

ÉCOLE DES HAUTES ÉTUDES EN SCIENCES SOCIALES

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Essais autour du capital social

Présentée par Marc SANGNIER
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ÉCOLE DES HAUTES ÉTUDES EN SCIENCES SOCIALES

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the École des hautes études en sciences sociales

Essays around social capital

Presented by Marc SANGNIER
Publicly defended on April 11th 2012

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Avertissement

Mis à part l'introduction et la conclusion générales qui constituent les chapitres 1 et 7, les différents chapitres de cette thèse sont issus d'articles de recherche rédigés en anglais et dont la structure est autonome. Ceci y explique la présence des termes “paper” ou “article” ainsi que l'éventuelle répétition de certaines informations. Les chapitres 4, 5 et 6 sont issus de collaborations avec mes coauteurs, ce qui y justifie l'utilisation du pronom “we”.

Notice

Except the general introduction (chapter 1) and the general conclusion (chapter 7), all chapters of this thesis are self-containing research articles. This is why terms “paper” or “article” are frequently used. This also explain that some information are given in multiple places of the thesis. Chapters 4, 5, and 6 are written with co-authors, what explain the use of the “we” pronoun.

Chapitre 1

Introduction générale

Cette thèse rassemble des contributions autour du capital social en économie. Le capital social est l'ensemble des valeurs qui poussent les individus à coopérer et à agir les uns envers les autres avec réciprocité et empathie en l'absence de tout mécanisme de contrôle formel. La première section de cette introduction s'attache à replacer le concept de culture dans l'analyse économique. Les concepts importants qui lui sont associés sont définis dans la section 1.2. La section 1.3 retrace l'histoire récente de l'approche culturelle chez les économistes. Les principaux travaux de ce champ disciplinaire sont présentés dans la section 1.4. Enfin, la section 1.5 présente les contributions à cette littérature faites par les différents chapitres de cette thèse.

1.1 Les causes profondes de la performance économique¹

En tant que discipline, l'économie s'intéresse à la façon dont les êtres humains s'organisent lorsqu'ils vivent en société. Au-delà de cela, l'économie a pour objectif de comprendre ce qui permet aux sociétés humaines de jouir d'un bien-être plus ou moins important. Le bien-être est un concept aux multiples dimensions dont la discussion n'est pas l'objet de cette thèse. Il

1. Le titre de cette section est fortement inspiré des mots employés dans les chapitres 1 et 4 de Acemoglu (2008).

recouvre un ensemble de conditions mentales, physiques et matérielles. Aussi limité et imparfait qu'il puisse être, le revenu peut être considéré comme une mesure approximative du bien-être. Le revenu constitue donc l'un des principaux centres d'intérêt des économistes. Ils essayent de comprendre pourquoi il est si différent d'un pays ou d'un individu à l'autre et comment il varie au cours du temps. En d'autres termes, les inégalités de revenu et la croissance constituent deux points focaux de l'analyse économique.

À la suite d'une longue tradition, les principales théories économiques ont longtemps souligné l'importance du capital humain et du capital physique pour expliquer les différences entre pays en termes de performance économique. Ces deux éléments sont en effet tous deux des intrants de toute fonction de production. La façon dont ils sont accumulés et combinés, i.e. l'état de la technologie, est sans aucun doute l'ultime raison pour laquelle il existe des différences de revenu entre sociétés ou au cours du temps. Dans une certaine mesure, le modèle de croissance canonique développé par Solow (1956) représente à la fois l'apogée des théories passées et la matrice originelle de travaux ayant raffiné, critiqué ou étendu ses idées centrales. L'accumulation de capital humain et de capital physique n'est néanmoins que la partie émergée des déterminants de la performance économique. En effet, si le développement économique n'était qu'une affaire d'accumulation et de technologie, alors les différences de revenus entre pays ne devraient pas être aussi importantes que celles que l'on peut constater. Ce qui importe véritablement, ce sont les conditions sous lesquelles les décisions d'accumulation sont prises. Acemoglu (2008) dégage quatre hypothèses non-exclusives concernant les causes fondamentales de la performance économique : la chance, la géographie, les institutions et la culture. La chance et la géographie sont des choses sur lesquelles les individus n'ont aucun contrôle. La géographie rassemble l'ensemble des caractéristiques de l'espace dévolu au développement d'une société. C'est à dire ses ressources et sa position absolue, mais aussi relative par rapport aux autres sociétés. Considérer la chance comme un facteur déterminant le développement économique rend compte de la possibilité que deux sociétés parfaitement identiques aboutissent à des réalisations économiques différentes à la suite d'une série de chocs aléatoires. Ces deux

éléments sont des contraintes qui s'imposent aux individus et avec lesquelles ces derniers doivent compter. Les changements technologiques et organisationnels peuvent évidemment permettre de relâcher ces contraintes. À l'inverse, la culture et les institutions sont tous deux des éléments du contexte dans lequel les décisions économiques sont prises et des produits de la vie en société.

Suite aux travaux fondateurs de North and Davis (1971), les économistes soulignant l'importance des institutions ont fortement accru leur audience au cours des vingt-cinq dernières années du vingtième siècle. Cette approche ne nie pas l'importance des explications classiques de la performance économiques, mais met en lumière le rôle auparavant sous-estimé des cadres construits socialement pour la conduite des activités économiques. Selon les mots utilisés par North (1994), les “*institutions sont les règles du jeu dans une société ou, de façon plus formelle, ce sont les contraintes conçues par les hommes et pesant sur les relations que ces-derniers entretiennent les uns avec les autres*”.² Acemoglu (2008) définit les institutions comme “*les règles, régulations, lois et politiques qui modifient les incitations économiques et donc les incitations à investir dans l'innovation technologique, l'accumulation de capital physique ou celle de capital humain*”. L'intérêt croissant pour le rôle des institutions dans l'analyse économique a été accompagné par l'avènement de l'économie politique moderne. Afin de comprendre les décisions économiques, ce champ souligne les arbitrages auxquels les agents rationnels font face dans un contexte institutionnel donné et l'importance de la structure sociale dans la prise de décision. Dans toute société, les individus interagissent. Ils appartiennent également à des groupes différents. Ces groupes peuvent être définis de façon exclusivement sociale, e.g. fondés sur une origine culturelle commune, ou institutionnelle, i.e. fondés sur des clivages créés suite à une réorganisation des institutions. Le contexte (institutionnel) dans lequel les individus évoluent et la répartition des pouvoirs entre les différents groupes déterminent tous deux la situation économique des divers agents formant la société. Par ailleurs, les décisions prises quant à la conception des institutions sont elles-mêmes les produits des interactions passées entre les membres de

2. Toutes les citations sont traduites par l'auteur de la thèse.

la société.

L’hypothèse relative au rôle de la culture a commencé à enrichir l’économie politique à la fin du siècle dernier. Alors que les concepts qui lui sont liés étaient déjà utilisés dans d’autres sciences sociales, la culture fut davantage considérée par les économistes comme l’un des facteurs pouvant expliquer les différences entre individus en matière de préférences, de valeurs et de croyances. L’idée centrale de l’approche culturelle de l’économie est que des groupes différents peuvent être caractérisés par des différences durables en matière de préférences, de valeurs ou de croyances. Cette hétérogénéité entre groupes ou entre individus est alors susceptible d’expliquer de larges différences dans les choix institutionnels ou la performance économique. La façon dont les préférences jouent sur les décisions économiques se trouve au centre du paradigme de l’agent rationnel classique : les agents maximisent leur utilité et choisissent quelles actions entreprendre ou quels biens consommer ; le niveau d’utilité atteint dépend alors des ressources et des préférences individuelles. D’un certain point de vue, les valeurs peuvent être considérées comme un concept proche de celui de préférences. Néanmoins, l’idée de “valeur” incorpore également une notion de jugement moral qui peut intervenir lors de la prise de décision. Enfin, les croyances font référence aux anticipations formées par les agents quant aux actions entreprises par d’autres. Aucun de ces concepts ne représente une divergence fondamentale vis-à-vis de l’approche économique “standard”. La principale contribution des économistes qui s’intéressent au rôle de la culture est plutôt de faire ressortir l’importance de ce facteur dans les différentes décisions que les agents sont amenés à prendre et la façon dont les facteurs culturels interagissent avec les institutions.

1.2 De la culture au capital social

Guiso et al. (2006) définissent la culture comme “*les croyances et valeurs coutumières que les groupes ethniques, religieux et sociaux transmettent de façon constante d’une génération à l’autre*”. Fernández (2011) définit la culture comme “*un ensemble de connaissances, de grilles de lecture et de pratiques communes*” et poursuit en présentant certaines des définitions de la culture

pouvant être trouvées dans le dictionnaire Merriam Webster : “*la part de la connaissance humaine, des croyances et des comportements qui est apprise et transmise d’une génération à l’autre*”, “*les croyances coutumières, les modes d’organisation sociale, et les caractéristiques matérielles d’un groupe racial, religieux ou social*”, “*l’ensemble des attitudes, valeurs, objectifs et pratiques partagés qui définissent une institution ou une organisation*” et “*l’ensemble des valeurs, conventions ou pratiques sociales associées à une activité ou à une caractéristique sociétale particulière*”. Bien que variables, ces différentes définitions mettent en exergue les traits caractéristiques de la culture. Par essence, celle-ci est partagée, transmise et définie relativement à un groupe. Sous bien des aspects, ces trois traits forment également les canons de l’approche culturelle en économie.

L’approche culturelle en économie ne s’intéresse pas à la culture *en soi* – dans ce cas, on utiliserait l’expression “économie de la culture” –, mais aux conséquences économiques des différences culturelles. Les économistes cherchent ainsi à circonscrire les composantes spécifiques de la culture qui peuvent se révéler importantes pour la performance économique. Deux de ces éléments intéressent fortement les économistes : le “capital social” et la “confiance”.

L’une des dimensions les plus importantes du capital social est qu’il souligne le rôle clé des attitudes qui prévalent dans les relations entre individus. C’est ainsi qu’il peut être relié à différents travaux menés en sociologie. Par exemple, Beck (1986) a mis en lumière le changement dans la nature du risque auquel les individus font face dans les sociétés modernes. Selon cet auteur, les sociétés modernes – par rapport aux sociétés existantes dans les premiers âges du développement économique et institutionnel – sont caractérisées par le fait que la plupart des risques provient des autres individus – par exemple, les risques environnementaux liés aux catastrophes industrielles, les pandémies ou le risque de chômage – et non plus de la nature. Cette assertion ne nie pas l’existence des menaces que la nature fait peser sur les individus – par exemple, les ouragans, les tremblements de terre, les inondations ou les sécheresses –, mais souligne que l’importance relative des sources de risque a évolué au cours du temps. C’est dans un tel cadre que Giddens (1991)

attire explicitement l'attention sur le rôle des croyances réciproques et de la confiance.

Les économistes et penseurs des disciplines connexes donnent différentes définitions de ce qu'est le capital social. Par exemple, Bourdieu (1986) écrit :

“Le capital social est un attribut d'un individu dans un contexte social. On peut acquérir du capital social au travers d'actions dédiées et le réaliser en des gains économiques conventionnels. Néanmoins, l'habilité à agir de la sorte dépend de la nature des obligations sociales, des connexions et des réseaux que chacun a à sa disposition”.

Une définition très proche est également proposée par Glaeser et al. (2002) :

“Nous définissons le capital social comme les caractéristiques sociales d'un individu – y compris ses capacités relationnelles, son charisme et la taille de son répertoire – qui lui permettent d'obtenir des gains marchands ou non en interagissant avec les autres”.

L'importance des liens entre individus est également soulignée par Putnam (2000) :

“[...] Le capital social fait référence aux liens entre individus – les réseaux sociaux et les normes de réciprocité et de confiance qui en émanent. En ce sens, le capital social est étroitement liée à ce que certains ont appelé la “vertu civique”. La différence est que le concept de “capital social” attire l'attention sur le fait que les vertus civiques sont plus puissantes lorsqu'elles sont enchâssées dans un réseau de relations réciproques dense. Une société composée de nombreux individus vertueux mais isolés n'est pas nécessairement riche en capital social”.

Enfin, tirant les conséquences de critiques exprimées notamment par Solow (1995, 1999), Arrow (1999), Durlauf (2002) et Sobel (2002), Guiso et al. (2010) redéfinissent le capital social comme

“[...] du capital civique, c'est à dire les valeurs et croyances persistantes et partagées qui aident un groupe d'individus à surmonter

le problème du passage clandestin lors de l'établissement d'activités socialement désirables".

Ma propre définition du capital social est la suivante. Je définis le capital social comme l'ensemble des valeurs qui poussent les individus à coopérer, à agir avec réciprocité ou empathie en l'absence de tout mécanisme de contrôle formel. Je considère ainsi qu'il n'y a d'espace pour l'expression du capital social que dans des situations dans lesquelles n'existe aucun dispositif institutionnel définissant la façon dont les individus doivent se comporter. Cette remarque n'implique néanmoins pas que le capital social n'a aucun rôle à jouer dans le processus de mise en place des institutions.

Fukuyama (1999) propose un lien extrêmement clair entre capital social et confiance :

"Le capital social peut être défini comme un ensemble de valeurs et de normes informelles partagées par les membres d'un groupe et leur permettant de coopérer les uns avec les autres. Si les membres du groupe en viennent à anticiper que chacun agira de façon fiable et honnête, alors ils auront confiance les uns envers les autres. La confiance agit comme un lubrifiant qui permet à n'importe quel groupe ou organisation de fonctionner de façon plus efficiente".

Cette relation est également mise en avant par Bowles and Gintis (2002) :

"Le capital social fait souvent référence à la confiance, au fait pour un individu de se soucier de ses partenaires ou à la volonté de vivre selon les normes d'une communauté et de punir ce qui n'agissent pas de la sorte".

Pour clore cette énumération, Knack and Keefer (1997) offrent un élégant résumé de la variété et de la diversité des définitions utilisées pour circonscrire le capital social et la confiance :

"La confiance, les normes de coopération et les associations d'individus correspondent à différentes définitions que la plupart des spécialistes utilisent pour le terme capital social. Coleman (1990) écrit que "les relations d'autorité, les relations de confiance et les allocations consensuelles de droits qui établissent ces normes"

peuvent être considérée comme des ressources pour les individus, en notant que Loury (1977) a introduit le terme “capital social” pour nommer ces ressources. À la suite de Granovetter (1973), Putnam a souligné l’importance potentielle des liens faibles au sein des groupes d’affinité. Tant Coleman que Putnam font référence à la confiance et aux normes de comportement civique comme autant de manifestations du capital social”.

Je définis pour ma part la confiance comme la croyance qui pousse un individu à concéder à un autre un pouvoir de décision sur un sujet dont l’issue peut avoir des conséquences tant favorables que défavorables pour lui-même. La confiance ne peut se manifester que si le premier individu abandonne tout pouvoir de décision au second. En ce sens, ma définition de la confiance fait écho à celle que j’ai donnée plus haut du capital social et insiste une nouvelle fois sur l’absence de mécanisme de contrôle.

Ma définition de la confiance est très proche de celle synthétisée par Rousseau et al. (1998) à partir des différentes approches du concept qui peuvent être trouvées dans les sciences sociales (e.g. l’économie, la sociologie, le management, la psychologie et les sciences politiques). Ces auteurs proposent la définition suivante :

“La confiance est un état psychologique portant l’intention d’accepter la vulnérabilité et fondé sur des anticipations positives des intentions ou du comportement d’un tiers”.

Je partage avec cette approche l’idée que l’acceptation de la vulnérabilité est centrale dans la définition de la confiance. L’une des principales caractéristiques de la confiance est que les individus qui font confiance aux autres ont une opinion positive concernant le comportement de celui à qui ils font confiance. En transférant un pouvoir de décision, ils escomptent que leur partenaire ne leur nuira pas. C’est en cela que la confiance diffère fondamentalement de l’altruisme. L’altruisme s’observe lorsque quelqu’un se prive de quelque chose (il peut s’agir d’un pouvoir de contrôle ou, plus simplement, d’argent) et le donne à quelqu’un d’autre, mais en étant sûr que cette action ne peut avoir de conséquences néfastes pour celui qui fait preuve d’altruisme.

Il est possible de remonter (au moins) jusqu'à Adam Smith pour trouver des traces de l'importance de la confiance pour la performance économique. En 1776, celui-ci écrivait en effet :

*“Dans la limite de ce que j’ai pu observer, les cinq points suivants sont les principales circonstances qui font que l’on peut obtenir un petit gain dans l’exercice de certaines activités et un gros dans d’autres : premièrement, l’agréabilité ou la désagréabilité de l’emploi lui-même ; deuxièmement, la facilité et le faible prix ou la difficulté et coût important requis pour faire son apprentissage ; troisièmement, la constance ou l’inconstance que l’on met à la tâche ; quatrièmement, la confiance plus ou moins grande que l’on peut placer en ceux qui l’exercent ; et cinquièmement, la probabilité de succès ou d’échec de l’entreprise”.*³

Au dix-neuvième siècle, John Stuart Mill a lui aussi consacré en 1848 quelques mots à la valeur économique de la confiance :

*“Les avantages que les hommes tirent de leur capacité à se faire confiance les uns aux autres concernent tous les recoins de la vie humaine : les aspects économiques sont peut-être la part la plus faible de ceux-ci, mais même eux sont inestimables”.*⁴

Le même auteur pousse cette idée plus loin et soutient que

*“[...] le bien-être économique d’un peuple et de l’humanité dépend de manière cruciale de la capacité des hommes à être capables d’accorder leur confiance quant aux engagements pris par leurs partenaires”.*⁵

Plus récemment, Arrow (1972) remarquait que

“[...] quasiment toutes les transactions commerciales ont en elles un élément de confiance, plus certainement encore toute transaction s’étendant sur une période de temps. On peut raisonnablement avancer que la plus grande partie des retards en matière

3. Smith (1904), livre I, chapitre X.

4. Mill (1909), livre I, chapitre VII.

5. Ibid., livre V, chapitre IX.

de développement économique observés dans le monde peut être expliquée par un manque de confiance mutuelle".⁶

Il n'existe en fin de compte, parmi les économistes et autres scientifiques sociaux, aucune définition unique de ce que désignent exactement le capital social⁷ et les concepts qui lui sont liés. Ce manque d'acuité constitue l'une des critiques les plus communément exprimées par ceux qui demeurent sceptiques quand à l'utilité même de ces concepts.⁸ Dans une certaine mesure, cette critique s'adresse également à l'approche culturelle en économie dans son ensemble. L'absence de définition homogène n'est cependant pas niée par les spécialistes qui s'y intéressent. Fernández (2011) reconnaît par exemple *"la nécessité d'une définition de la culture, même si elle demeure relativement vague"*. Ce problème est néanmoins pris au sérieux par les économistes comme l'illustrent Guiso et al. (2010). Dans cet article, les auteurs cherchent explicitement à établir une définition du capital social qui satisfasse les traits canoniques de tout "capital" et soit en même temps utilisable.⁹

1.3 La culture en économie

L'attention portée par les économistes à la culture comme facteur explicatif fondamental de la performance économique ne cesse de s'accroître. Ce fait peut être illustré par la figure 1.1. Cette figure représente les apparitions de mots liés à l'approche culturelle en économie dans les titres d'articles scientifiques entre 1990 et 2011. J'ai collecté le nombre de résultats obtenus en cherchant les expressions suivantes dans le champ 'Business, Administration, Finance, and Economics' sur Google Scholar : "social capital", "trust"

6. Cette citation est l'une des citations favorites des économistes qui s'intéressent au capital social ou à la confiance.

7. Cf. Dasgupta and Stiglitz (1980).

8. Voir par exemple les critiques formulées par Solow (1995, 1999), Arrow (1999), Durlauf (2002) et Sobel (2002) notamment.

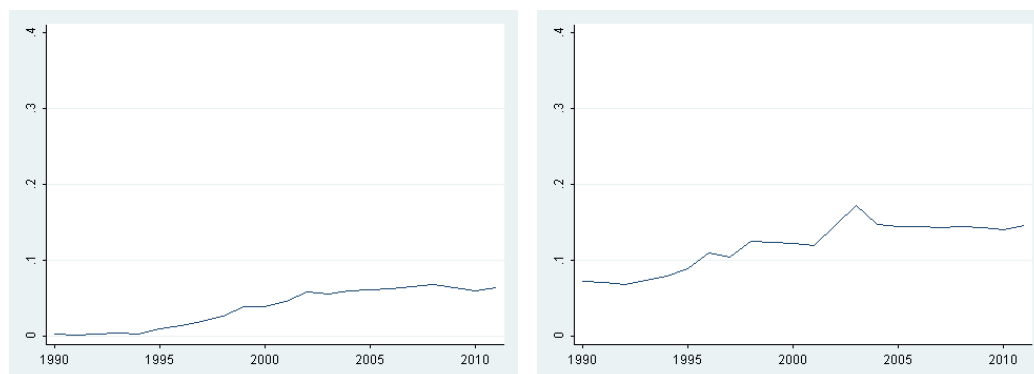
9. Voir la définition proposée par Guiso et al. (2010) en page 6. En bref, la critique formulée par Solow (1995) est la suivante : le "capital social" doit être mesurable (même imparfaitement), doit permettre d'obtenir des gains économiques non-négatifs, doit pouvoir être distingué du capital humain et nécessite des théories expliquant comment il s'accumule et se déprécie.

et “culture”.¹⁰ J’ai reproduit le même exercice pour les expressions “growth”, “unemployment” et “economic development”. La somme de ces derniers résultats est utilisée pour normaliser les premiers et ainsi tenir compte de l’évolution de la production scientifique en économie et du développement de la diffusion électronique. Les données utilisées pour construire les courbes sont présentées dans le tableau 1.1 en annexe. L’indice des apparitions de “social capital” est passé de zéro en 1990 à 0.07 en 2011. Les indices associés à “trust” et “culture” ont également évolué de 0.07 à 0.14 et de 0.10 à 0.13 au cours de la même période. La somme des trois indices s’est donc accrue de 0.17 en 1990 à 0.34 en 2011. Ces évolutions reflètent la place grandissante occupée par l’hypothèse culturelle dans la recherche scientifique en économie. J’ai également reproduit cet exercice en cherchant les apparitions des mêmes expressions à quelque endroit que ce soit dans les articles (pas uniquement dans le titre). Les indices ainsi obtenus sont représentés dans la figure 1.2 en annexe et confirment les évolutions déjà mentionnées.

Comme évoqué plus haut, la prise en compte de la culture dans les décisions économiques ne présente pas de difficultés particulières du point de vue théorique. Les différents concepts qui lui sont liés sont dans une large mesure déjà au coeur de la théorie économique classique. Le principal obstacle au développement de l’hypothèse culturelle réside davantage dans les difficultés existant à identifier clairement l’impact économique de la culture d’un point de vue empirique. Dans la mesure où les variables culturelles sont en elles-mêmes difficiles à définir et parce que les attitudes culturelles ne se définissent que *par rapport* à un objet, il est délicat d’isoler son effet de celui d’autres variables. C’est en particulier vrai en ce qui concerne d’autres variables qui sont le produit d’interactions sociales, telles que les institutions par exemple. La culture a en effet un impact sur l’activité économique. Mais, dans le même temps, elle évolue et s’adapte en fonction de l’environnement dans lequel les hommes vivent. En d’autres termes, l’hypothèse culturelle est demeurée longtemps à l’arrière plan de l’analyse économique en raison

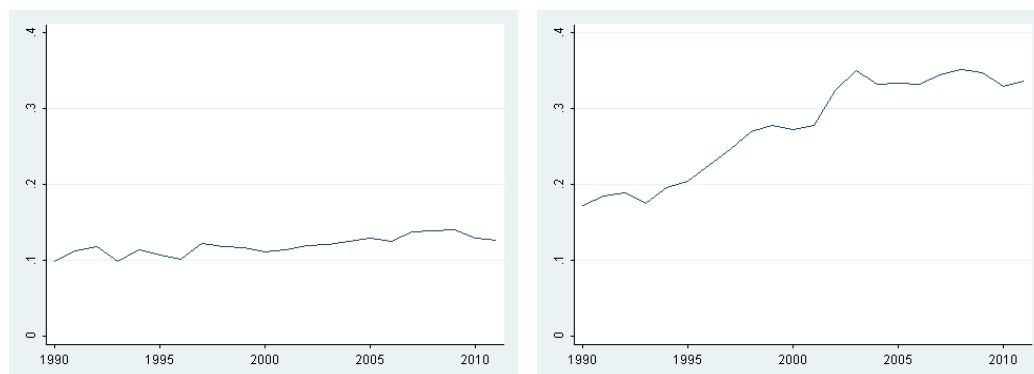
10. Voir la section 1.2 pour les liens existant entre les deux premières expressions et la culture.

Figure 1.1 – Apparitions relatives de mots liés à la culture en économie dans les titres d’articles scientifiques.



(a) Apparitions relatives de “social capital” dans les titres d’articles.

(b) Apparitions relatives de “trust” dans les titres d’articles.



(c) Apparitions relatives de “culture” dans les titres d’articles.

(d) Apparitions relatives de “social capital”, “trust” ou “culture” dans les titres d’articles.

Les données sont extraites de Google Scholar. Les figures représentent le nombre de résultats obtenus en cherchant “social capital”, “trust” ou “culture” dans les titres d’articles, normalisé par le nombre de résultats obtenus en cherchant “growth”, “unemployment” et “economic development”. Les requêtes sont limitées au champ “Business, Administration, Finance, and Economics” tel que défini par Google Scholar.

de difficultés empiriques liées à la causalité inverse.¹¹ Ces faiblesses notoires sont narrées de façon précise et convaincante par Durlauf (2002).

Trois évolutions ont aidé à (partiellement) surmonter ces difficultés. L’une

11. À bien des égards, cette remarque s’est également longtemps appliquée à l’hypothèse relative à l’importance des institutions. Les deux hypothèses partagent en fait ne nombreux traits en ce qui concerne leurs places dans l’analyse économique, notamment sur les questions d’identification empirique.

est technique, les autres sont d'ordre méthodologique. Tout d'abord, à la suite du développement des nouvelles technologies de l'information et de la communication, la disponibilité de vastes enquêtes individuelles s'est accrue. À partir des années quatre-vingt le développement d'enquêtes qualitatives internationales a permis la comparaison d'attitudes subjectives concernant des thèmes variés. Parmi ces enquêtes, on peut notamment citer la World Values Survey, l'European Values Study, l'European Social Survey, l'Eurobarometer, l'Afrobarometer, le Latinobarómetro, l'Asian Barometer et le International Social Survey Programme. Pour le moment, ces données demeurent relativement récentes et ne permettent pas de suivre l'évolution des variables culturelles sur de longues périodes de temps. Néanmoins, des efforts d'harmonisation croissants ont rendu possible les comparaisons entre pays. Dans le même temps, plusieurs pays ont développé des enquêtes similaires au niveau national ou ont inclus des modules subjectifs à des enquêtes existantes. Parmi ces enquêtes, on peut citer la General Social Survey aux États-Unis, la British Household Panel Survey, l'Australian Survey of Social Attitudes et le German Socio-Economic Panel.¹² Ces enquêtes nationales permettent notamment de répliquer les estimations empiriques des relations dérivées de l'hypothèse culturelle dans différents pays et différents contextes. Cette évolution ne résout pas le problème de l'identification claire et incontestable de l'effet des variables culturelles, mais permet de multiplier l'illustration de leurs effets. De plus, la variété des questions posées dans ces enquêtes permet d'observer les différences de valeurs dans de multiples dimensions. Enfin, l'abondance de données offre de nombreuses opportunités pour utiliser des variables instrumentales afin accroître la précision des estimations des effets de la culture sur la performance économique.

Ensuite, la pertinence des prémisses de l'hypothèse culturelle – c'est à dire l'idée selon laquelle il existe des différences systématiques entre groupes en ce qui concerne les attitudes pertinentes en matière de décisions économiques – a pu être validée à l'aide d'expériences en laboratoire. De telles expériences ont permis de démontrer que des individus appartenant à des groupes sociaux différents ou d'origines différentes adoptent des stratégies systématiquement

12. Les hyperliens vers ces enquêtes sont présentés dans le tableau 1.2 en annexe.

différentes dans des jeux de confiance, des jeux du dictateur ou des jeux de financement de biens publics.¹³ Les résultats issus d'expériences en laboratoire souffrent par construction d'un manque de validité externe comme l'ont souligné Oosterbeek et al. (2004) dont la méta-analyse mitige la portée des résultats rassemblés. De plus et bien qu'en nombre abondant, certaines de ces études fournissent des résultats divergents comme par exemple Glaeser et al. (2000) et Fehr et al. (2003). Le premier article montre que la question de la World Values Survey habituellement utilisée pour mesurer la confiance¹⁴ ne prédit pas la confiance mais la fiabilité. À l'opposé, Fehr et al. (2003) démontrent le résultat symétrique : les réponses à la question utilisée pour mesurer la confiance prédisent la confiance et non la fiabilité de la personne interrogée. Une tentative de conciliation des résultats présentés par les deux articles a été faite par Sapienza et al. (2007) en soulignant que la confiance est un phénomène protéiforme.

Enfin, une révolution méthodologique s'est produite durant les années quatre-vingt-dix lorsque les économistes ont commencé à utiliser l'approche épidémiologique pour isoler le rôle de la culture dans les décisions économiques. Cette approche s'inspire explicitement de la méthode utilisée dans les études épidémiologiques médicales. Un groupe d'individus qui diffèrent dans une dimension est observé dans le même environnement. Les différences d'états entre les individus observés dans le même contexte peuvent alors être attribuées aux différences de la dimension d'intérêt. En recherche clinique, cette dimension consiste souvent en un traitement médical. Les économistes s'intéressant à la culture ne "traitent" pas les individus qu'ils observent. Ils sont en revanche relativement proches des épidémiologistes qui observent des individus exposés à une maladie dans différents environnements et essaient de distinguer les facteurs génétiques et contextuels qui déterminent la réaction des individus. En économie, cette approche peut être utilisée pour

13. Cf. Yamagishi et al. (1998), Henrich (2000), Henrich et al. (2001), Glaeser et al. (2000), Fehr et al. (2003) et Bornhorst et al. (2004) par exemple.

14. La question est : "*D'un point de vue général, diriez-vous que l'on peut faire confiance à la plupart des gens ou bien qu'il faut être très prudent lorsqu'on a affaire avec les autres ?*". La réponse peut être "*On peut faire confiance à la plupart des gens*" ou "*On ne peut être assez prudent*".

distinguer les facteurs culturels et contextuels (c'est à dire les caractéristiques économiques ou institutionnelles de l'environnement dans lequel les individus évoluent) des décisions prises. L'idée est de supposer que si des individus d'origines culturelles différentes sont observés dans une même situation mais prennent des décisions économiques différentes, alors ces différences peuvent être attribuées à des différences culturelles une fois que l'ensemble des caractéristiques observables ont été prises en compte. Cette approche a été utilisée dans un article fondateur par Carroll et al. (1994). Ces auteurs se sont penchés sur les différents comportements d'épargne entre les immigrants d'origines différentes au Canada. Ils n'ont pas trouvé d'effet de la culture sur les comportements d'épargne. Bien que la conclusion de cet article ne soit pas favorable à l'hypothèse culturelle, son rôle a été prépondérant sur le plan de la méthodologie. L'approche épidémiologique est devenue de plus en plus populaire pour identifier les effets de la culture lorsqu'elle a été à nouveau utilisée durant la décennie précédente. L'utilisation de cette méthode a bien évidemment été croissante à mesure qu'elle fournissait des résultats confirmant l'hypothèse culturelle. Cela a été particulièrement le cas lors de la publication d'articles emblématiques telles que ceux de Fernández and Fogli (2006, 2009), Guiso et al. (2006) et Fernández (2007).

Ces évolutions ont permis à l'approche culturelle de gagner en crédibilité, en intérêt et en popularité parmi les économistes. Les progrès empiriques ont également stimulé la renaissance des concepts associés à la culture dans la théorie économique. L'économie politique moderne est devenue peu à peu moins réticente à utiliser – ou simplement à reconnaître l'intérêt de – l'hypothèse culturelle. En fin de compte, la littérature scientifique s'est développée vers la reconnaissance du rôle de la culture en économie alors que cette dernière était le plus souvent "laissée dans le résidu" auparavant.

1.4 État de l'art

En tant qu'économiste, s'intéresser à la culture revient à se poser deux principales questions. Tout d'abord, quel est l'impact du capital social sur l'activité économique ? Ensuite, le contexte (économique) dans lequel vivent

les individus a-t-il un impact sur les valeurs portées et transmises par ces derniers ? Tous les articles scientifiques s'intéressant à la culture ou au capital social se penchent directement ou indirectement sur ces questions. Dans cette section, je passe en revue les principales avancées dans ces domaines. Cet état de l'art ne prétend pas être exhaustif. Je me focalise délibérément sur certaines contributions majeures et c'est consciemment que je laisse de côté des contributions théoriques sur la transmission des valeurs.¹⁵ Les apports à cette littérature faits par cette thèse sont présentés dans la section suivante.

1.4.1 Les effets du capital social sur l'économie

La première question peut être reformulée de la façon suivante. Les différences culturelles ont-elles un impact sur l'activité économique ? Un capital social plus important permet-il de plus grandes réussites économiques ? Si oui, quels sont les canaux par lesquels le capital social modifie l'activité économique ? En première approximation, on peut considérer que les différences en matière de valeurs peuvent affecter l'activité économique directement ou indirectement. Je considère qu'un effet est direct s'il transite principalement via les décisions économiques des agents. Je considère qu'un effet est indirect s'il transite principalement via les décisions concernant la mise en place des institutions.

De nombreux articles de ce champ font référence à la conjecture exprimée par Putnam (1993) selon laquelle les différences de capital social entre le nord et le sud de l'Italie ont persisté au cours du temps et continuent à expliquer les différences en matière de performance économique entre ces deux régions. Cet auteur suggère par ailleurs que les différences de capital social peuvent être mesurées en s'intéressant aux différentes pratiques concernant la vie associative.

L'article pionnier documentant une relation positive entre le capital social et l'activité économique est celui de Knack and Keefer (1997).¹⁶ Ces auteurs

15. Cf. Bisin and Verdier (2001, 2008), Francois and Zabojnik (2005), Tabellini (2008) et Guiso et al. (2008b) parmi d'autres.

16. En la matière, peu d'articles ont précédé Knack and Keefer (1997). Dans leur brève revue de la littérature, ces auteurs n'attirent l'attention que sur les contributions de Greif

comparent des pays entre eux et montrent qu'il existe une corrélation positive entre des agrégats économiques importants tels que la croissance et l'investissement, et la confiance ou la coopération civique. Tout comme de nombreux articles s'étant inspiré d'eux, Knack and Keefer (1997) utilisent la question suivante de la World Values Survey pour mesurer la confiance : *"D'un point de vue général, diriez-vous que l'on peut faire confiance à la plupart des gens ou bien qu'il faut être très prudent lorsqu'on a affaire avec les autres ?"*. La réponse peut être *"On peut faire confiance à la plupart des gens"* ou *"On ne peut être assez prudent"*. La mesure traditionnelle de la confiance au sein d'un pays est la part des personnes interrogées qui répondent *"On peut faire confiance à la plupart des gens"*. Ils utilisent un autre ensemble de questions issues de la même enquête pour mesurer l'étendue des normes civiques dans un pays. Ces questions sont également devenues des canons de la littérature. Elles s'organisent autour de l'accroche suivante : *"Pour chacune des déclarations suivantes, dites-moi si vous pensez que c'est toujours justifié, jamais justifié ou quelque chose entre-deux"*. Knack and Keefer (1997) utilisent les réponses données suite aux déclarations suivantes : *"Demander des prestations publiques auxquelles on n'a pas droit"* ; *"Frauder dans les transports publics"* ; *"Tricher sur les impôts si l'opportunité se présente"* ; *"Garder de l'argent trouvé"* ; *"Ne pas signaler un dommage fait accidentellement à un véhicule garé"*. Les réponses données s'échelonnent de 1 pour *"jamais justifiable"* à 10 pour *"toujours justifiable"* et sont agrégées pour créer un indice des normes civiques au niveau du pays. En comparant 29 pays, Knack and Keefer (1997) montrent que la confiance et les normes de civisme sont positivement et significativement corrélées avec la croissance et le ratio de l'investissement au produit intérieur brut.¹⁷ Ils montrent également que ces relations persistent lorsque de nombreuses variables potentiellement omises sont prises en compte. Cela concerne en particulier un indice de protection des droits de propriété qui peut être considéré comme une approximation de la qualité des institutions. Enfin, ces auteurs ne trouvent aucune preuve d'une relation positive entre vie associative et activité économique comme le

(1989), Helliwell and Putnam (1995) et Narayan and Pritchett (1997).

17. L'échantillon utilisé comprend essentiellement des pays développés.

suggérerait Putnam.

À la recherche des canaux par lesquels le capital social influence l'activité économique, Knack and Keefer (1997) montrent que plus la part des individus qui ont confiance est importante dans un pays, plus le travail y est productif, plus le stock de capital physique est important, meilleur est le niveau d'éducation et plus la productivité totale des facteurs est élevée. Ils s'intéressent également à la relation entre la confiance interpersonnelle et la confiance envers le gouvernement : la relation entre ces deux variables est positive et statistiquement significative. Enfin, ils présentent des résultats montrant que la qualité des institutions est plus élevée dans les pays pourvus d'une confiance supérieure.

En même temps que Knack and Keefer (1997), La Porta et al. (1997) ont eux aussi publié des résultats montrant que des niveaux de confiance plus élevés sont associés à de meilleures performances économiques. Ces auteurs conjecturent que la confiance doit avoir un rôle plus important à jouer dans des situations où la taille a de l'importance – c'est à dire dans des situations dans lesquelles le nombre d'individus qui interagissent est important. De telles situations se retrouvent en particulier dans l'administration publique ou au sein des grandes entreprises. Les résultats présentés par La Porta et al. (1997) montrent que la confiance est positivement et significativement corrélée à l'efficacité du gouvernement, au volume des ventes des grandes entreprises et à la qualité de l'organisation sociétale : dans les pays où la part des individus faisant confiance est plus élevée, les infrastructures sont de meilleure qualité, une plus grande proportion de la population est éduquée et la mortalité infantile est plus faible. Tout ceci s'ajoute à une inflation plus faible et à une croissance plus forte.

Les articles de Knack and Keefer (1997) et La Porta et al. (1997) suggèrent tous deux fortement que le capital social en général et la confiance en particulier accroissent la performance de l'économie au travers de l'investissement. Tant les investissements en capital privé qu'en capital public – comme par exemple les infrastructures et le système éducatif – semblent jouer un rôle. Zak and Knack (2001) se sont précisément intéressés à cette idée en développant un modèle théorique dont les prédictions sont testables. Dans

ce modèle d'équilibre général, la confiance réduit les coûts de transaction et relâche la contrainte créée par l'aléa moral dans les situations caractérisées par une asymétrie d'information entre investisseurs et courtiers. En comparant 41 pays, les auteurs complètent les résultats de Knack and Keefer (1997) au sujet de la relation positive existant entre la confiance d'une part et la croissance et l'investissement d'autre part. Ils confirment également que l'effet de la confiance sur les performances économiques persiste une fois que la qualité des institutions formelles est prise en compte. Bien que la confiance et les institutions soient sans doute liées, les faits suggèrent que les deux facteurs ont des effets indépendants sur l'activité économique qui demeurent une fois que l'effet de l'autre est pris en compte. D'autres articles, tels que Knack (2001) et Platteau (2000) fournissent des illustrations empiriques de ces relations.¹⁸

Certains des canaux liant le capital social à l'activité économique ont été étudiés par Guiso et ses co-auteurs dans une série d'articles. Guiso et al. (2004) se sont intéressés aux prises de décisions financières prises par les ménages italiens. Ils se servent des variations du capital social entre les régions italiennes pour estimer l'effet du capital social sur le développement financier. Ces auteurs montrent que les individus utilisent plus fréquemment des moyens de paiement non liquides et détiennent davantage de produits financiers dans les régions dans lesquelles le capital social est plus élevé.¹⁹ L'idée sous-jacente de cette analyse est que les décisions financières représentent le cas précis dans lequel la confiance envers les autres doit jouer un rôle important. Même si elle repose d'une façon ou d'une autre sur un quelconque accord écrit, toute décision financière amène l'investisseur à aliéner une part de sa richesse en échange de la promesse d'un paiement futur.²⁰ Le résultat portant sur l'utilisation de formes de monnaie moins matérielles, c'est à dire

18. Voir en particulier Platteau (2000) pour une étude de la relation entre capital social, institutions et activité économique dans les pays en voie de développement.

19. Guiso et al. (2004) utilisent le taux de participation aux élections, les dons du sang et la question traditionnelle de la World Values Survey relative à la confiance pour mesurer le capital social.

20. L'une des caractéristiques d'une transaction financière est qu'elle se déroule au cours du temps. C'est à cette occasion que la confiance devient cruciale. Cf. la citation de Arrow (1972) en page 9.

des chèques plutôt que du liquide, peut être aisément appréhendé en pensant à l'élément de "confiance" que la monnaie porte en elle. Plus un moyen de paiement est dématérialisé, plus son utilisation repose sur la croyance du receveur qu'il sera également accepté par un tiers agent.

Guiso et al. (2006) utilisent l'approche épidémiologique pour montrer que la confiance envers les autres accroît la probabilité de devenir entrepreneur. Ils utilisent les informations de la General Social Survey au sujet de la religion et du pays d'origine des américains pour estimer l'importance de la culture comme déterminant du niveau de confiance des individus. Ils montrent également que les différences culturelles entre pays se retrouvent dans les différences entre pays en matière de comportements d'épargne : le taux d'épargne s'accroît de 2.8 points de pourcentage lorsque la part des individus qui considèrent qu'il est important d'enseigner l'épargne aux enfants augmente de 10 points de pourcentage.²¹ L'article est complété d'une section présentant une relation positive entre les préférences culturelles pour la redistribution et le niveau de redistribution dans les différents états américains. Les auteurs utilisent de légères variantes de l'approche épidémiologique pour distinguer précisément le rôle de la culture de celui des institutions dans les relations qu'ils présentent. Dans Guiso et al. (2009), ils soulignent que la confiance mutuelle affecte les flux commerciaux et d'investissements entre pays européens. Tant les placements de portefeuille que les investissements directs à l'étranger sont concernés. Ces résultats persistent une fois que de nombreux traits des pays sont pris en compte, notamment la qualité des institutions.²² Une fois de plus, ces résultats soulignent que la confiance entre en jeu principalement dans des situations où le comportement des partenaires est difficilement observable ou contrôlable.

Dans le même ordre d'idée, Tabellini (2010) se sert des variations des

21. La question utilisée par Guiso et al. (2006) provient de la World Values Survey et est tournée de la façon suivante : "*Voici une liste de qualités que les enfants peuvent être encouragés à apprendre à la maison. Lesquelles considérez-vous comme particulièrement importantes ? L'épargne.*"

22. Dans un article récent, Yu et al. (2011) utilisent le même échantillon de pays et s'intéressent aux interactions entre l'efficacité des institutions judiciaires et la confiance mutuelle. Les auteurs concluent en soutenant que la confiance ne joue un rôle que si la protection légale des activités économiques est faible.

attitudes entre les régions d'Europe pour identifier l'effet de la confiance et du respect des autres sur le développement économique. Ses résultats confirment à nouveau que la richesse et la croissance dépendent de facteurs culturels.

Tous les papiers présentés ci-dessous identifient l'impact de la culture sur l'activité économique en utilisant des variations dans l'espace. Soit entre pays, soit entre régions d'un même pays. Ils ont souvent recours à des variables instrumentales pour résoudre l'éventuelle causalité inverse entre activité économique et capital social. De ce point de vue, une contribution majeure à cette littérature a été faite par l'article de Algan and Cahuc (2010) qui parviennent à identifier l'effet des changements de la confiance sur le développement économique au cours du temps au niveau d'un pays. Ces auteurs utilisent l'approche épidémiologique et tirent profit des différentes vagues d'immigration aux États-Unis. En s'intéressant aux réponses aux questions de la General Social Survey faites par les immigrants américains de différentes générations, Algan and Cahuc (2010) parviennent à reconstruire les différences de confiance entre pays d'origine pendant les années trente et à la fin du vingtième siècle.²³ L'évolution des différences de confiance au cours du temps permet aux auteurs de mesurer indirectement les changements de confiance dans les pays d'origine au cours du vingtième siècle. Algan and Cahuc (2010) montrent que les pays dans lesquels la confiance s'est le plus accrue au cours de la période sont aussi ceux qui se sont le plus développés. Cette relation apparaît plus forte que celle entre le développement économique et la qualité des institutions mesurée en utilisant un indice de démocratie.

Un ensemble d'articles met en lumière le fait que les valeurs et croyances sont susceptibles d'avoir un effet sur l'activité économique au travers de la construction des institutions. Algan and Cahuc (2009) montrent comment les vertus civiques influencent le choix des sociétés quant au design de l'assurance chômage. Une société peut soit protéger les emplois, soit offrir des indemnités généreuses aux chercheurs d'emplois. La protection de l'emploi préserve les individus du chômage mais décourage la création d'emplois et crée des

23. La stratégie utilisée par Algan and Cahuc (2010) repose sur des hypothèses parcimonieuses sur la taille des générations. Ils considèrent par exemple qu'un américain de la seconde génération né avant 1975 a des parents ayant immigré à une date strictement antérieure à 1975.

trappes à chômage. À l'inverse, une faible protection de l'emploi associée à des prestations sociales généreuses fluidifie le marché du travail et protège les individus contre les pertes de revenu. Le choix entre les deux modes d'organisation dépend de la portée des normes de civisme. Par exemple, il est plus probable que l'équilibre avec une forte protection de l'emploi et des allocations chômage faibles soit adopté dans une société où une large part de la population pense qu'il peut être justifié de tricher sur les prestations sociales. Algan and Cahuc (2009) utilisent la méthode épidémiologique pour identifier les différentes attitudes qui prévalent dans les pays européens en observant les américains déclarant des ancêtres ayant immigré de ces pays. Cela leur permet d'identifier l'aspect causal de la relation entre vertus civiques et choix des institutions régulant le marché du travail.

Le raisonnement mené par Aghion et al. (2010) part de la simple observation que la confiance est négativement corrélée à la régulation du marché si l'on compare des pays entre eux. Pour expliquer ce fait, les auteurs présentent un modèle d'économie politique conduisant à des équilibres multiples. En bref, la défiance envers les autres accroît la demande de régulation de l'économie car les agents redoutent que leurs partenaires agissent de façon injuste. Dans le même temps, l'existence d'une forte régulation du marché empêche la construction de la confiance entre les agents, ce qui renforce la défiance initiale. Aghion et al. (2010) présentent des résultats empiriques qui illustrent le fait que la confiance est corrélée négativement à la sévérité de la régulation du marché du travail et à l'existence de barrières à l'entrée sur le marché des biens. Ils utilisent également des observations individuelles pour montrer que les individus qui ne font pas confiance aux autres sont également plus enclins à juger positivement l'intervention de l'état dans l'économie.

Dans le même ordre d'idée, Aghion et al. (2011) mettent en lumière l'interaction qui existe entre la coopération décentralisée et l'existence d'un salaire minimum. Le modèle théorique et les faits présentés dans cet article reposent sur les intuitions suivantes : le manque de confiance quant au comportement des employeurs pousse les travailleurs à demander une régulation publique des salaires ; la régulation centralisée empêche alors employeurs et employés d'apprendre les uns des autres lors de négociations sur les salaires, ce qui ré-

duit la volonté de coopérer au niveau local. Les auteurs proposent ainsi une explication rationnelle à l'existence de deux types de sociétés différentes : l'une dans laquelle les salaires sont fortement régulés par l'état et où le taux de syndicalisation est faible (il n'y a en effet aucune incitation à se syndiquer dans une telle société), l'autre dans laquelle des syndicats sont puissants et la régulation des salaires par l'état est relativement faible. Cette grille de lecture correspond remarquablement bien aux différences en termes d'organisation sociale qui peuvent être observées entre les pays de l'Europe méditerranéenne et les pays scandinaves par exemple.

1.4.2 Les déterminants du capital social

La seconde question majeure – le contexte (économique) dans lequel vivent les individus a-t-il un impact sur les valeurs portées et transmises par ces derniers ? – à laquelle s'intéresse les économistes revient à se poser la simple question suivante : d'où viennent les valeurs ? Des réponses à une telle question peuvent être apportées en la transformant marginalement. Il est par exemple pertinent d'essayer de comprendre comment les résultats des décisions économiques prises par les individus amènent ceux-ci à réviser les jugements qu'ils formulent et à modifier les valeurs qu'ils souhaitent transmettre. En d'autres termes, comment les individus révisent-ils leurs croyances ? Une autre approche consiste à se pencher sur la persistance de valeurs spécifiques au cours de longues périodes de temps au sein d'un groupe ou d'une société. Cette approche met en exergue l'idée selon laquelle les traits sociaux ou les différents modes d'organisation du lointain passé sont susceptibles de modeler les attitudes contemporaines. Les contributions scientifiques présentées ci-dessous doivent de plus être analysées au travers du prisme formé par la divergence d'opinions entre ceux qui considèrent que la culture et les valeurs évoluent rapidement et ceux qui tendent à penser qu'elles se modifient peu au cours du temps, voir qu'elles n'évoluent pas.

Dans leur article devenu célèbre, Knack and Keefer (1997) se penchent brièvement sur les déterminants de la confiance et des normes de civisme en comparant les pays de leur échantillon. Ils montrent que le produit intérieur

brut par tête est corrélé avec la confiance de façon positive et significative. Ils présentent également des résultats montrant que les indicateurs de capital social sont positivement associés au niveau de l'éducation secondaire. La corrélation avec l'éducation primaire est en revanche négative. Ces auteurs avancent également des éléments suggérant que la confiance et les normes civiques sont plus élevées dans les sociétés où les inégalités de revenu sont plus faibles et dans celles qui sont plus homogènes d'un point de vue ethnique. La participation à des associations ou des groupes à visées politiques est également plus forte dans les pays dotés de plus de capital social.

La Porta et al. (1997) montrent quand à eux que la confiance mesurée au niveau d'un pays est négativement corrélée à la part des citoyens appartenant à une religion hiérarchique.²⁴ Cette hypothèse est issue de Putnam (1993) qui considère que les organisations hiérarchiques, c'est à dire verticales, découragent la formation de la confiance entre les individus, c'est à dire la formation de liens horizontaux.

Guiso et al. (2009) présentent des résultats qui suggèrent que la confiance mutuelle entre les pays d'Europe est fortement déterminée par la proximité culturelle et le fait de partager une histoire violente commune. Les similarités tant religieuses que génétiques ont un effet positif sur la confiance que les individus de deux pays s'accordent mutuellement. À l'inverse, ils montrent clairement que le nombre d'années de conflit entre deux pays au cours de 1000 dernières années réduit la confiance mutuelle. Ces facteurs explicatifs prédisent mieux la confiance mutuelle que la distance géographique ou des racines communes pour les systèmes judiciaires.

Dans l'article de Tabellini (2010), les différences historiques dans les expériences politiques et sociales des régions d'Europe apparaissent très corrélées aux attitudes et croyances actuelles. Le taux d'alphabétisation en 1880 et la qualité des institutions entre 1600 et 1850 sont par exemple tous deux de bons indices des variables culturelles observées à la fin du vingtième siècle.

Bidner and Francois (2011) proposent quant à eux un modèle théorique qui souligne les interactions entre les normes de coopération et les institu-

24. La Porta et al. (1997) définissent une personne interrogée comme appartenant à une religion hiérarchique si elle est catholique, orthodoxe ou musulmane.

tions. L'une des prédictions de ce modèle est que l'honnêteté est une valeur plus communément répandue à l'état stationnaire dans les sociétés de grande taille que dans celle de taille plus petite. Ils présentent des résultats montrant que la taille de la population est en effet positivement corrélée au niveau de confiance une fois que les traditionnelles variables associées à la confiance sont prises en compte (le fractionnement ethnique et linguistique, l'homogénéité religieuse, l'inégalité des revenus et la qualité des institutions).

La tâche de s'intéresser aux caractéristiques expliquant la confiance exprimée au niveau individuel a été accomplie par Alesina and La Ferrara (2002). Ces auteurs ont utilisé la General Social Survey américaine et ont montré que les individus appartenant à des groupes historiquement discriminés – comme par exemple les noirs et les femmes – se défient davantage des autres. Le niveau d'éducation et de revenu sont également fortement corrélés à la confiance : les personnes les moins éduquées et celles ayant un revenu plus faibles sont moins susceptibles d'accorder leur confiance aux autres. Une maladie ou un divorce réduisent aussi la confiance déclarée s'ils sont récents. Néanmoins, ces deux types d'événements ont des effets relativement faibles et pratiquement nuls dès lors qu'ils ont eu lieu plus de cinq années avant la date d'interview. La diversité religieuse apparaît quant à elle faiblement corrélée à la confiance dans cette étude. Alesina and La Ferrara (2002) montrent par ailleurs que les individus vivant dans des endroits plus fragmentés sont moins confiants que ceux vivant dans des endroits plus homogènes : la confiance est plus faible là où les revenus sont plus inégaux et là où l'origine raciale n'est pas homogène.

Alesina and La Ferrara (2005) se sont ensuite intéressés à des valeurs très précises qui ont de fortes répercussions sur l'activité économique, notamment via le design des institutions : les préférences pour la redistribution. Ils montrent en particulier que la position d'un individu sur l'échelle sociale est un facteur important pour expliquer son opinion vis-à-vis des politiques de redistribution. L'apport de cet article n'est pas de montrer que les pauvres sont plus favorables aux politiques de redistribution du revenu que les riches. Les auteurs vont en effet plus loin que cette évidence en montrant que la probabilité de connaître une ascension sociale prédit particulièrement bien

les opinions concernant la redistribution. Les individus dont la probabilité de gravir l'échelle sociale est élevée sont moins favorables aux politiques de redistribution que les autres. De même, ceux qui pensent que la société dote tous ses membres des mêmes chances sont moins favorables à la redistribution que les autres, et ceci quelque soit leur position dans l'échelle sociale.²⁵

Giuliano and Spilimbergo (2009) se sont également intéressés aux attitudes des américains et à leur relation à la situation économique. Ils montrent que les individus ayant connus une récession dans l'état dans lequel ils vivaient lorsqu'ils avaient entre 18 et 25 ans expriment une confiance plus faible envers les institutions et sont plus favorables à la redistribution des revenus que les autres. Ils sont également plus enclins à penser que la réussite est plus fréquemment due à la chance qu'à l'effort individuel. Ces auteurs montrent par ailleurs que de tels événements n'influencent pas la confiance envers les autres à long terme.

Luttmer and Singhal (2011) utilisent l'approche épidémiologique pour distinguer les facteurs contextuels et culturels des préférences pour la redistribution. Ils comparent à cette fin les immigrants vivant dans différents pays européens. Cela leur permet d'observer des individus de même origine culturelle vivant dans des pays différents ainsi que des individus d'origines différentes vivant dans le même pays. Ils montrent dans ce cadre que la culture est un déterminant important des préférences pour la redistribution parmi les immigrants des première et seconde générations.

Alesina and Fuchs-Schündeln (2007) montrent que les modes d'organisation politique et institutionnel ont des effets persistant sur les préférences portant sur le rôle de l'état dans l'économie. Ils analysent les opinions des allemands concernant la responsabilité de l'état quand à la sécurité financière des individus exposés à différents risques tels que les risques de chômage, de maladie et celui lié au vieillissement par exemple. Cet article montre que les allemands ayant vécu sous le régime communiste sont plus susceptibles de prôner la responsabilité de l'état sur ces sujets que leurs compatriotes ayant vécu en Allemagne de l'Ouest. Cet effet existe quel qu'ait été la mobilité des individus suite à la chute du mur de Berlin. De plus, l'effet ne semble pas

25. Voir également Alesina and Giuliano (2011) pour des résultats complémentaires.

s'atténuer. L'effet du communisme sur les attitudes apparaît donc comme fortement persistant.

La persistance des valeurs à moyen terme a également été étudiée par Grosfeld et al. (2011). Ces auteurs utilisent les différences en matière de peuplement juif entre différentes régions de l'est de L'Europe pour identifier la persistance de valeurs spécifiques. Ils présentent des résultats qui montrent que les résidents actuels des régions qui étaient auparavant fortement peuplées par des juifs ont une probabilité plus faible d'être favorables à l'économie de marché et à la démocratie. Ils montrent également qu'il est moins probable qu'ils soient entrepreneurs, mais qu'ils font davantage confiance aux autres que leurs compatriotes.

D'autres auteurs se sont penchés sur l'effet d'événements du lointain passé sur le capital social actuel. Guiso et al. (2008a) montrent par exemple que les différences actuelles en matière de capital social entre les régions d'Italie peuvent être en grande partie expliquées par l'existence ou non de cités-états entre 1000 et 1300.²⁶ Une approche différente est adoptée par Durante (2009) qui avance l'hypothèse que la confiance entre individus s'est développée au cours des siècles passés en réaction aux risques climatiques. Les faits correspondent à la persistance de telles valeurs. La stratégie d'identification utilisée par Durante (2009) repose sur les différences des variations annuelles de précipitation et de température entre 1500 et 2000 en Europe. Les individus qui vivent dans des régions caractérisées par une volatilité climatique passée importante ont davantage tendance à se déclarer confiants que les autres. Dans un autre article, Nunn and Wantchekon (2011) montrent que le commerce des esclaves a eu des conséquences durables sur les variables de confiance mesurées chez les africains. Ils se servent des différences dans le nombre d'esclaves capturés en différents endroits et dans différentes ethnies pendant plus de 400 ans pour identifier cet effet. En concordance avec le fait que l'existence du commerce d'esclaves reposait sur différentes méthodes pour s'emparer de ces derniers, les auteurs montrent que les individus appartenant à des groupes marqués plus intensivement par cet épisode sont moins enclins à accorder leur confiance à des individus d'autres groupes, mais aussi aux autres membres de

26. Il s'agit là d'un test direct de la conjecture faite par Putnam (1993).

leur groupe, à leurs voisins ou à leurs proches. Ces deux articles soulignent les conséquences de long terme d'un environnement risqué sur la confiance. Néanmoins, autant l'environnement est risqué dans les deux cas, autant la dimension du risque diffère-t-elle entre les deux études. Une interprétation directe des résultats présentés par Durante (2009) et Nunn and Wantchekon (2011) est que le type même de l'insécurité est crucial pour comprendre la construction ou la destruction de la confiance. Il semble que l'insécurité induite par les autres détruit la confiance alors que celle créée par la nature la favorise.

1.5 Organisation de la thèse

Les travaux qui constituent les différents chapitres de cette thèse ont pour objectif d'apporter de nouvelles réponses aux deux questions majeures attachées au capital social en économie.²⁷ Tout d'abord, quel est l'impact du capital social sur l'activité économique ? Ensuite, le contexte (économique) dans lequel vivent les individus a-t-il un impact sur les valeurs portées et transmises par ces derniers ? Les chapitres 2, 3 et 4 se rattachent à la première question. Les chapitres 5 et 6 s'intéressent à la seconde.

La plupart des contributions portant sur la relation entre la confiance et l'activité économique au niveau macroéconomique se sont focalisés sur la croissance et le développement économique, en soulignant notamment le rôle clé de l'investissement. Dans le chapitre 2, je m'écarte de ces travaux et m'intéresse à la relation entre confiance et volatilité macroéconomique. Je montre tout d'abord que si l'on compare des pays entre eux, alors la volatilité apparaît comme étant plus faible dans les pays dont le niveau de confiance est plus élevé. Je m'attache à montrer que cette relation est peu vraisemblablement le produit de variables omises. En particulier, il apparaît que la relation persiste quand bien même l'effet de la qualité des institutions est prise en compte. Une telle relation n'implique néanmoins pas que la confiance a bel et bien un effet sur la volatilité économique. J'utilise donc deux stratégies différentes

27. Cf. section 1.4

pour exclure l'hypothèse de causalité inverse et établir une présomption de causalité allant de la confiance vers la volatilité macroéconomique. J'ai tout d'abord recours aux différences de confiance entre les américains de différentes origines pour construire un indicateur de la confiance latente dans leurs pays d'origine. Cette mesure est alors utilisée comme un instrument de la confiance mesurée. L'utilisation de cette variable instrumentale confirme les résultats précédents et invalide l'hypothèse d'une causalité inverse. J'applique ensuite l'approche proposée par Algan and Cahuc (2010). En utilisant les changements de la confiance héritée par les immigrants américains entre 1910 et 1970, je construis deux mesures de la confiance pour chaque pays d'origine. Cette stratégie me permet alors de montrer que les pays dans lesquels la confiance s'est le plus accrue entre les deux dates sont également ceux pour lesquels la volatilité macroéconomique a le plus diminué. Une confiance plus élevée est donc associée à une volatilité plus faible non seulement dans l'espace, mais aussi dans le temps à l'intérieur d'un même pays. En conclusion de cette étude, je m'intéresse aux principaux canaux par lesquels la confiance est susceptible de réduire la volatilité macroéconomique. Une première hypothèse est qu'une confiance accrue permet d'aboutir à des politiques publiques de meilleure qualité. Si cette hypothèse est valide, alors la volatilité des dépenses publiques devrait être plus faible dans les pays dotés d'une confiance élevée. La seconde hypothèse est qu'une confiance plus importante permet de stabiliser l'investissement. Si cette hypothèse est valide, alors l'investissement privé devrait être plus volatile dans les pays à faible niveau de confiance. Mes résultats vont dans le sens de la seconde hypothèse : la confiance semble réduire la volatilité macroéconomique au travers de la volatilité de l'investissement.

Dans le chapitre 3, je présente des résultats illustrant l'évolution simultanée du capital social, mesuré par la confiance, et du développement financier au cours du vingtième siècle. À cette fin, j'ai à nouveau recours à la méthode développée par Algan and Cahuc (2010) que j'utilise pour reconstruire l'évolution de la confiance envers les autres dans 14 pays européens entre 1913 et 1990. Ces données sont alors combinées à trois différentes mesures du développement financier. Ces mesures proviennent de Rajan and Zingales

(2003) qui soutiennent que le développement financier peut en grande partie être expliqué par les interactions entre différents groupes induites par l'ouverture des économies au commerce international. Les résultats que j'obtiens montrent que la confiance et le développement financier ont connu des évolutions simultanées au cours du siècle dernier. En d'autres termes, les pays ayant connu une augmentation plus importante de la croissance sont également ceux dans lesquels le système financier s'est le plus développé au cours de la période. Ces résultats complètent l'analyse de Guiso et al. (2004) à propos du lien entre confiance et développement financier.²⁸ J'étends la relation mise en lumière par ces auteurs à des comparaisons temporelles. Je montre par ailleurs que la relation entre les deux variables demeure positive et statistiquement significative lorsque les changements du degré d'ouverture à l'échange international sont pris en compte.

Le chapitre 4 conclut la partie de cette thèse consacrée aux effets du capital social sur l'économie. Ce chapitre est coécrit avec Yann Algan et Pierre Cahuc. Notre contribution s'écarte de nombreux articles de science politique présentant une relation positive entre confiance et générosité de l'état-providence. Nous soutenons que cette relation est en réalité non-monotone et présentons des faits stylisés qui démontrent que c'est bien le cas au sein des pays de l'OCDE.²⁹ La relation entre confiance et générosité de l'état-providence est d'abord croissante pour les pays dans lesquels la confiance est faible. Elle atteint un maximum pour les pays d'Europe méditerranéenne dans lesquels la confiance est relativement faible. La relation est ensuite décroissante et elle atteint un minimum local pour les pays anglo-saxons. Enfin, la relation est à nouveau croissante et atteint un pic pour les pays scandinaves où la confiance et la générosité de l'état-providence sont importantes.

Nous présentons un modèle d'économie politique permettant de saisir les différents mécanismes liant la confiance et la générosité de l'état-providence. Dans ce modèle, la population est composée d'individus civiques (ou coopératifs) et d'individus non-civiques. Les individus civiques n'essayent pas d'ob-

28. Voir page 19.

29. Nous mesurons la confiance à l'aide de la question traditionnelle de la World Values Survey. La générosité de l'état-providence est quant à elle mesurée à l'aide du total des dépenses sociales exprimées en pourcentage du produit intérieur brut.

tenir des prestations sociales lorsqu'ils n'en ont pas besoin, déclarent honnêtement leurs revenus et se comportent correctement lorsqu'ils sont employés de l'administration publique. Les individus non-civiques essaient de ne pas déclarer leurs revenus et tentent en toutes occasions d'obtenir le versement de prestations sociales quelle que soit leur situation réelle. Lorsqu'ils sont employés de l'administration, ils agissent de façon inefficace et créent ainsi une perte pour la collectivité. Le modèle prédit que tout individu demande davantage de redistribution des revenus lorsque la population comprend davantage d'individus civiques car le système social est alors plus efficace (la fraude est moindre et les employés de l'administration qui se comportent correctement sont plus efficaces). Néanmoins, les individus non-civiques sont plus favorables à la redistribution que les autres car ils n'en supportent pas tout le poids et en bénéficient plus souvent. Ces deux prédictions impliquent qu'une hausse de la part des individus civiques dans la société a deux effets opposés sur la demande de redistribution. D'un côté, tous les individus veulent davantage de redistribution car ils sont entourés d'un nombre croissant d'individus civiques. De l'autre, la part des individus non-civiques diminue, ce qui réduit le soutien pour la redistribution et la générosité désirée de l'état-providence. Il est alors possible d'aboutir à deux équilibres dans lesquels l'état-providence est généreux : dans l'un, il est inefficace et soutenu par un nombre important d'individus non-civiques ; dans l'autre, il est efficace et s'appuie sur une population en majorité civique.

Nous testons les prédictions du modèle au niveau individuel en utilisant des enquêtes individuelles internationales. Cela nous permet de montrer que la confiance envers les autres est un bon indice du soutien accordé à l'état-providence. Nous montrons également que les individus non-civiques demandent plus de redistribution des revenus que les autres et que l'efficacité perçue de l'état-providence est plus faible dans les pays où le niveau de confiance est faible. Pour conclure, nous utilisons l'approche épidémiologique sur les immigrants vivants dans les pays européens. Nous montrons que la culture et le contexte expliquent tous deux les préférences pour la redistribution. Ce résultat remet en cause celui présenté par Luttmer and Singhal

(2011).³⁰

Le chapitre 5, coécrit avec Mathieu Couttenier, s'intéresse à la question de l'effet du contexte dans lequel vivent les individus sur la formation et la persistance des valeurs. Nous y examinons la relation entre l'abondance en ressources minérales et les attitudes individualistes mesurées à l'aide de questions de la General Social Survey. Par "individualisme", nous faisons référence à l'ensemble des valeurs défavorables à l'intervention de l'état dans l'allocation des revenus et favorables à la responsabilité individuelle. Ces valeurs sont étroitement liées aux mythes fondateurs de l'industrie minière aux États-Unis. Nous utilisons le Mineral Resources Data System pour mesurer l'abondance en minerais à l'aide d'informations sur le contenu du sous-sol. En comparant les individus vivants dans des états avec plus ou moins de ressources de ce types, nous trouvons que les individus qui vivent dans les états fortement pourvus en ressources minérales sont plus individualistes que les autres : ils sont moins favorables à la redistribution, à l'assistance publique en faveur des pauvres et prônent plus fréquemment la responsabilité individuelle. Nous distinguons alors deux canaux par lesquels les ressources minérales sont positivement associées à l'individualisme au niveau individuel : soit par la transmission de valeurs formées dans le passé ; soit par l'observation directe de découvertes de minerais au moment de la vie des individus où se forment les valeurs et attitudes. Nous considérons que le premier canal reflète la transmission contextuelle de valeurs spécifiques. Le second illustre quant à lui l'effet direct des ressources minérales sur les valeurs. Les découvertes remettent en lumière ces valeurs.

La relation initiale entre l'abondance entre ressources minérales et l'opposition à la redistribution peut être expliquée de la façon suivante. Les ressources naturelles représentent une aubaine qui est susceptible d'accroître le revenu courant et le revenu futur. Les opportunités de richesse sont alors plus nombreuses. Une société de ressources naturelles est donc plus riche qu'une société qui n'en est pas dotée. Les individus qui vivent proches de ces ressources ont tendance à les considérer comme une propriété dont ils peuvent tirer profit moyennant effort. Cet accroissement de la richesse, réel

30. Voir page 26.

ou virtuel, réduit alors la demande de redistribution.³¹ Pour résumer, plus la dotation en ressources minérales est importante, plus les possibilités d’en tirer profit sont fréquentes et plus les individus qui sont susceptibles d’en bénéficier sont opposés à la redistribution des revenus.

Nous montrons l’existence des deux canaux mentionnés ci-dessus en deux étapes. Tout d’abord, nous nous concentrons sur les individus vivants dans les états richement pourvus en ressources minérales et comparons ceux qui ont assisté à des découvertes de gisements durant leurs années formatives à ceux pour qui ce n’est pas le cas. D’après Giuliano and Spilimbergo (2009), l’hypothèse des “années formatives” fait référence à l’idée selon laquelle “*les attitudes, croyances et valeurs se forment durant une période de grande plasticité mentale et demeurent par la suite quasiment inchangées*”. Cette approche nous permet d’identifier le canal de l’*expérience*. Par la suite, nous comparons les individus vivants dans les états pauvrement dotés en ressources minérales à ceux vivants dans des états richement dotés en ressources minérales mais qui n’ont pas assisté à des découvertes de gisements durant leurs années formatives. En ôtant l’effet direct des ressources minérales sur les valeurs, cette approche nous permet d’identifier le canal de *transmission*. En fin de compte, nous montrons que les deux canaux contribuent à expliquer la relation d’ensemble.

Le dernier chapitre de cette thèse est coécrit avec Yanos Zylberberg. Il illustre comment la confiance envers divers tiers réagit suite à des chocs. Dans le chapitre 6, nous observons les changements de la confiance envers les institutions et du sentiment subjectif d’appartenance à la communauté nationale suite à des émeutes ou des manifestations en Afrique. Nous localisons les personnes interrogées dans l’Afrobarometer à l’aide des informations concernant les régions et districts de résidence contenues dans cette enquête. Nous croisons ces informations avec d’autres tirées de la base de données Armed Conflict Location and Event Dataset qui nous permet d’identifier la position géographique et diverses caractéristiques de nombreux conflits ayant lieu sur

31. Suite aux travaux de Romer (1975), Meltzer and Richard (1981) et Piketty (1995), cette relation a été illustrée empiriquement par Alesina and La Ferrara (2005), Alesina and Angeletos (2005) et Alesina and Giuliano (2011) parmi d’autres.

le continent africain. Notre stratégie d'identification permet donc de comparer des individus qui vivent dans la même région, mais pas exactement au même endroit. Nous montrons que les réponses données par les personnes interrogées varient fortement et rapidement après des conflits sociaux violents. Ce résultat montre que la confiance n'est pas seulement un capital qui s'accumule lentement au cours du temps. Cela nous permet également d'avoir une idée de la sensibilité de la réaction de la confiance suite à des événements à connotations négatives. Dans la mesure où les conflits dégradent la confiance, cette analyse illustre en partie les mécanismes qui conduisent à des situations d'équilibres "bas" dans lesquelles la confiance et la coopération sont faibles et les conflits sociaux fréquents.

Les trois premiers chapitres de cette thèse s'intéressent donc à la façon dont la confiance et les normes de coopération modifient l'activité économique, soit de façon directe, soit de façon indirecte au travers de la mise en place d'institutions. Cette approche est renversée dans le quatrième chapitre qui documente la persistance des valeurs fondatrices de l'industrie minière dans les états américains les plus richement dotés en ressources naturelles. Le dernier chapitre exploite une idée similaire mais propose une analyse des changements de court terme de la confiance envers différentes institutions à la suite de conflits sociaux. Le chapitre 7 conclut en proposant une interprétation des différents résultats présentés dans cette thèse ainsi que des pistes pour de futures recherches.

1.6 Annexe

Tableau 1.1 – Apparitions de mots liés à la culture en économie dans les titres d’articles référencés par Google Scholar.

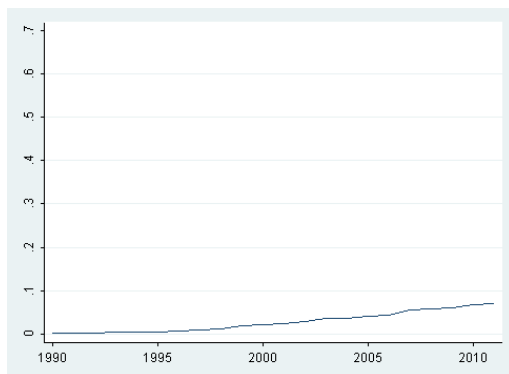
	“Social capital”	“Trust”	“Culture”	“Social capital”, “trust”, or “culture”	“Growth”, “unemployment”, or “economic development”
1990	9	242	329	580	3 358
1991	5	243	390	638	3 465
1992	12	255	448	715	3 795
1993	16	327	434	777	4 439
1994	15	372	539	926	4 720
1995	45	444	532	1 021	4 993
1996	77	626	580	1 283	5 716
1997	118	621	727	1 466	5 972
1998	161	776	727	1 664	6 186
1999	253	795	750	1 798	6 464
2000	282	881	797	1 960	7 214
2001	327	860	817	2 004	7 202
2002	449	1 120	916	2 485	7 664
2003	451	1 390	978	2 819	8 064
2004	493	1 220	1 040	2 753	8 296
2005	521	1 220	1 090	2 831	8 491
2006	560	1 310	1 130	3 000	9 046
2007	589	1 300	1 250	3 139	9 128
2008	604	1 290	1 240	3 134	8 906
2009	585	1 300	1 280	3 165	9 106
2010	562	1 310	1 200	3 072	9 346
2011	558	1 280	1 100	2 938	8 750

Les données sont extraites de Google Scholar. Chaque cellule correspond au nombre de résultats obtenus suite à la recherche de mots précis dans les titres d’articles parus au cours d’une année. Les requêtes sont limitées au champ “Business, Administration, Finance, and Economics” tel que défini par Google Scholar.

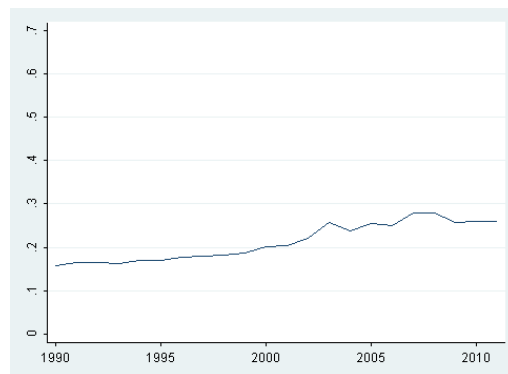
Tableau 1.2 – Liste d’enquêtes nationales et internationales.

Afrobarometer	http://www.afrobarometer.org
Asian Barometer	http://www.asianbarometer.org
Australian Survey of Social Attitudes	http://aussa.anu.edu.au
British Household Panel Survey	http://www.iser.essex.ac.uk/bhps
Eurobarometer	http://ec.europa.eu/public_opinion
European Social Survey	http://www.europeansocialsurvey.org
European Values Study	http://www.europeanvaluesstudy.eu
General Social Survey	http://www3.norc.og/GSS+Website
German Socio-Economic Panel	http://www.diw.de/en/soep
International Social Survey Programme	http://www.issp.org
Latinobarómetro	http://www.latinobarometro.org
World Values Survey	http://www.worldvaluessurvey.org

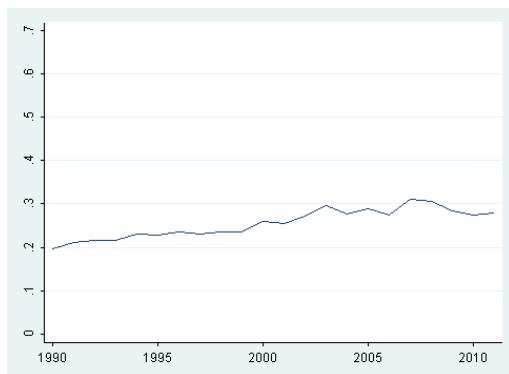
Figure 1.2 – Apparitions relatives de mots liés à la culture en économie à n’importe quel endroit dans les articles scientifiques.



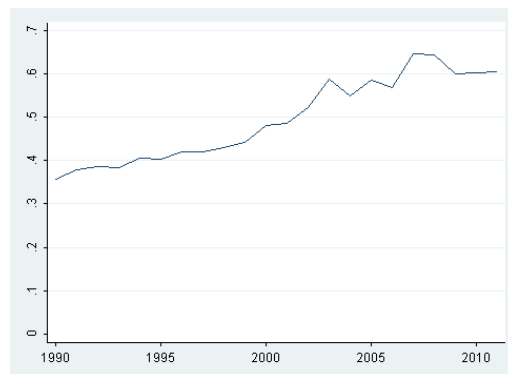
(a) Apparitions relatives de “social capital” à n’importe quel endroit dans les articles.



(b) Apparitions relatives de “trust” à n’importe quel endroit dans les articles.



(c) Apparitions relatives de “culture” à n’importe quel endroit dans les articles.



(d) Apparitions relatives de “social capital”, “trust” ou “culture” à n’importe quel endroit dans les articles.

Les données sont extraites de Google Scholar. Les figures représentent le nombre de résultats obtenus en cherchant “social capital”, “trust” ou “culture” à n’importe quel endroit dans les articles, normalisé par le nombre de résultats obtenus en cherchant “growth”, “unemployment” et “economic development”. Les requêtes sont limitées au champ “Business, Administration, Finance, and Economics” tel que défini par Google Scholar.

Chapter 1

General introduction

This thesis presents academic contributions around social capital in economics. I define social capital as all values that push individuals to cooperate, to act with reciprocity or empathy in the absence of any formal control mechanism. In the first section of this introduction, I put back the concept of culture in general economic thinking. Key concepts are defined in section 1.2. I review the recent history of cultural economics in section 1.3. Then, I briefly present the literature dealing with the main questions linked to the role of social capital in economics in section 1.4. Finally, I present and summarize my contributions to this field in section 1.5.

1.1 Fundamental causes of economic performance¹

As an academic discipline, economics is interested in the way humans organize themselves to live together. Beside this, economics aims ultimately at understanding what makes societies better off. Economic welfare is a multidimensional concept covering a lot of mental, physical, and material conditions of living. As limited and imperfect it is, income is traditionally considered as a first-order proxy for welfare, especially by economists. One of the main focus of economics is thus income. Economists try to understand why income may be different across space – they intend to capture reasons

1. The title of this section is heavily inspired from words used in the first and fourth chapters of Acemoglu (2008).

of income disparities across individuals or countries – and across time – they seek to identify the determinants of growth.

Following a long tradition, conventional theories emphasized the role of human and physical capital. Both are indeed inputs of any production function. The way they are accumulated and combined, i.e. the state of technology, is, without any doubt, the ultimate determinant of differences of income across societies and time. To some extent, the canonical growth model developed by Solow (1956) represents both the climax of past theories and the original matrix of a tremendous amount of theories refining, criticizing, and extending its core ideas. However, the accumulation of human and physical capital is only the visible part of determinants of economics performance. If development was only a matter of accumulation, there should not exist so much differences in income across countries. What really matters are the conditions under which accumulation's decisions are made. Acemoglu (2008) sketches four non-exclusive hypothesis for the fundamental causes of economic performance: luck, geography, institutions, and culture. Roughly speaking, luck, and geography are things on which individuals have no control. Geography refers to features of the space and resources available for the development of a society. It also include relative positions of individuals and societies they form. Referring to luck as a cause of economic development simply accounts from the possibility that two perfectly identical societies may end up in different economic situations following a series of random shocks. Both constraints are given and societies must deal with it. Technological changes and organization's decisions may of course allow to relax these constraints. On the opposite, institutions and culture are elements of both the context in which economic decisions are taken and outcomes of collective life.

After the funding piece by North and Davis (1971), economists emphasizing the importance of institutions have gained audience during the last quarter of the twentieth century. This approach do not deny the importance of classical explanations of economic performance, but rather stresses the previously under-estimated role of socially constructed frames in economic activity. Using words of North (1994), “*institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape*

human interaction". Acemoglu (2008) defines institutions as "*rules, regulations, laws, and policies that affect economic incentives and thus the incentives to invest in technology, physical capital, and human capital*". This growing interest for the role of institutions has been accompanied by the birth of modern political economy. This approach underlines trade-offs faced by rational agents in specific institutional frameworks as well as the key role of society's structure to understand economic outcomes. In any society, individuals interact. They also belong to different groups. Such groups can be exclusively social, i.e. culturally grounded groups, or institutional groups, i.e. groups created following some institutional changes. Both the (institutional) context in which they evolve and the raw balance of power between groups determine economic outcomes. On top of that, institutional arrangements are themselves the products of past interactions between members of the society.

The cultural hypothesis started to enrich the political economy analysis at the turn between the previous and the current centuries. Already used in other social sciences, culture started to be seriously considered as a deep root of values, beliefs, and preferences by economists. The core idea of the new cultural approach of economics is that different groups of individuals may durably share different values, beliefs, and preferences. This heterogeneity may subsequently account for large differences in institutional choices and economic outcomes. The way preferences affect economic decisions stands at hearth of the classical rational economic paradigm: agents maximize their utility and choose actions or consumption accordingly; the utility level they reach depends on their preferences. In a first approximation, values can be considered as a slight variation around the concept of preferences. However, the idea of "values" also incorporate a dimension of moral judgment that may be used in decision-making process. Finally, beliefs refers to expectations formed by agents on actions undertaken by others. These concepts are yet not path-breaking with respect to "standard" economic approach. The main contribution made by economists who built upon the cultural hypothesis is rather to emphasize the weight of culture in economic decisions and the way it interacts with institutions.

1.2 From culture to social capital

Guiso et al. (2006) define culture as “*those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation*”. Fernández (2011) defines culture as “*a body of shared knowledge, understanding, and practice*” and continues with some of the definitions of culture given by the Merriam Webster dictionary: “*the integrated pattern of human knowledge, belief, and behavior that depends upon the capacity for learning and transmitting knowledge to succeeding generations*”, “*the customary beliefs, social forms, and material traits of a racial, religious, or social group*”, “*the set of shared attitudes, values, goals, and practices that characterizes an institution or organization*, and “*the set of values, conventions, or social practices associated with a particular field, activity, or societal characteristic*”. Although typical, these definitions point out key features of culture. By essence, culture is shared, transmitted, and defined with respect to a group. These three main features are also canonical aspects of the cultural approach in economics.

Cultural economics is not interested in culture *per se* – otherwise, we would use the expression “economics of culture” –, but in economic consequences arising from cultural differences. Accordingly, economists seek to capture specific features of culture that may reveal relevant for economic performance. Two of the components of culture that attracted much of economists’ interest are “social capital” and “trust”.

One of the key dimension of social capital is that it emphasizes the role of attitudes prevailing in relations between individuals. In that sense, it may be linked to sociological works. Among others, Beck (1986) pointed out the change in the nature of risk in modern societies. According to this author, modern societies – with respect to societies in the previous stages of economic and institutional development – are characterized by the fact that risks originate from other individuals – e.g. environmental risks due to industrial choices, pandemics, unemployment risks – and not from nature anymore. This statement does not negate threats imposed by mother nature on individuals in modern societies – e.g. hurricanes, earthquakes, floods,

droughts –, but stresses that the relative importance of risks' sources has evolved over time. In such a framework, Giddens (1991) pointed out the key role of reciprocal beliefs and trust.

Economists and scholars from other disciplines give alternative definitions of what social capital is. For example, Bourdieu (1986) wrote:

“Social capital is an attribute of an individual in a social context. One can acquire social capital through purposeful actions and can transform social capital into conventional economic gains. The ability to do so, however, depends on the nature of the social obligations, connections, and networks available to you”.

A very close definition is given by Glaeser et al. (2002):

“We define individual social capital as a person’s social characteristics – including social skills, charisma, and the size of his Rolodex – which enable him to reap market and non-market returns from interactions with others”.

The importance of connections is also stressed by Putnam (2000):

“[...] Social capital refers to connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them. In that sense social capital is closely related to what some have called “civic virtue”. The difference is that “social capital” calls attention to the fact that civic virtue is most powerful when embedded in a dense network of reciprocal social relations. A society of many virtuous but isolated individuals is not necessarily rich in social capital”.

Finally, drawing consequences from criticisms by Solow (1995, 1999), Arrow (1999), Durlauf (2002), and Sobel (2002) among others, Guiso et al. (2010) redefine social capital as

“[...] civic capital, i.e. those persistent and shared beliefs and values that help a group overcome the free rider problem in the pursuit of socially valuable activities”.

My own definition of social capital is following. I define social capital as all values that push individuals to cooperate, to act with reciprocity or

empathy in the absence of any formal control mechanism. I would like to emphasize the “absence of formal control mechanism”. By this, I mean that there is only room for social capital in a given situation whenever there exists no institutional arrangements defining how individuals should act in this situation. Note that this remark does not imply that social capital has no role to play in the building process of institutions.

Fukuyama (1999) proposes a clear link between social capital and trust:

“Social capital can be defined simply as an instantiated set of informal values or norms shared among members of a group that permits them to cooperate with one another. If members of the group come to expect that others will behave reliably and honestly, then they will come to trust one another. Trust acts like a lubricant that makes any group or organization run more efficiently”.

This link is also stressed by Bowles and Gintis (2002):

“Social capital generally refers to trust, concern for one’s associates, a willingness to live by the norms of one’s community and to punish those who do not”.

To close this enumeration, Knack and Keefer (1997) provide a nice summary of the variety and the richness of definitions attached to social capital and trust:

“Trust, cooperative norms, and associations within groups each fall within the elastic definitions that most scholars have applied to the term social capital. Coleman (1990) writes that “authority relations, relations of trust, and consensual allocations of rights which establish norms” can be viewed as resources for individuals, noting that Loury (1977) introduced the term “social capital” to describe these resources. Following Granovetter (1973), Putnam points to the potential importance of weak ties across kinship groups. Both Coleman and Putnam refer to trust and norms of civic-minded behavior as other manifestations of social capital”.

I define trust as a belief that pushes an individual to grant to another individual some decision power on an issue that may have both favorable and

detrimental consequences for the former. Trust only manifests itself if the first individual gives up full decision power to the second. In that sense, my definition of trust is in line with the definition of social capital I presented above and also emphasizes the absence of control mechanism.

My definition of trust is very close to the one synthesized by Rousseau et al. (1998) from various approaches adopted in social sciences (e.g. economics, sociology, management, psychology, and political science). These authors proposed the following definition:

“Trust is a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another”.

I share with this approach the idea that accepting vulnerability is central to the definition of trust. A key feature of trust is that people who trust others have positive expectations on the behavior of the individual they are trusting. When transferring some power over an issue, they expect the partner not to harm them. This is where trust fundamentally differs from altruism. Altruism can be observed when someone deprive itself from something (money or control power) and give it to someone else, but being sure that this action cannot have detrimental consequences on the one who manifests altruism.

The importance of trust for economic performance can be traced back (at least) to Adam Smith who wrote in 1776:

*“The five following are the principal circumstances which, so far as I have been able to observe, make up for a small pecuniary gain in some employments, and counter-balance a great one in others: first, the agreeableness or disagreeableness of the employments themselves; secondly, the easiness and cheapness, or the difficulty and expence of learning them; thirdly, the constancy or inconstancy of employment in them; fourthly, the small or great trust which must be reposed in those who exercise them; and fifthly, the probability or improbability of success in them”.*²

2. Smith (1904), book I, chapter X.

In the nineteenth century, John Stuart Mill also emphasized in 1848 the economic value of trust:

*“The advantage to mankind of being able to trust one another, penetrates into every crevice and cranny of human life: the economical is perhaps the smallest part of it, yet even this is incalculable”.*³

The same author insists on this idea and argues that

*“[...] the economical well-being of a people, and of mankind, depends in an especial manner upon their being able to trust each other’s engagements”.*⁴

More recently, Arrow (1972) noted that

*“[...] virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence”.*⁵

There is ultimately no single definition of social capital,⁶ or of other concepts related to it, among economists or social researchers in general. This lack of precision represents a common blame made by scholars skeptical about the usefulness of these concepts.⁷ To some extent, this reproach also applies to the cultural approach in general. The absence of homogeneous definitions is however acknowledged by scholars interested in culture, social capital, or trust. For example, Fernández (2011) confesses that *“a definition of culture is needed, even if it is left somewhat vague”*. However, this concern is taken seriously by economists as illustrated by Guiso et al. (2010). This article explicitly intends to propose a definition of social capital that satisfies

3. Mill (1909), book I, chapter VII.

4. Ibid., book V, chapter IX.

5. This citation is actually the favorite quote of economists interested in trust or social capital.

6. See Dasgupta and Stiglitz (1999).

7. See for example reservations expressed by Solow (1995, 1999), Arrow (1999), Durlauf (2002), and Sobel (2002).

canonical features of any “capital” and is sufficiently operable.⁸

1.3 Culture in economics

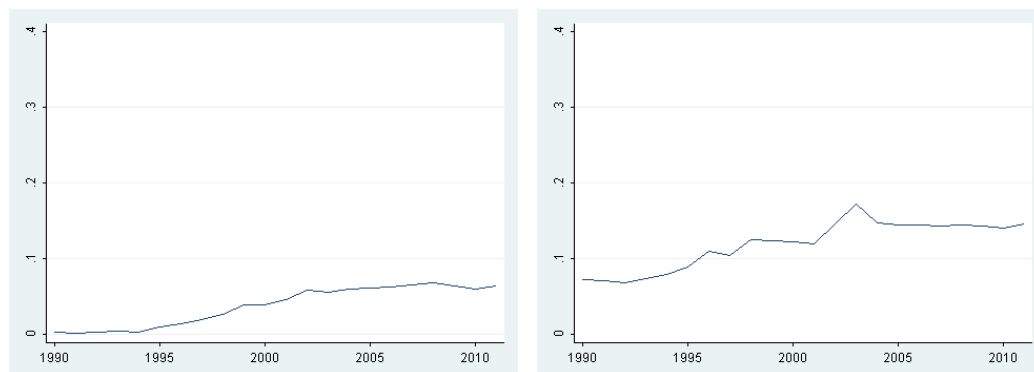
The interest for culture as a prime explanation of economic outcomes is growing among economists. This fact is illustrated by figure 1.1. This figure plots occurrences of words related to culture in titles of academic papers between 1990 and 2011. More precisely, I collected the number of search results in the area of “Business, Administration, Finance, and Economics” on Google Scholar for the following list of expressions: “social capital”, “trust”, and “culture”.⁹ I conducted the same exercise for “growth”, “unemployment”, and “economic development”. I use the sum of the latter results to normalize the previous one. This takes into account both the pattern of academic production and the development of electronic diffusion. Data used to construct the figures are presented in table 1.1 in appendix. The index of occurrences of “social capital” went from something close to zero in 1990 to 0.07 in 2011. Indexes of “trust” and “culture” also increased from 0.07 to 0.14 and from 0.10 to 0.13 over the same period. Accordingly, the sum of the three indexes moved from 0.17 in 1990 to 0.34 in 2011. These patterns reflect the growing space occupied by the cultural hypothesis in economic academic research. I also looked for occurrences of these words anywhere in academic papers, i.e. not only in the title. Corresponding indexes are presented in figure 1.2 in appendix and strikingly echo these evolutions.

As stressed above, assessing the role of culture in the determination of economic outcomes has never been a real difficulty from a theoretical point of view. Related concepts are largely part of the core of classical economic theory. The major stumbling block in the development of the cultural hypothesis was rather that it is difficult to find convincing empirical strategies

8. See the definition by Guiso et al. (2010) presented on page 41. In simple words, the critique expressed by Solow (1995) is following: “social capital” should be measurable (even imperfectly), it must have a non-negative economic pay-off, it must be possible to distinguish it from human capital, and it needs theories to explain how it accumulates and depreciates.

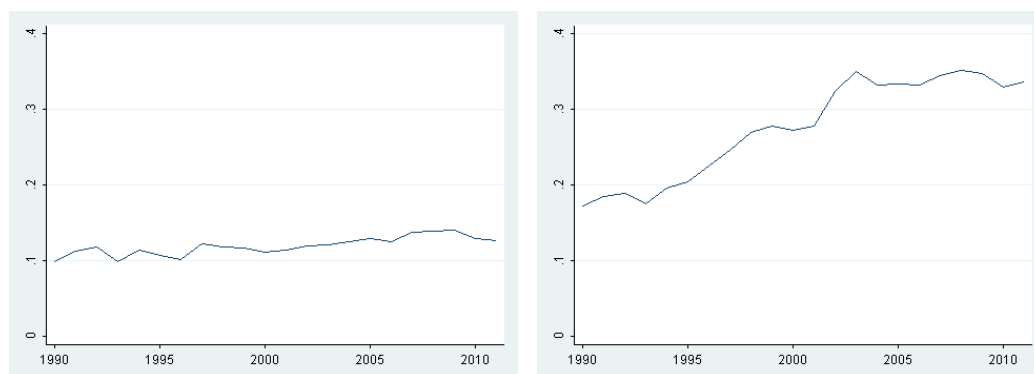
9. See section 1.2 for links between the two first expressions and culture.

Figure 1.1: Relative occurrences of words related to cultural economics in titles of academic articles.



(a) Relative occurrences of "social capital" in articles titles.

(b) Relative occurrences of "trust" in articles titles.



(c) Relative occurrences of "culture" in articles titles.

(d) Relative occurrences of "social capital", "trust", or "culture" in articles titles.

Data are from Google Scholar. Figures plot the number of results obtained when searching for "social capital", "trust", or "culture" in articles titles, normalized by the number of results obtained when searching for "growth", "unemployment", and "economic development". Queries are limited to the area of "Business, Administration, Finance, and Economics" as defined by Google Scholar.

that allow to identify clearly the impact of culture on economic outcomes. As cultural variables are *per se* difficult to circumscribe and also because cultural attitudes almost only exists as a positioning *with respect* to a reference point, it is difficult to isolate its effect from other socially determined variables, e.g. institutions, or simply economic variables. Indeed, culture has an effect on economic activity, and, in the same time, evolves according to the context in which individuals live. In other words, the cultural hypothesis

has long been stuck in the background of economics because of empirical difficulties induced by reverse causality.¹⁰ These flaws of prime importance are presented in a very concise and efficient way by Durlauf (2002).

Three evolutions helped to (partially) alleviate some major difficulties. One of them is technical, the others are methodological. First, in line with the (still relatively recent) development of new technologies of information and communication, large individual data sets became more and more available. Starting in the eighties, the development of international qualitative surveys has made possible the comparison of subjective attitudes toward various topics. Without being fully exhaustive, a list of such surveys would include the World Values Survey, the European Values Study, the European Social Survey, the Eurobarometer, the Afrobarometer, the Latinobarómetro, the Asian Barometer, and the International Social Survey Programme. For the moment, these data are still relatively young and do not allow to track the evolution of culture across long period of time. However, harmonization efforts have made feasible comparisons across countries. In the same time, several countries strongly developed similar surveys at the national level or included attitudinal modules in existing surveys. As above, a non-exhaustive list of such survey would include the General Social Survey in the United States, the British Household Panel Survey, the Australian Survey of Social Attitudes, and the German Socio-Economic Panel.¹¹ These national surveys allow to replicate empirical results derived from the cultural hypothesis in different countries and contexts. This evolution do not solve the issue of clean identification of cultural variables, but multiply evidence in favor of the cultural hypothesis. In addition, the variety of questions asked in these surveys allows to observe differences in attitudes and values across multiple dimensions. On top of that, the abundance of data and their diversity created lots of opportunities to use instrumental variables approaches to improve the precision of the estimates of culture on different economic outcomes.

10. Note that this statement has also been true for the institutional hypothesis for a long time. The evolution's pattern of cultural and institutional hypothesis in economics do in fact share a lot of similar steps in their development. Especially from the empirical point of view.

11. Hyperlinks to these surveys are provided in table 1.2 in appendix.

Second, the relevance of the very premise of the cultural hypothesis – i.e. the idea that there are systematic differences in economically relevant attitudes among groups – has been checked using laboratory experiments. Such experiments provide evidence that individuals from different social groups or origins play systematically different strategies in trust games, dictator games, or public good games.¹² The results from laboratory experiments lack external validity as underlined by Oosterbeek et al. (2004) whose meta-analysis mitigates the scope of these evidence. In addition and although in abundant number, some of these surveys provide conflicting results as Glaeser et al. (2000) and Fehr et al. (2003) for example. On the one hand, the first authors show that the question from the World Values Survey traditionally used to measure trust¹³ does not predict trust but only trustworthiness. On the other hand, Fehr et al. (2003) show the exact opposite: answers to the question used to measure trust predict trust of respondents, but not their trustworthiness. An attempt to conciliate both sets of results has been conducted by Sapienza et al. (2007) by underlying that trust is a multifaceted phenomenon.

Finally, a methodological revolution happened in the beginning of the nineties when economists started to use the epidemiological approach to isolate the role of culture in economics. This method is heavily inspired by the reasoning on which medical epidemiological surveys rely. A group of individuals is observed in the same environment, knowing that they differ in one dimension. Observing different outcomes for different individuals in similar environment, researchers can attribute these differences to variations of the dimension of interest. In clinical research, this dimension is most of the time a medical treatment. Economists interested in the role of culture depart from this as they do not “treat” individuals they observe. On the contrary, they are closer to epidemiologists who observe people subject to a disease in various environments and try to disentangle genetic and environ-

12. See Yamagishi et al. (1998), Henrich (2000), Henrich et al. (2001), Glaeser et al. (2000), Fehr et al. (2003), and Bornhorst et al. (2004) for example.

13. The question is: “*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*”. The answer can be either “*Most people can be trusted*”, or “*Can’t be too careful*”.

mental determinants of differences in individuals' reactions. In economics, this approach can be used to disentangle cultural and environmental (e.g. institutional or economic features of the environment in which individuals evolve) determinants of decisions. The idea is to assume that if individuals with different cultural origins are observed in similar situations but differ in the decisions they take, this difference may be attributed to difference in culture once other observable characteristics have been taken into account. This approach was undertaken in a seminal article by Carroll et al. (1994). These authors looked at differences in saving patterns across immigrants of different origins in Canada. They did not find any empirical evidence of cultural effects on savings. Although its conclusion was not favorable to the cultural hypothesis, this article was pioneer for the methodological point of view. The epidemiological approach in cultural economics became increasingly popular as it was use again in the previous decade. Obviously, the use of this method went along with evidence that it provided statistically significant results supporting the cultural hypothesis. This was mostly the case with emblematic works such as Fernández and Fogli (2006, 2009), Guiso et al. (2006), and Fernández (2007).

These evolutions allow cultural economics to gain credibility, interest, and fame. Empirical progresses also stimulated the revival of the concept in theoretical economics. Modern political economists become slowly less reluctant to rely on – or simply to consider the relevance of – the cultural hypothesis. All in all, the literature developed toward the recognition of the role of culture in economics whereas it was often “left in the residual” before.

1.4 State of the art

As an economist, being interested in social capital suggests two different obvious questions. First, what is the impact of social capital on economic activity? Second, does the (economic) context in which individuals live alter values held and transmitted by these agents? All academic papers interested in culture and social capital directly or indirectly tackle one of these two questions or slight variations of them. In this section, I review the main

findings around culture and social capital in economics. This review does not pretend to be exhaustive, I deliberately focus on some selected major contributions. In addition, I chose to let aside theoretical contributions on the transmission of values for expository purposes.¹⁴ The contributions made to the literature by the different chapters of my thesis are presented in the next section.

1.4.1 The economic effects of social capital

More complete formulations of the first question follow. Do differences in culture have any impact on economic activity? Are there any payoff from higher social capital? If yes, what are the channels through which social capital alter economic performance? In broad outline, differences in values may impact economic performance either directly or indirectly. I refer to an effect as a direct one if it transits mainly through the alteration of economic decisions made by agents. I refer to an effect as an indirect one if it transits through decisions concerning the building of institutions.

Much academic articles from this field refer to the conjecture made by Putnam (1993) that past differences in social capital between the North and the South of Italy persisted over time and still explain today's discrepancies in economic outcomes between these two regions. This author conjectures that differences in social capital may be captured by looking at differences in associational activity across places.

The keystone article documenting positive relationships between social capital and economic outcomes is certainly the one by Knack and Keefer (1997).¹⁵ These authors use cross country empirical evidence to show that there exists a positive correlation between aggregate economic variables of prime importance, e.g. growth or investment, and trust or civic cooperation. As a huge number of articles following their work, Knack and Keefer (1997)

14. Academic papers in this category include Bisin and Verdier (2001, 2008), Francois and Zabojnik (2005), Tabellini (2008), and Guiso et al. (2008b) among others.

15. Prior to Knack and Keefer (1997), there was little evidence that social capital has a direct effect on economic performance. In their brief literature review, these authors only acknowledge major contributions by Greif (1989), Helliwell and Putnam (1995), and Narayan and Pritchett (1997).

use the following question of the World Values Survey to measure trust: “*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*”. The answer can be either “*Most people can be trusted*”, or “*Can’t be too careful*”. The standard indicator of trust at the country level is the share of respondents who reply “*Most people can be trusted*”. They use another group of question from the same survey to capture the extent of civic norms in a country. This question also became canonical in the literature. The question is phrased as follows: “*Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between, using this card*”. Knack and Keefer (1997) use answers to following statements: “*Claiming government benefits to which you are not entitled*”; “*Avoiding a fare on public transport*”; “*Cheating on taxes when you have a chance*”; “*Keeping money that you have found*”; “*Failing to report damage you’ve done accidentally to a parked vehicle*”. Answers given by individuals range from 1 for “*never justifiable*”, to 10 for “*always justifiable*”, and are aggregated by the authors to create a index of civic norms at the country level. Knack and Keefer (1997) provide evidence that trust and civic norms are both positively and significantly correlated with growth and the ratio of investment over gross domestic product in a cross-section of 29 countries.¹⁶ They show that these results persist when taking into account various potentially omitted variables, including an index of property right protection which can be seen as a rough proxy of institutions’ quality. In addition, testing Putnam’s conjecture on their sample, the authors do not find any evidence that more associational activity is positively associated with better economic performance.

Investigating the channels from social capital to economic performance, Knack and Keefer (1997) provide evidence that larger share of trusting individuals in a country is associated with higher labor productivity, larger accumulation of physical capital, better education, as well as higher total factor productivity. These authors also investigate the relationships between trust and confidence in the government: the relationship is positive and statistically significant. They finally present results showing that the

16. Their sample includes mostly developed countries.

quality of institutions is higher in countries with more trust.

In the very same time as Knack and Keefer (1997), La Porta et al. (1997) provide additional cross section evidence that higher trust is associated with better economic performance. These authors conjecture that trust should be more important in situation where the size matters – i.e. in situations where the number of individuals who interact is higher. Such situations especially correspond to public administration or large private organizations. Results presented by La Porta et al. (1997) illustrate that trust is positively and significantly associated with better government efficiency, more sales in large firms, and better social efficiency: in countries with more trusting individuals, the quality of infrastructure is higher, a larger share of the population is educated, and infant mortality is lower. All this outcomes lead to lower inflation and higher growth.

Both articles by Knack and Keefer (1997) and La Porta et al. (1997) strongly suggest that social capital in general and trust in particular foster economic performance through investment. Investment in both private and public capital – e.g. infrastructures, education system – seems to matter. Zak and Knack (2001) precisely tackle this issue by developing a theoretical model whose predictions are empirically testable. In this general equilibrium model, trust lowers transaction costs and alleviates moral hazard problems in a situation where there is information asymmetry between investors and brokers. In a cross-section of 41 countries, the authors provide empirical evidence that complement findings of Knack and Keefer (1997) about the positive relationship between investment and growth on the one side, and trust on the other side. They also confirm that the effect of trust on economic performance persists once the quality of formal institutions is taken into account. Although potential co-variation between social capital variables and institutional variables, empirical evidence suggests that both groups of factors have independent effects that persist once the effect of the other one is washed out. Other early articles offer evidence of similar relationships. See for example Knack (2001) or Platteau (2000) for a survey of the relationship between social capital, institutions and economic performance in developing

countries.

Some channels linking social capital to economic outcomes have been investigated by Guiso and co-authors in a series of papers. Guiso et al. (2004) look at financial decisions made by Italian households. They use variations in social capital across Italian regions to estimate the effect of social capital on financial development. These authors provide evidence that individuals use non-cash means of payments more frequently and are more likely to hold financial assets in regions with higher social capital.¹⁷ The underlying idea behind this analysis is that financial decisions represent the very place where trust in others should matter. Even if it is somehow backed by a formal and written arrangement, any financial decision leads the investor to alienate part of its wealth in exchange of a promise of payment in the future.¹⁸ The result concerning the decision to use less material forms of money, i.e. checks rather than cash, can be easily understood by thinking about the “confidence” dimension of money. The more a mean of payment is dematerialized, the more its use in a place rely on the belief by the receiver that it will be accepted by a third agent.

Guiso et al. (2006) use the epidemiological approach to show that trust in others increases the probability to become an entrepreneur. They use information conveyed by the General Social Survey about religion and ancestors’ origin country of Americans to assess the importance of culture as a determinant of individual trust. They also show that cultural differences across countries have an impact on savings behavior at the macroeconomic level: the ratio of national savings to gross domestic product increases by 2.8 percentage points as the share of individuals who consider that learning thrift and savings is important for children increases by 10 percentage points.¹⁹ The article is completed by a section documenting a positive and statis-

17. Guiso et al. (2004) use voting turnout, blood donations, and the standard trust question from the World Values Survey as measures of social capital.

18. The feature of financial operations is that it is conducted over time. This is where trust kicks in as a crucial factor. See the citation from Arrow (1972) on page 44.

19. The question used by Guiso et al. (2006) comes from the World Values Survey and is phrased as follows: “*Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Thrift, saving money and things.*”

tically significant relationship between culturally defined preferences toward redistribution and state-level income redistribution in the United States. The authors use variations around the epidemiological approach to precisely disentangle the role of culture from the one of institutions in their findings. In Guiso et al. (2009), the authors outline that bilateral trust affects trade flows and investments across European countries. Both portfolio and direct investments flows are affected. These results persist once characteristics such as institutional quality of both countries are taken into account.²⁰ Once again, these results highlight that trust appears to be very important in situations where the behavior of partners is hardly observable and controllable.

In the same vein, Tabellini (2010) uses variations in social attitudes between regions of Europe to identify the effect of trust or respect of others on economic development. The results of this author offer additional evidence that income per capita and growth are influenced by cultural factors.

All papers mentioned above identify the impact of cultural factors on economic outcomes using variations across space. Either between countries or between areas within the same country. They often rely on instrumental variable estimates to wash out the potential reverse causality between social capital variables and economic performance. From this point of view, an important contribution to the literature was made by Algan and Cahuc (2010) who managed to identify the effect of changes in trust on economic development at the country level and over time. These authors use the epidemiological approach and take advantage of differences in immigration times of ancestors of Americans interviewed in the General Social Survey. Looking at immigrants from different generations, Algan and Cahuc (2010) reconstruct differences in trust across origin countries in the thirties and at the end of the twentieth century.²¹ Comparing the evolution of differences in trust over time allow the authors to indirectly measure changes in trust

20. A recent paper by Yu et al. (2011) use the same sample of countries and explores the interactions between the effectiveness of judicial institutions and bilateral trust. The authors conclude that trust only matters when legal protections of economic activities are not effective.

21. The strategy used by Algan and Cahuc (2010) relies on parsimonious assumptions on the size of generations. For example, an American of second generation born before 1975 is considered as having parents who immigrated strictly before 1975.

in origin countries over time. Algan and Cahuc (2010) provide evidence that countries which experienced heavier trust improvements over the period are also those which developed more. This effect appears stronger than the one of changes in the quality of institutions as measured by an index of democracy.

A group of articles underlines that values and beliefs may have an effect on economic performance through the building of institutions. Algan and Cahuc (2009) show how civic virtues influence the choice of societies to provide unemployment insurance. Societies can either protect jobs or provide generous unemployment benefits. Job protection protects against unemployment but discourages jobs creation and creates unemployment traps. On the other side, low job protection combined with generous unemployment benefits ensures turnover and protects individuals against income losses. The choice between the two institutional settings ultimately depends on the extent of civic values. For example, the equilibrium with high job protection and low unemployment benefits is more likely to be attained in countries where a large share of individuals think that it is justifiable to cheat on social benefits. Algan and Cahuc (2009) use the epidemiological approach to capture cultural attitudes in European countries using Americans with foreign ancestors. This allow them to identify the causal relationship between civic virtues and the choice of labor market institutions.

Aghion et al. (2010) starts from the simple observation that trust is negatively correlated with market regulation in a cross-section of countries. In order to explain this fact, the authors propose a political economy model leading to multiple equilibria. In a nutshell, distrust in others creates heavier demand for regulation of economic activities as agents fear to be treated unfairly by their partners. In turn, regulation prevent the building of trust, what reinforces the initial distrust. Aghion et al. (2010) present empirical cross-country evidence that trust is negatively and significantly correlated with the regulation of entry on the goods market and the regulation of labor market. They also use individual observations and show that non-trusting agents are more favorable to governmental intervention in the economy.

In the same vein, Aghion et al. (2011) highlight the interplay between decentralized cooperation and minimum wage regulation. The model and

the empirical evidence they present build on the following intuitions: the lack of trust in the behavior of employers pushes workers to favor governmental regulation of wages setting; in turn, centralized regulation prevent employers and workers to learn from each other in decentralized negotiations and deters willingness to cooperate at the local level. These authors offer a rational explanation for the existence of two different societies: one with heavy regulation of wages negotiation by the state and low unionization (as there is no incentive to unionize), the other with powerful unions and weak regulations of wages by the state. This reading template fits remarkably well with the differences in social organization between European Mediterranean countries on the one hand and Scandinavian countries on the other hand.

1.4.2 The determinants of social capital

The second main question – does the (economic) context in which individuals live alter values held and transmitted by these agents? – addressed by economists interested in the role of culture mainly deals with the following very simple question: where do values come from? Answers to such a question can be approached using variations around it. For example, it is interesting to understand how the economic outcomes of decisions taken by agents induce them to change the values they hold or they decide to transmit. In other terms, how do individuals update their values and beliefs? Another variation of the core question concerns the persistence of specific values across long period of time. This approach highlights that social characteristics or institutional arrangements from the past are likely to shape today's values and attitudes. All the academic contributions presented below should be analyzed through the prism of the debate between those who consider that culture and values evolve quickly and those who argue that such variables moves very slowly over time, if they ever do.

In their famous article, Knack and Keefer (1997) briefly investigate the determinants of trust and civic norms in their cross-section of developed countries. Gross domestic product appears to be positively and significantly correlated with trust. The correlation of gross domestic product with civic

cooperation is also positive, but hardly statistically significant. They find evidence of a positive relationship between secondary education and social capital variables. On the contrary, their results suggest that the latter variables are negatively linked to primary education. They also provide evidence that trust and civic cooperation are higher in more equal and ethnically more homogeneous countries. Membership in politically oriented associations or groups is also higher in countries with better scores for the two social capital variables.

La Porta et al. (1997) provide evidence that today's trust at the country level is negatively correlated with the share of citizens belonging to a hierarchical religion.²² This hypothesis is derived from Putnam (1993) who argues that hierarchical, i.e. vertical, organizations deter the building of trust among individuals, i.e. horizontal ties.

Guiso et al. (2009) provide evidence that bilateral trust across countries of Europe is massively influenced by cultural proximity and common violent history. For instance, both religious and genetic similarities have positive effect on bilateral trust. On the contrary, the authors found strong evidence that the number of years at war between two countries over a 1,000 years period affects negatively bilateral trust. These explanatory factors are better predictors of bilateral trust than geographic distance or shared origin of judicial systems.

In Tabellini (2010), differences in political and social historical experiences across regions of Europe are shown to be correlated with today's attitudes and beliefs expressed by individuals. The literacy rate in 1880 and institutions' quality between 1600 and 1850 are both pretty good predictors of cultural attitudes at the end of the twentieth century.

Bidner and Francois (2011) develop a theoretical model insisting on the interplay between norms of cooperation and institutions. One of their prediction is that honesty will be more frequent at the steady state in large societies than in small communities. The authors present cross-country evidence that trust in other is indeed higher in countries with a larger population once

22. La Porta et al. (1997) define a respondent as belonging to a hierarchical religion if it is Catholic, Eastern Orthodox, or Muslim.

traditional determinants and covariates of trust are taken into account (ethnic and linguistic fractionalization, religious homogeneity, income inequality, institutions' quality, and protection of property rights).

Characteristics associated with trust at the individual level were explicitly explored by Alesina and La Ferrara (2002). These authors use the General Social Survey and show that historical discrimination against a group – e.g. blacks or women – is a major determinant of distrust in others. Education or income are also strong correlates of trust: less educated people as well as people with low income are less likely to trust others. Recent divorces and diseases also affect trust negatively if such events happened less than one year before the interview. These effects are however relatively small with respect to the one of other variables. Interestingly, such adverse events have less or not impact if they occurred five years before. In addition, religious assimilation appears to be a weak correlate of trust in their study. Alesina and La Ferrara (2002) also show that individuals living in more fragmented places are less trusty than those who live in homogeneous areas: trust is lower when racial and income fragmentation is higher.

Alesina and La Ferrara (2005) investigate precise values which are of prime importance for the design of institutions: preferences for redistribution. They show in particular that the position of an agent on the social scale is a very strong predictor of its preferences for its support for redistribution of income. The point of Alesina and La Ferrara (2005) is not to show that poor people support more redistribution than rich people. They supplement this rough idea by illustrating the weight of individual prospect of upward mobility on the preferences for redistributions. Individuals who have a quite high probability to climb up the social scale given their characteristics support less redistributions than others. Concomitantly, individuals who think that societies provide equal opportunities to everyone support less redistribution irrespectively to their position on the social scale.²³

Giuliano and Spilimbergo (2009) also investigates attitudes of Americans and their relation to the economic situation. They show that individuals who experienced a recession in the state where they lived when they were

23. See also Alesina and Giuliano (2011) for complementary results.

aged between 18 and 25 exhibit less confidence in institutions and tend to be more favorable to redistribution than others. They are also more likely to think that success in life is more determined by luck than by individual effort. These authors show that such recessions in early adulthood do not have any long term impact on trust in others.

Luttmer and Singhal (2011) use the epidemiological approach to disentangle cultural and contextual determinants of preferences for redistribution. They compare immigrants within European countries. This allow them to observe people from different origin countries in the same context as well as people from the same origin in different residence countries. These authors document a strong effect of culture on preferences for redistribution among immigrants of the first and second generation.

Alesina and Fuchs-Schündeln (2007) document the persistent effect of political and institutional settings on preferences regarding economic and social organizations. These authors investigate attitudes of Germans toward the responsibility of the state for financial security when individuals face different risks: unemployment, diseases, and old-age among others. This article provide evidence that Germans who lived under Communism are more likely to support responsibility of financial security by the state than their compatriots who lived outside of former East-Germany. The authors show that this effect holds irrespective of whether individuals moved in former West-Germany after the fall of the Berlin Wall. In addition, they only find weak evidence of attenuation. The effect of Communism on these attitudes seems strongly persistent.

Medium term persistence of attitudes and values have also been explored by Grosfeld et al. (2011). These authors use differences in Jewish population across places in Eastern Europe to identify the persistence of specific values. They find that current residents of places formerly populated with a larger number of Jews are less likely to support market economy and democracy. They are also less likely to become entrepreneur, but do trust others more than their compatriots.

Other authors investigate the effect of events from the distant past on today's social capital variables. For example, Guiso et al. (2008a) provide

evidence that differences in today's social capital across regions in Italy can be traced back to the existence of free city states between 1000 and 1300.²⁴ A different approach is adopted by Durante (2009) who argues that interpersonal trust developed as a way to cope with climatic risk during past centuries. This author provides evidence that such values persist across time. The identification used by Durante (2009) uses variations in yearly changes of precipitation and temperature between 1500 and 2000 across regions of Europe. Individuals living in regions characterized by large past climate volatility are more likely to trust each others. In another paper, Nunn and Wantchekon (2011) provide evidence that the African slave trade had durable consequences on trust-related values held by Africans. They use variations across the number of slaves shipped across places and ethnicity to identify the effect of more than 400 years of slave trade from Africa on today's attitudes. As the very existence of slave trade relied on different methods to catch people, the authors show that groups who suffer more heavily from this trade are less likely to trust people from other groups, but also people from the same groups, neighbors, or relatives. These two papers highlight long term relations and provide evidence of the sharp consequences of an insecure environment on trust toward others. However, as the environment is insecure in both cases, results are different. A direct interpretation of findings presented by Durante (2009) and Nunn and Wantchekon (2011) is that the nature of insecurity matters a lot in the building of interpersonal trust. Insecurity created by others deters trust, whereas insecurity created by mother nature foster trust.

1.5 Outline of the thesis

The works presented in the different chapters of this thesis intend to contribute to the two main questions around social capital in economics presented in section 1.4. First, what is the impact of social capital on economic activity. Second, does the (economic) context in which individuals live alter

24. This is a direct test of the conjecture made by Putnam (1993).

values held and transmitted by these agents? Chapters 2, 3, and 4 refer to the first question. Chapters 5 and 6 contribute to the second one.

Most of the literature investigating the relationship between trust and economic performance from an aggregate point of view has focused on growth or economic development, emphasizing the role of investment. I depart from this literature in chapter 2 where I look at the aggregate relationship between macroeconomic volatility and trust. I first show that higher trust is negatively and significantly correlated with macroeconomic volatility in a cross section of countries. I carefully check whether this relationship is driven by some omitted variable. This allows to show that the relation persists even when the quality of institutions is taken into account. However, this cross-section relationship does not imply that there is an effect of trust on macroeconomic volatility. I conduct two different strategies in order to disentangle backward causality and to establish a presumption of causality from trust to volatility. I first use inherited trust of Americans immigrants as an indicator of latent trust in their origin country. This instrumental variable approach confirms the earlier results. I then apply the approach developed by Algan and Cahuc (2010). Using changes between 1910 and 1970 in trust inherited by Americans, I obtain measures of trust at different points in time for a group of European countries. This strategy allow to track changes in trust and volatility over time at the country level. I present evidence that both variables are negatively correlated across time. This show that trust also reduces macroeconomic instability across time and not only across space. Finally, I briefly investigate the two main channels through which higher trust may translate in lower macroeconomic volatility. The first hypothesis is that higher trust is a symptom of better governmental management of the economy. If this hypothesis is true, there should be evidence that public expenditure volatility is lower in high-trust countries. The second one is that trust helps to stabilize investment. If this hypothesis is true, private investment should be more volatile in low-trust countries. My results argue in favor of the second hypothesis: trust weakens macroeconomic volatility through investment's volatility.

In chapter 3 I document the co-evolution of social capital, measured as

trust, and financial development over the twentieth century. To achieve this objective, I use once again the method developed by Algan and Cahuc (2010) and apply it to Americans with foreign ancestors to track changes in trust between 1913 and 1990 in 14 European countries. I match the data with three different measures of financial development. The latter are obtained from Rajan and Zingales (2003) who offer an explanation of financial development as determined by the political economy issues induced by trade openness. The results I present in this chapter show that trust and financial development evolved simultaneously at the country level over the previous century. In other terms, countries that experienced larger improvements trust also experienced a stronger financial development. These results complement the analysis made by Guiso et al. (2004) on the link between trust and financial development.²⁵ I extend the findings of these authors to a time-varying environment. In addition, I provide evidence that the relationship between the two variables is still positive and statistically significant when changes in trade openness are taken into account.

Chapter 4 closes the part of this thesis devoted to the effect of social capital on economic outcomes. In this chapter, jointly written with Yann Algan and Pierre Cahuc, we depart from the traditional political science literature which document a monotonic positive relationship between the generosity of the welfare state and trust. We argue that there is in fact a non-monotonic relationship between trust and the generosity of the welfare states in OECD countries.²⁶ The relation is first increasing for low trust countries, reaching a local maximum for countries with a relatively low level of trust like continental European countries. The relation then becomes decreasing, reaching a local minimum for the Anglo-Saxon countries. Finally, the relationship starts increasing again with the country level of trust, reaching a peak for Scandinavian countries.

We begin by providing a simple political economy model which analyzes the relation between trust and the scope of the welfare state. The model com-

25. See page 53.

26. We measure trust using the traditional question from the World Values Survey. The generosity of the welfare state is measured using total public social expenditure as a share of gross domestic product.

prises civic (or trustworthy) and uncivic individuals. Civic individuals cheat neither on taxes nor on social benefits and they behave properly when they serve as officials. Uncivic individuals cheat on taxes and on social benefits if this is in their own interest. They do not behave properly when they serve as officials. The model predicts that everybody wants more social benefits when he expects to be surrounded by more civic individuals, because there is less fraud on taxes and benefits and officials are more efficient. However, uncivic individuals want more redistribution than civic individuals because they escape from taxes, but benefit from public transfers. This implies that a rise in the share of civic individuals has two opposite effects on the support for the welfare state. On one hand, everybody wants more redistribution, expecting to be surrounded by more civic individuals. On the other hand, the demand for redistribution is reduced because there are fewer uncivic individuals asking for a high level of transfers. These two opposite effects induce a non-monotonic relationship between the share of trustworthy individuals and the size of the welfare state. It is possible to get a large, but inefficient, welfare state in a society populated by numerous uncivic individuals who cheat on social benefits, escape from taxes and do not behave properly when they serve as officials. Conversely, the welfare state can be both large and efficient only if the share of civic individuals is sufficiently large. The model thus explains why big welfare states can be supported in both low and high trust countries, but with very contrasting perceptions of their degree of transparency.

We test the predictions of the model using international surveys and show that trust in others and trust in institutions is a strong determinant of the support for the welfare state. We also provide evidence that non-civic individuals demand more redistribution than others and that the perceived efficiency of the welfare state is lower in countries where the share of trustworthy individuals is weaker. In addition, we use the epidemiological approach and look at immigrants living in Europe. We show that both culture and context seems to determine preferences of redistributions. This result mitigates the one developed by Luttmer and Singhal (2011).²⁷

27. See page 59.

Chapter 5, jointly written with Mathieu Couttenier, addresses the question of the effect of context on individual attitudes. We investigate the effect of mineral resources abundance on individualistic values, measured using the American General Social Survey. We refer to “individualism” as the set of values opposed to public intervention in income allocation and favorable to individual self-responsibility. In that sense, individualistic values reflect attitudes that are closely associated with the funding myth of mining activity in the United States. We use the Mineral Resources Data System to determine mineral resources abundance in each state using information about ground tenor. Comparing individuals in states with more or less mineral resources, we find that individuals living in states with lots of mineral resources support less redistribution by the government, less public assistance to the poor, and are more favorable to individual self-responsibility. Then, we highlight two channels through which mineral resources foster individualism: either by transmission of values formed in the past, or by experience of mineral discoveries at a specific point in life-time of individuals. We interpret the first channel as reflecting the contextual transmission of specific values. The second one illustrates the direct effect of mineral resources abundance on individualistic values. Here, discoveries act as an update for values.

The early relationship between mineral resources abundance and opposition to redistribution can be explained as follows. Natural resources represent a windfall which is likely to induce both an increase of current and expected income. Their existence create more wealth opportunities. As a consequence, a society with natural resources is richer than a society without any natural resources endowment. Local residents consider mineral resources (and natural resources in general) as a treasury belonging to them and exploitable by their efforts. This windfall induced by natural resources can be related to the well-known effect of income on the demand for redistribution. Increasing current or expected income is known to be associated with less willingness to redistribute.²⁸ To sum up, the larger the mineral resources endowment,

28. Following Romer (1975), Meltzer and Richard (1981), and Piketty (1995), this relationship has been documented by Alesina and La Ferrara (2005), Alesina and Angeletos (2005), and Alesina and Giuliano (2011) among others.

the wider wealth opportunities, and the lower the support for redistribution by people surrounded by the resources.

We disentangle the existence and the relative importance of the two channels mentioned above in the following ways. First, we focus on individuals living in states with lots of mineral resources and compare individuals that experienced mineral resources discoveries during their impressionable years to those who did not. Following Giuliano and Spilimbergo (2009), the “impressionable years” hypothesis refers to the hypothesis that “*core attitudes, beliefs, and values crystallize during a period of great mental plasticity in early adulthood and remain largely unaltered throughout the remaining adult years*”. This approach uncovers the *experience* channel. Second, we compare individuals living in states with few or no mineral resources to individuals living in states with lots of mineral resources, but who did not experience mineral resources discoveries during their impressionable years. By removing the direct effect of mineral resources on individualistic values, this approach uncovers the *transmission* channel. All in all, we provide evidence that both channels matter to explain the overall relationship.

The last chapter of this thesis is jointly written with Yanos Zylberberg. It further investigates how trust in various entities reacts to shocks. In chapter 6, we look at changes in declared trust in institutions and subjective membership of national community following social conflicts such as riots or protests in Africa. We geo-localize individuals interviewed in the Afrobarometer survey using information about regions and districts contained in this data set. We extract information about civil conflicts in Africa from the Armed Conflict Location and Event Dataset. We take advantage on information about the day of interview that can be found in the Afrobarometer to match each respondent to social conflict that occurred over a 30 days period before the interview. Our identification strategy is grounded on precise location and precise timing. This allow us to compare individuals that live in the same administrative region but not exactly in the very same place. We show a number of stylized facts that we rationalize using a simple theoretical framework. In this model, groups revise their priors on the monitoring capacity of institutions after having experienced rent extraction from a leader and

individuals react to signals represented by actions of the leader. In the empirical part, we interpret riots and protests signals of the elite's mis-behavior toward some groups of the society. Our empirical findings indicate very large movements in beliefs in leaders and institutions. The occurrence of a single riot in the previous month reduces the probability for respondents in a radius of 20 kilometers to declare themselves as being part of a nation (as opposed to being part of a local group) by up to a third of a standard deviation. The same amplitude is recorded for trust in institutions that supposedly exert some monitoring on the leaders in charge (electoral commission or parliament). These results point out that trust is not only a capital which slowly accumulates over decades. It also provides some measure of the sensitivity of trust to negative events. As conflicts substantially affect trust in a negative way, this may partially explain that places are trapped in bad equilibria with low trust, low cooperation, and high social conflicts frequency.

To sum up, the first three chapters of this thesis investigate how trust and norms of cooperation impact the economic activity, either directly or through the setting of institutions. This approach is reversed in the fourth chapter which provides evidence of the persistence across time of values specifically associated with the early times of mining industry: self-responsibility and opposition to public intervention in economic activity. The last chapter goes further into this direction but investigates the short-term movements of trust in various institutions. Finally, chapter 7 briefly concludes by suggesting joint interpretations of the previous chapters as well as directions for future research.

1.6 Appendix

Table 1.1: Occurrences of words related to cultural economics in articles titles on Google Scholar.

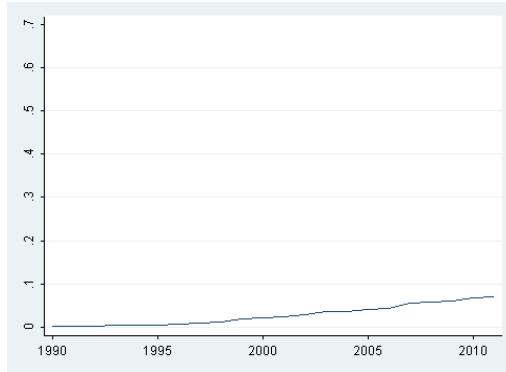
	“Social capital”	“Trust”	“Culture”	“Social capital”, “trust”, or “culture”	“Growth”, “unemployment”, or “economic development”
1990	9	242	329	580	3 358
1991	5	243	390	638	3 465
1992	12	255	448	715	3 795
1993	16	327	434	777	4 439
1994	15	372	539	926	4 720
1995	45	444	532	1 021	4 993
1996	77	626	580	1 283	5 716
1997	118	621	727	1 466	5 972
1998	161	776	727	1 664	6 186
1999	253	795	750	1 798	6 464
2000	282	881	797	1 960	7 214
2001	327	860	817	2 004	7 202
2002	449	1 120	916	2 485	7 664
2003	451	1 390	978	2 819	8 064
2004	493	1 220	1 040	2 753	8 296
2005	521	1 220	1 090	2 831	8 491
2006	560	1 310	1 130	3 000	9 046
2007	589	1 300	1 250	3 139	9 128
2008	604	1 290	1 240	3 134	8 906
2009	585	1 300	1 280	3 165	9 106
2010	562	1 310	1 200	3 072	9 346
2011	558	1 280	1 100	2 938	8 750

Data are from Google Scholar. Each cell reports the number of results obtained when searching for specific words in titles of articles released during a given year. Queries are limited to the area of “Business, Administration, Finance, and Economics” as defined by Google Scholar.

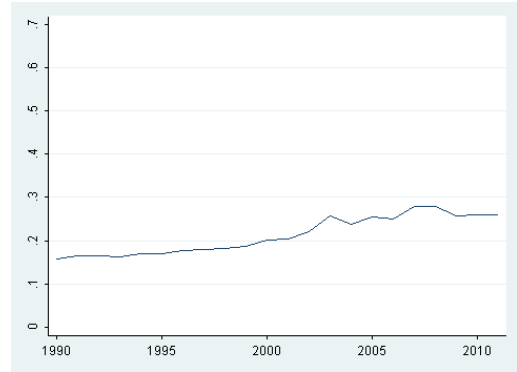
Table 1.2: List of national and international surveys.

Afrobarometer	http://www.afrobarometer.org
Asian Barometer	http://www.asianbarometer.org
Australian Survey of Social Attitudes	http://aussa.anu.edu.au
British Household Panel Survey	http://www.iser.essex.ac.uk/bhps
Eurobarometer	http://ec.europa.eu/public_opinion
European Social Survey	http://www.europeansocialsurvey.org
European Values Study	http://www.europeanvaluesstudy.eu
General Social Survey	http://www3.norc.og/GSS+Website
German Socio-Economic Panel	http://www.diw.de/en/soep
International Social Survey Programme	http://www.issp.org
Latinobarómetro	http://www.latinobarometro.org
World Values Survey	http://www.worldvaluessurvey.org

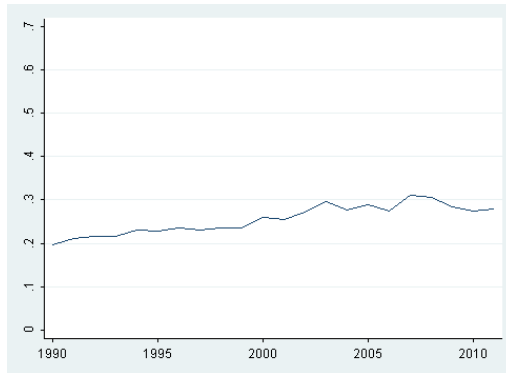
Figure 1.2: Relative occurrences of words related to cultural economics anywhere in academic articles.



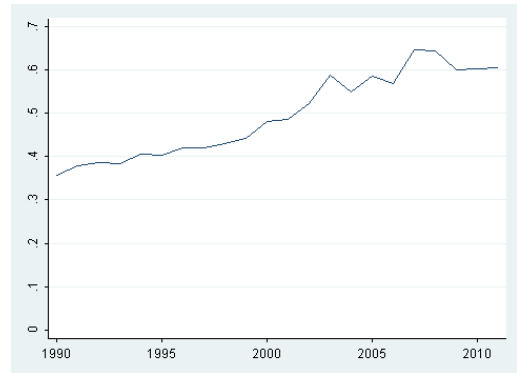
(a) Relative occurrences of “social capital” anywhere in articles.



(b) Relative occurrences of “trust” anywhere in articles.



(c) Relative occurrences of “culture” anywhere in articles.



(d) Relative occurrences of “social capital”, “trust”, or “culture” anywhere in articles.

Data are from Google Scholar. Figures plot the number of results obtained when searching for “social capital”, “trust”, or “culture” anywhere in articles, normalized by the number of results obtained when searching for “growth”, “unemployment”, and “economic development”. Queries are limited to the area of “Business, Administration, Finance, and Economics” as defined by Google Scholar.

Chapter 2

Does trust favor macroeconomic stability?

This paper investigates the relationship between trust and macroeconomic volatility. In a cross section of countries, higher trust is associated with lower macroeconomic volatility. This relationship persists when various covariates are taken into account. I use inherited trust of Americans as an instrumental variable for trust in their origin country to overcome reverse causality concerns. I then use changes in inherited trust over the 20th century to show that increasing trust is also associated with decreasing volatility across time at the country level. Finally, I provide evidence that trust lowers volatility through the investment channel.

2.1 Introduction

The cost of real macroeconomic volatility in terms of well-being has been shown by Wolfers (2003) to be quantitatively important. Thus, all the factors that are able to foster or weaken it deserve attention. This paper investigates the relationship between trust and macroeconomic instability. In a cross section of countries, higher trust is correlated with weaker macroeconomic volatility. I focus on this relationship and show that it is robust to the introduction of various covariates. I disentangle backward causality by using

inherited trust of Americans immigrants as an indicator of latent trust in their origin country. Then, using changes in inherited trust between 1910 and 1970, I show that trust also reduces macroeconomic instability across time at the country level. Last, I provide evidence that trust weakens macroeconomic volatility through investment's volatility.

In figure 2.1, trust is measured in each country by the share of people who answer “*most people can be trusted*” to the following question of the World Values Survey between 1981 and 2008: “*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*”. Macroeconomic instability is represented by the standard deviation of real GDP per capita growth rate between 1970 and 2008. The negative relationship between these two variables is highly significant. Differences in trust explain up to a third of differences in volatility across countries.

The fact that cultural traits such as norms of cooperation, civic spirit or beliefs regarding the behavior of others have an impact on macroeconomic performance has been massively explored by the literature. See Fernández (2011) for a recent review. Most papers investigating the relationship between trust and economic performance from an aggregate point of view have focused on growth or economic development, emphasizing the role of investment. See for example Knack and Keefer (1997), La Porta et al. (1997), or Algan and Cahuc (2010) among others. In this paper, I depart from this literature by looking at macroeconomic stability, an unexplored economic outcome that may be in part explained by trust as suggested by the relationship presented above.

Trust is an indicator of social capital. This later concept has been defined by Putnam (2000) as “*the collective values of all social networks and the inclinations that arise from these networks to do things for each others*”. Trust represents a set of beliefs that favor inter-personal cooperation within the society. Trust may thus favor economic performance, especially in decisions such as investment's decisions.¹

Trust may favor macroeconomic stability through three channels. First,

1. See below.

Figure 2.1: Relationship between the standard deviation of real GDP per capita growth rate (1970-2008) and trust (1981-2008).



Sources: World Values Survey and Penn World Table.

since trust implies extended civic behavior, it may be associated with better economic management by the authorities if it reflects a greater cohesion of the society. Indeed, it has been shown by Knack and Keefer (1997) that countries with higher trust have also better institutions. According to Acemoglu et al. (2003), countries with better institutions exhibit lower macroeconomic volatility. Hence, if trust deters the discretionary use of public expenditure it can thus implies weaker macroeconomic volatility due to less volatile policies. Second, the cohesion of society can also translate into social stability. As a consequence, civil conflicts, violence, and political instability in general are less frequent in high-trust countries. This may results in lower economic volatility since internal conflicts are a major source of shocks for any economy. Third, following Glaeser et al. (2000), trust, the most general dimension of

social capital, is closely linked to trustworthiness.² Hence, individual trust can be considered as empathy or as an individual commitment to behave well with other agents. This decreases costs of interactions and allows to build expectations and plans with greater certainty. In line with this reasoning, Knack and Keefer (1997) documented a positive relationship between trust and the share of investment in GDP. I conjecture that if trust makes investment higher, it should also make it more stable over time, what is also likely to smooth aggregate output. Although explaining the deep mechanisms of these channels at the micro-economic level is beyond the scope of this paper, these three explanations are tested throughout the paper. I show that channels running through the quality of institutions or social cohesion do not fully explain the negative relationship between trust and macroeconomic volatility. In the last section, I provide evidence that the main channel through which trust weakens macroeconomic volatility is the investment channel: private investment's volatility is particularly low in high-trust countries.

Let me propose a rational framework to understand how trust may reduce volatility thanks to the stability of investment. I define trust as a belief that pushes an individual to grant to another individual some decision power. In a the relation between a principal and an agent, trust pushes the principal to grant more control power to the agent. Let us consider an environment where individuals engage in business relations that involve a principal and an agent. Given the definition of trust given above and assuming that writing contracts is costly (because of search costs, or transaction costs for example), contracts of longer length will be preferred by high-trust principals. On the opposite, shorter contracts will be privileged by low-trust principals as they want to keep control over the business relation by leaving open the possibility of renegotiation during subsequent periods. Assume now that productivity is subject to changes from one period to another. Principals engaged in a long-term contract will not be able to end the business relation in front of a bad shock. On the opposite, principals engaged in shorter relations can decide whether to start a new relation or not to engage in any relation at all

2. This assertion has been discussed by Fehr et al. (2003) and Sapienza et al. (2007) among others.

when they face a bad state of nature. This framework lead to lower volatility of economic activity in high-trust societies through the following channel. The share of principals who choose to set up short contracts is higher in low-trust societies. The share of investment that react to changes in the state of nature is thus larger in such societies. This is different in high-trust societies where more principals engage in longer contracts, what reduces the share of activity that reacts to changes in the state of nature.

The three channels mentioned above from trust, and social capital in general, to macroeconomic stability can be found under alternative and various forms in the literature that investigates the impact of culture and social capital on economic outcomes. In that dimension, this paper is closely related to all researches that aim to point a link from social capital to economic outcomes.

After the funding pieces of work run by Putnam (1993), lots of evidence about the impact of social capital on economic performance have been raised by scholars. Knack and Keefer (1997) showed that countries with higher social capital have also better institutions, higher and more equal incomes, and a better educated population. Similar evidence have been provided by Tabellini (2010) in the case of European regions. Guiso et al. (2008a,b) presented some evidence about the way economic experiences from the distant past may shape current economic performance, through transmission of adequate norms. Dincer and Uslaner (2010) have found a positive relationship between trust and growth. More recently, Algan and Cahuc (2010) provide new evidence regarding the impact of trust on economic development. See also La Porta et al. (1997), Zak and Knack (2001), Knack (2001), and Tabellini (2008) among others for additional developments.

A key aspect of this literature is about the issue of the malleability of beliefs with respect to current economic situation. In rough terms, a first approach considers that norms and values of a society are very sticky and slow moving parameters and therefore weakly altered by current events. On the opposite, a second approach emphasizes the changes in beliefs induced by changes in the current economic situation. My view is closer to the former approach. In this paper, I assume that trust is a latent component of a

society. Consequently, I consider that latent culture is unaffected by macroeconomic volatility. The first set of results presented in this paper rely on this assumption.

Indeed, I first measure trust through the widely used question of the World Values Survey, using the share of trusting people as a proxy for generalized trust at the country level during the last quarter of the 20th century. This variable is negatively and significantly correlated with macroeconomic volatility between 1970 and 2008. However, the hypothesis that the current level of trust may be impacted by current macroeconomic outcomes cannot be fully rejected. For example, it has been shown by Giuliano and Spilimbergo (2009) that people who experienced recessions during early adulthood are likely to have lower individual social capital. Hence, a measure of trust that is unaltered by macroeconomic instability is required to overcome reverse causality concerns. Subsequently, I confirm earlier results by using inherited trust of Americans as an instrument for the latent trust in their origin country. This method, inspired by Carroll et al. (1994) and used by Fernández and Fogli (2006, 2009) among others, overcomes reverse causality. Using this instrumental variable strategy confirms the negative relationship between trust and volatility. Accordingly, the first result presented in this paper is that trust decreases macroeconomic volatility in space.

However, this does not mean that higher trust is associated with higher economic stability at the country level. In order to investigate this question, I use a time-varying measure of trust. Such a measure does not exist for a long period of time because values surveys have only been conducted and generalized since 1980. Consequently, to overcome data shortage regarding the time variation of trust, I use the methodology developed by Algan and Cahuc (2010) to track changes in trust using changes in inherited trust measured with different waves of American immigrants. This method allows to exploit the changes in trust over the 20th century to show that countries which have experienced an increase in trust also experienced a decrease in macroeconomic volatility.

In all estimations presented in this paper, trust is proved to be an important determinant of macroeconomic stability. However, it is not the only

one. A rich literature has examined the key determinants of macroeconomic volatility. Most of these papers focus on the institutional and political context. For example, Alesina and Drazen (1991) argue that stabilizations are delayed because interest groups fight to know who will bear the economic burden. In the same vein, Rodrik (1999) shows that the greater latent social conflicts in a society and the weaker its institutions of conflict management, the larger the effects of external shocks on growth. In the case of less developed countries, Acemoglu et al. (2003) state that macroeconomic fluctuations arise from turbulence created by politicians in weakly institutionalized economies. See also Fernández and Rodrik (1991), Francois and Zabojnik (2005), and Acemoglu et al. (2008) for a focus on reforms feasibility. This literature points out the important role of institutions quality in economic management. My results confirm this effect which goes in the same direction as the one of trust. This lets room for a joint interpretation of institutions and trust, or norms of cooperation in general, these two variables mutually reinforcing, as stressed by Francois (2008).

The remaining of this paper is organized as follows. The data used and the estimation strategy are presented in section 2.2. In section 2.3, I present simple cross section estimates. Results using inherited trust as an instrument for trust in cross section and panel estimations are presented in section 2.4. This allow to overcome backward causality between economic fluctuations and trust and to asses the within effect of trust on macroeconomic volatility. In section 2.5, I distinguish between the volatility of the different components of GDP and present evidence that trust lowers volatility through the stability of investment. In the same section, I discuss how the mechanism presented above about the way trust lowers macroeconomic volatility through contracts' length could be tested. Finally, section 2.6 briefly concludes.

2.2 Data and methodology

In this section, I describe the different estimation strategies and present the main data used in this paper.

To investigate the relationship between trust and macroeconomic volatil-

ity across space, I rely on the estimation of the following equation:

$$\text{Volatility}_i = \alpha + \beta \text{Trust}_i + \sum_{j=1}^n \gamma_j x_{ji} + \varepsilon_i, \quad (2.1)$$

where i denotes a country, Volatility_i is a measure of macroeconomic volatility, Trust_i the measure of trust, x_{ji} is a covariate that may explain differences in volatility across countries, and ε_i is the error term. If the relationship between trust and volatility is negative, then the coefficient β must be negative and significantly different from zero.

I address the question of the relation between trust and volatility across time at the country level by estimating the following expression:

$$\text{Volatility}_{it} = \alpha + \beta \text{Trust}_{it} + \sum_{j=1}^n \gamma_j x_{jit} + I_i + \varepsilon_{it}, \quad (2.2)$$

where notations are the same as in equation (2.1), except that subscript it denotes country i observed at time t . In addition, this equation includes a country fixed effect I_i . The estimation of equation (2.2) reveals information about the within country relationship between trust and volatility. If this relation is negative, then the coefficient β will show up negative and significant.

I use three different measures of macroeconomic volatility. All are computed using real GDP per capita growth rate from the Penn World Table. The three volatility indicators are computed for 56 countries over the period 1970-2008. The first measure I use is the standard deviation of real GDP per capita growth rate. The second is the frequency of real GDP per capita negative growth years. The third indicator is the largest drop in real GDP per capita over the period. I use the opposite of this measure such that a larger value represents a deeper negative performance. When investigating the relationship between trust and volatility over time, I use the Maddison data set and compute these three measures for each country for two periods of equal length. Namely 1910-1940 and 1970-2000.

Following Knack and Keefer (1997), La Porta et al. (1997), Zak and Knack

(2001), and Algan and Cahuc (2010) among others, I measure generalized trust in each country as the share of people who answer “*most people can be trusted*” to the following question of the World Values Survey between 1981 and 2008: “*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*”. The alternative answer is “*can’t be too careful*”.³ The implicit hypothesis made in this paper is that trust is a very slow moving parameter at the country level. Therefore, this measure of trust is supposed to be a general indicator of social capital over the whole period of interest. This approach is sustained by evidence presented by Guiso et al. (2006, 2008a), Durante (2009), Tabellini (2010), and Nunn and Wantchekon (2011) who show that trust has deep historical roots. Table 2.7 presented in appendix displays the list of the 56 countries for which I computed this measure of trust. The table decomposes trust into the different waves of the World Values Survey for countries that have been surveyed more than once. Figure 2.4, in appendix, plots the distribution of changes in trust between two consecutive waves. Changes from one wave to the next are very concentrated around 0, i.e. most of them have a small amplitude.⁴

The estimation of inherited trust of Americans relies on the assumption that differences in trust among Americans interviewed in the General Social Survey are linked to their ancestors country of origin. Accordingly, I estimate the following expression using a probit model:

$$\mathbb{1}\{\text{Trust}\}_{ic} = \alpha + \sum_{j=1}^n \beta_j x_{ji} + I_c + \varepsilon_i, \quad (2.3)$$

where $\mathbb{1}\{\text{Trust}\}_{ic}$ is the answer of individual i , claiming that its ancestors came from country c , to the trust question of the General Social Survey: “*Generally speaking, would you say that most people can be trusted or that you can’t be too careful in life?*”. The variable is equal to 1 if the respon-

3. See Knack (2001) for a discussion of the validity of this question as an indicator of generalized trust at the country level.

4. In addition, it can be easily shown that country fixed effects explain most of the variation across trust at the individual level.

dent answers “*most people can be trusted*”. It is equal to 0 otherwise. The variable I_c is the origin country fixed effect, Norway being the omitted category.⁵ Individual characteristics of respondent i are taken into account by variables x_{ji} , and ε_i is the error term. Following Algan and Cahuc (2010), the expression (2.3) is estimated and using Americans of second, third and fourth generations. Results of this estimation are presented below in section 2.4 when inherited trust is introduced in the analysis.

Other variables used as covariates in regressions will be described on the fly when I introduce them.

2.3 Cross section estimates

In this section, results of simple cross section regressions are presented. Summary statistics of all variables used in this section are presented in table 2.8 presented in appendix. They depict the relationship between trust and macroeconomic volatility across space. The analysis involves 56 countries for which all used data are available.⁶ Figures 2.5 and 2.6 presented in appendix mirror figure 2.1 presented in the introduction. In figure 2.5, macroeconomic volatility is measured using the frequency of real GDP per capita negative growth between 1970 and 2008, whereas it is measured as the absolute value of the largest drop in real GDP per capita over the same period in figure 2.6. In both cases, differences in trust explain up to a fourth of difference in volatility across countries.

In table 2.1, estimated coefficient of equation (2.1) are presented. Even-numbered columns reproduce the simple linear fit presented by figures 2.1, 2.5, and 2.6. In odd-numbered columns, I introduce obvious variables that

5. The choice of Norway as the reference origin country is purely arbitrary and does not drive the results.

6. Observed countries are: Algeria, Argentina, Australia, Austria, Bangladesh, Belgium, Brazil, Canada, Chile, China, Colombia, Denmark, Dominican Republic, Egypt, El Salvador, Finland, France, Germany, Ghana, Greece, Guatemala, Hungary, India, Indonesia, Ireland, Israel, Italy, Japan, Jordan, South Korea, Malaysia, Mali, Mexico, Netherlands, New Zealand, Norway, Peru, Philippines, Poland, Portugal, Rwanda, Singapore, South Africa, Spain, Sweden, Switzerland, Thailand, Trinidad and Tobago, Turkey, Uganda, United Kingdom, United States, Uruguay, Venezuela, Zambia, and Zimbabwe.

are likely to be correlated with trust and macroeconomic volatility. These variables are the mean of real GDP per capita growth rate over the period, the (log of) initial GDP per capita in the beginning of the period, and a set of continental fixed effects. Growth is correlated both with volatility, according to Ramey and Ramey (1995), and with trust, according to Algan and Cahuc (2010). The introduction of these variables lowers the size and significance level of the coefficient of trust. However, it is still negative in all cases and significant at the 5% significance level for two out of three measures of macroeconomic volatility. According to estimated coefficients displayed in columns 2 and 6, a one standard deviation change in trust is associated with a negative change of macroeconomic volatility that amounts around one fourth of the standard deviation of this variable. Although not statistically significant, the estimated coefficient displayed in column 4, i.e. when the dependent variable is the frequency of real GDP per capita negative growth, leads to a similar interpretation for the size of the effect. In that case, the induced change in volatility amounts one tenth of the variable's standard deviation.

In table 2.2, I expand the set of explanatory variables by introducing the share of public expenditure in GDP, trade openness (measured as (imports + exports)/GDP), and the standard deviation of terms of trade over the period. The first variable is likely to reduce economic volatility by stabilizing some part of the economy. The two others measure exposure to external shocks and external shocks themselves. To limit as much as possible endogeneity of the explanatory variables (what would bias in a non-predictable direction the estimate of the variable of interest), I define the share of public expenditure and trade openness at the beginning of the period, i.e. in 1970. Each new variable is added to growth and initial GDP in a separate regression in order to keep degrees of freedom at a reasonable level.⁷ The size and the significance level of the coefficient of trust remains remarkably stable across specifications for the three dependent variables. This confirms the negative relationship between trust and macroeconomic volatility when

7. Entering all variables simultaneously, as well as adding continental fixed effects does not alter the results presented here.

Table 2.1: Cross country relationship between trust and macroeconomic volatility, controlling for average growth and initial GDP per capita.

Dependent variables are three different measures of macroeconomic volatility.						
	(1)	(2)	(3)	(4)	(5)	(6)
	Sd		Freq		Min	
Trust	-0.09*** (0.02)	-0.04** (0.02)	-0.22*** (0.05)	-0.04 (0.04)	-0.25*** (0.06)	-0.11** (0.05)
Growth		-0.14 (0.24)		-2.95*** (0.62)		-1.09* (0.61)
Initial GDP		-0.78** (0.32)		-1.37 (0.87)		-2.86*** (0.90)
Continental fixed effects		Yes		Yes		Yes
Observations	56	56	56	56	56	56
Adjusted R-squared	0.33	0.52	0.24	0.66	0.28	0.44

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. OLS regressions. All regressions include a constant term. *Trust* is the share of people who answer “*most people can be trusted*” to the following question of the World Values Survey between 1981 and 2008: “*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*” *Growth* is the average growth rate between 1970 and 2008. *Initial GDP* is the log of real GDP per capita in 1970. Continental fixed effects are included for Africa, Asia and Oceania, Europe, North America, and South America. Dependent variables are defined over the period 1970-2008. *Sd* is the standard deviation of real GDP per capita growth rate. *Freq* is the frequency of real GDP per capita negative growth. *Min* is the absolute value of the largest drop in real GDP per capita.

different economic covariates are taken into account.

It is still possible that the effect of trust on macroeconomic stability is mediated by omitted variables, or that trust is simply a proxy for another key socio-economic determinant of volatility. If this turns out to be true, then the estimated coefficient of trust should be weaker and less significant when introducing such variables. Obvious candidates are the quality of institutions, social fractionalization, education of the population, violence, and inequalities. Table 2.3, and tables 2.9 and 2.10 in appendix, display the estimated coefficients of equation (2.1) when such variables are entered as explanatory variables. For the same reason as above, variables are introduced in separate regressions. In table 2.3, the dependent variable is the standard deviation of real GDP per capita growth rate. In column 1, differences in the quality of institutions across countries are taken into account by the revised polity score from the Polity IV Project defined in 1970.⁸ This variable measure the degree

8. A similar candidate from the same data set would be the measure of constraints

Table 2.2: Cross country relationship between trust and macroeconomic volatility, controlling for public expenditure, openness, and changes in terms of trade.

	Dependent variables are three different measures of macroeconomic volatility.								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Sd			Freq			Min	
Trust	-0.05*** (0.02)	-0.04*** (0.02)	-0.04*** (0.02)	-0.06* (0.03)	-0.06* (0.03)	-0.05 (0.04)	-0.12** (0.05)	-0.12** (0.05)	-0.10** (0.04)
Growth	-0.39** (0.16)	-0.43** (0.18)	-0.33* (0.19)	-3.51*** (0.58)	-3.27*** (0.65)	-3.15*** (0.62)	-1.43*** (0.43)	-1.40*** (0.51)	-1.30** (0.51)
Initial GDP	-1.19*** (0.23)	-1.16*** (0.27)	-1.05*** (0.29)	-3.09*** (0.62)	-2.50*** (0.61)	-2.27*** (0.65)	-3.32*** (0.82)	-3.21*** (0.87)	-2.93*** (0.91)
Initial public expenditure	-0.01 (0.02)			-0.12** (0.05)			-0.02 (0.05)		
Initial trade openness		0.01*** (0.00)			0.01 (0.02)			0.00 (0.01)	
Terms of trade volatility			0.02 (0.02)			0.06 (0.05)			0.08** (0.04)
Observations	56	56	56	56	56	56	56	56	56
Adjusted R-squared	0.51	0.52	0.53	0.68	0.63	0.65	0.45	0.45	0.48

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. OLS regressions. All regressions include a constant term. *Trust* is the share of people who answer “most people can be trusted” to the following question of the World Values Survey between 1981 and 2008: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” *Growth* is the average growth rate between 1970 and 2008. *Initial GDP* is the log of real GDP per capita in 1970. Dependent variables are defined over the period 1970-2008. *Sd* is the standard deviation of real GDP per capita growth rate. *Freq* is the frequency of real GDP per capita negative growth. *Min* is the absolute value of the largest drop in real GDP per capita. *Initial public expenditure* is the share of public expenditure in GDP in 1970. *Initial openness* is the value of (Imports + Exports)/GDP in 1970. *Terms of trade volatility* is the standard deviation of terms of trade between 1970 and 2008.

of democracy of societies. The estimated coefficient of this variable is negative and significantly different from zero. A one standard deviation change in the polity score is associated with a change of volatility that represents a third of the standard deviation of this variable. However, the estimated coefficient of trust is leaved unchanged with respect to previous specifications, suggesting that trust reduces macroeconomic volatility by itself and not only by allowing to achieve a higher level of democracy. In column 2, I use ethnolinguistic fractionalization from Easterly and Levine (1997) as alternative covariate. This variable is another measure of the cohesion of the society that could also be related to volatility (and trust).⁹ Education, measured as the average of schooling years in the total population aged 25 and over from Barro and Lee (2001) is entered in column 3. In column 4, the number of years in civil war according to the UCDP/PRIO Armed Conflict Dataset is introduced as additional explanatory variable. Finally, I use the Gini coefficient from the World Development Indicators in columns 5. All these variables leave the size and the significance level of the coefficient of trust virtually unchanged. These results suggest that it may be reasonable to rule out the omitted variables bias hypotheses stated above. Tables 2.9 and 2.10 reproduce exactly the same exercise as in table 2.3 with the two other measures of macroeconomic volatility. In all cases, the estimated coefficient of trust is virtually unchanged.

This set of simple cross section estimations show that the negative relationship between trust and macroeconomic volatility is robust to the introduction of various alternative determinants of volatility and competitive variables for trust. At this stage of the analysis, no causality statement would be reasonable. However, we can temporarily conclude that there is a strong negative relationship between trust and macroeconomic volatility across space.

on the executive. However, this variable does not appear to be significantly related to volatility.

9. Results are identical if ethnic fractionalization from Alesina et al. (2003) is used instead of ethnolinguistic fractionalization.

Table 2.3: Cross country relationship between trust and macroeconomic volatility, controlling for the level of democracy, fractionalization, education, civil war, and inequalities.

Dependent variable is the standard deviation of real GDP per capita growth rate.					
	(1)	(2)	(3)	(4)	(5)
Trust	-0.05** (0.02)	-0.05*** (0.02)	-0.05** (0.02)	-0.06*** (0.02)	-0.06** (0.02)
Initial polity score	-0.00 (0.03)				
Ethnolinguistic fractionalization		-0.02 (0.01)			
Education			-0.00 (0.13)		
Civil war				-0.17** (0.07)	
Gini index					-0.03 (0.04)
Observations	56	56	56	56	56
Adjusted R-squared	0.51	0.53	0.51	0.56	0.51

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses. OLS regressions. All regressions include a constant term, average growth between 1970 and 2008 and real GDP per capita in 1970. *Trust* is the share of people who answer “*most people can be trusted*” to the following question of the World Values Survey between 1981 and 2008: “*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*” Dependent variable is defined over the period 1970-2008. *Initial polity score* is the revised combined polity score in 1970 from the Polity IV project. *Ethnolinguistic fractionalization* is from Easterly and Levine (1997). *Education* is the average of schooling years in the total population aged 25 and over from Barro and Lee (2001). *Civil war* is the number of years in civil war from the UCDP/PRIO Armed Conflict Dataset. *Gini index* is from the World Development Indicators.

2.4 Instrumental variables estimates

In this section, I use the inherited trust of US immigrants as an instrument for trust in their origin country. I first briefly present the estimation method for inherited trust. Then, I use inherited trust as an instrument for trust in cross section estimations. Finally, I use changes in inherited trust to track changes in trust at the country level over the 20th century.

2.4.1 Inherited trust

It has been shown by Giuliano and Spilimbergo (2009) that macroeconomic events, in particular macroeconomic shocks, are likely to alter beliefs of agents. As a consequence, aggregate trust could be influenced by past

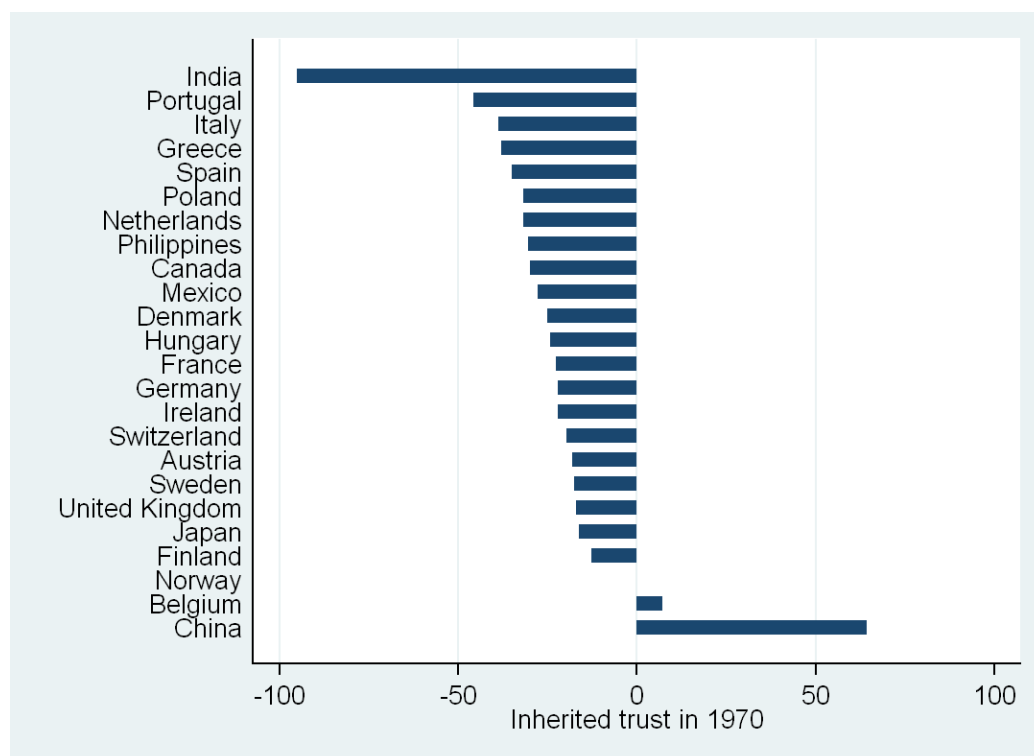
and current macroeconomic volatility. Although this may look totally opposed to the exogeneity assumption for trust made above, their approach is compatible with mine. In fact, they argue that beliefs are formed during early adulthood, this is the so called “impressionable years hypothesis”, and remain almost unchanged after it. Hence, beliefs are changing slowly over time because only a fraction of the population is likely to change beliefs as a reaction to current macroeconomic fluctuations. Thus, the identification hypothesis used in the former regressions remain plausible despite the potential reverse causality in the medium term. However, to be sure to avoid reverse causality concerns and consistent with the view of deep trust as a indicator of latent social capital, I will now use inherited trust of US immigrant as an alternative measure of latent trust in their origin country.

This strategy has for main advantage to avoid potential reverse causality from macroeconomic instability to trust. This approach relies on the assumption that differences in beliefs among Americans with foreign origins are linked to differences in beliefs between their countries of origin. In order to be sure that observed Americans have not been affected by macroeconomic volatility in their origin country after 1970, I focus on individuals whose forbears have immigrated before 1970. Hence, assuming 25 years between each generation, selected individuals are immigrants of second generation born before 1970, third generation immigrants born before 1995, and fourth generation immigrants.

Having estimated equation (2.3), marginal effects are reported in table 2.11 in appendix. Marginal effects of origin countries are also represented in figure 2.2. This figure should be read as follows: in 1970, an American with Irish ancestors is 8.6 percentages points less likely to answer that “*most people can be trusted*” than an American whose forbears came from Norway. The main drawback of this approach is to shrink the number of available countries from 56 to 24.¹⁰ Most of the least developed countries are lost due to this method.

10. Observed origin countries are following: Austria, Canada, China, Denmark, United Kingdom, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Mexico, Netherlands, Norway, Philippines, Poland, Spain, Sweden, Switzerland, India, Portugal and Belgium.

Figure 2.2: Inherited trust of Americans in 1970 by country of origin.



Source: General Social Survey (author's calculation). The figure plots the difference in trust with respect to Americans with Norwegian ancestors for Americans of different origins.

2.4.2 Cross section instrumental variables estimates

In table 2.4, I present estimated coefficients of the effect of trust on macroeconomic volatility when trust is instrumented by inherited trust. Summary statistics for the observations used in these estimations are presented in table 2.12 presented in appendix. In order to preserve degrees of freedom, I restrict the specification to a limited number of explanatory variables: trust (instrumented by inherited trust), (log of) real GDP per capita in 1970, institutional quality (measured using the revised polity score), and a dummy variable that splits the sample between European and non-European countries.

Column 1 of table 2.4 presents the estimation of the first stage regression. As shown by the estimated coefficient of inherited trust, this variable is

strongly correlated with trust in origin country. Columns 2, 4, and 6 present the estimated coefficients of equation (2.1) for the three measures of macroeconomic volatility when trust is predicted using the first stage regression. As a comparison, columns 3, 5, and 7 presents the standard OLS estimates for the same set of countries. For the three dependent variables, the estimated coefficient of trust using the instrumental variable approach is negative and significant. Moreover, the estimated coefficients are larger and at least statistically significant at a lower level of confidence than the estimated coefficients using the standard OLS approach. In column 7, when the dependent variable is the absolute value of the largest drop in real GDP per capita, a one standard deviation change in trust is associated with a change in the dependent variable that amounts roughly one standard deviation of this variable. Order of magnitude are similar for other columns. These simple comparisons suggest that the previous strategy was leading to an under-estimation of the effect of trust on macroeconomic volatility.

Using instrumental variables allows to limit endogeneity concerns and to show that trust has a strong and significant effect on the indicators of macroeconomic instability in cross country regressions. Accordingly, the results of this instrumental variable strategy offer the opportunity to state that trust is not only associated with macroeconomic stability in a cross section of countries, but also that trust decreases macroeconomic volatility.

2.4.3 Within estimates

In this sub-section, I will now investigate whether the effect of trust on volatility is also valid at the country level. To do so, I use changes in inherited trust of US immigrants as a proxy for trust changes in their origin country. Following Algan and Cahuc (2010), I use different immigration waves to assess changes in inherited trust. Accordingly, inherited trust in year T is estimated using second generation immigrants born before T , third generation immigrants born before $T + 25$ and fourth generation immigrants born before $T + 50$. I estimate inherited trust in 1910 and 1970 with respect to

Table 2.4: Cross country relationship between trust and macroeconomic volatility, instrumenting trust with inherited trust.

Dependent variables are three different measures of macroeconomic volatility.						
	(1) First stage Trust	(2) IV	(3) OLS	Freq		
			Sd	(4) IV	(5) OLS	(6) IV
						Min
Inherited trust	0.24** (0.10)					
Trust		-0.03** (0.01)	-0.01 (0.01)	-0.10 (0.06)	-0.07 (0.06)	-0.22*** (0.05)
Initial GDP	-0.00 (3.90)	-0.42*** (0.10)	-0.41** (0.15)	0.21 (0.63)	0.24 (0.77)	0.39 (0.75)
Initial polity score	0.94** (0.40)	-0.04** (0.02)	-0.05** (0.02)	0.02 (0.09)	-0.00 (0.09)	-0.20* (0.11)
Europe	2.23 (8.14)	-0.10 (0.27)	-0.15 (0.30)	-1.77 (1.08)	-1.85 (1.20)	-0.37 (1.06)
Observations	24	24	24	24	24	24
Adjusted R-squared	0.27		0.58		0.08	0.30

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. All regressions include a constant term. In columns 2, 4, and 6, *trust* is instrumented by *inherited trust*. *Trust* is the share of people who answer “most people can be trusted” to the following question of the World Values Survey between 1981 and 2008: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” *Inherited trust* is inherited trust of Americans with foreign ancestors in 1970. See the text for the relevant estimation method. Dependent variables are defined over the period 1970-2008. *Sd* is the standard deviation of real GDP per capita growth rate. *Freq* is the frequency of real GDP per capita negative growth. *Min* is the absolute value of the largest drop in real GDP per capita. *Initial GDP* is the log of real GDP per capita in 1970. *Initial polity score* is the revised combined polity score in 1970 from the Polity IV project. *Europe* is a dummy variable that splits the sample between European and non-European countries.

Norwegian immigrants.¹¹ Due to the limited number of observations available for inherited trust in 1910, the sample is restricted to 22 countries.¹² I use the Maddison database to construct the three indicators of macroeconomic volatility for the periods 1910-1940 and 1970-2000. The choice of this two periods is made essentially because the estimation of inherited trust for different dates requires both a sufficient number of observations for each period and a sufficient gap to avoid overlapping generations. I then estimate equation (2.2) using a reduced form approach since trust is not directly observable between 1910 and 1940. Hence, inherited trust is used here as a proxy for trust.

Table 2.5 presents the estimated coefficient of OLS regressions with country fixed effects. Covariates include initial real GDP per capita and average institutional quality for each period. In addition, I introduce a time dummy to account for systematic convergence or divergence of countries in terms of macroeconomic volatility. The estimated coefficient of inherited trust is not significant when the dependent variable is the standard deviation of real GDP per capita growth or the absolute value of the largest drop in real GDP per capita. However, it is statistically significant at the 5% level of confidence when the dependent variable is the frequency of real GDP per capita negative growth as shown by column 2. In that case, the coefficient is negative. This means that an increase in trust across time is associated with a decrease in macroeconomic volatility as measured by this dependent variable.

This relationship between trust and macroeconomic volatility across time is represented by figure 2.3. This figure plots changes in inherited trust relatively to Norway between 1910 and 1940, and changes in the frequency of real GDP per capita negative growth between 1910-1940 and 1970-2000. It appears that changes in trust explain a substantial part of within country

11. Inherited trust in 1910 is estimated using second generation immigrants born before 1910, third generation immigrants born before 1935 and fourth generation immigrants born before 1960. Inherited trust in 1970 is estimated using second generation immigrants born between 1910 and 1970, third generation immigrants born between 1935 and 1995 and fourth generation immigrants born after 1960.

12. Observed countries are following: Austria, Belgium, Canada, Czechoslovakia, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Mexico, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, United Kingdom and Yugoslavia.

Table 2.5: Within country relationship between trust and macroeconomic volatility.

Dependent variables are three different measures of macroeconomic volatility.			
	(1) Sd	(2) Freq	(3) Min
Inherited trust	0.025 (0.054)	-0.253** (0.116)	-0.009 (0.105)
Initial GDP	-1.870 (2.119)	0.140 (11.525)	-2.569 (5.658)
Polity score	-0.078 (0.090)	-0.546 (0.626)	-0.864** (0.308)
Time	-0.208 (0.996)	-5.417 (5.534)	2.533 (2.444)
Observations	44	44	44
Number of countries	22	22	22
Adjusted within R-squared	0.0846	0.344	0.295

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses. OLS regressions. All regressions include an constant term and country fixed effects. *Inherited trust* is inherited trust of Americans with foreign ancestors in 1910 and 1970. See the text for the relevant estimation method. Dependent variables are defined over the periods 1910-1940 and 1970-2000. *Sd* is the standard deviation of real GDP per capita growth rate. *Freq* is the frequency of real GDP per capita negative growth. *Min* is the the absolute value of the largest drop in real GDP per capita. *Initial GDP* is the log of real GDP per capita in 1910 and 1970. *Polity score* is the revised combined polity score from the Polity IV project averaged over periods 1910-1940 and 1970-2000. Within each period, all variables are expresed relatively to Norway.

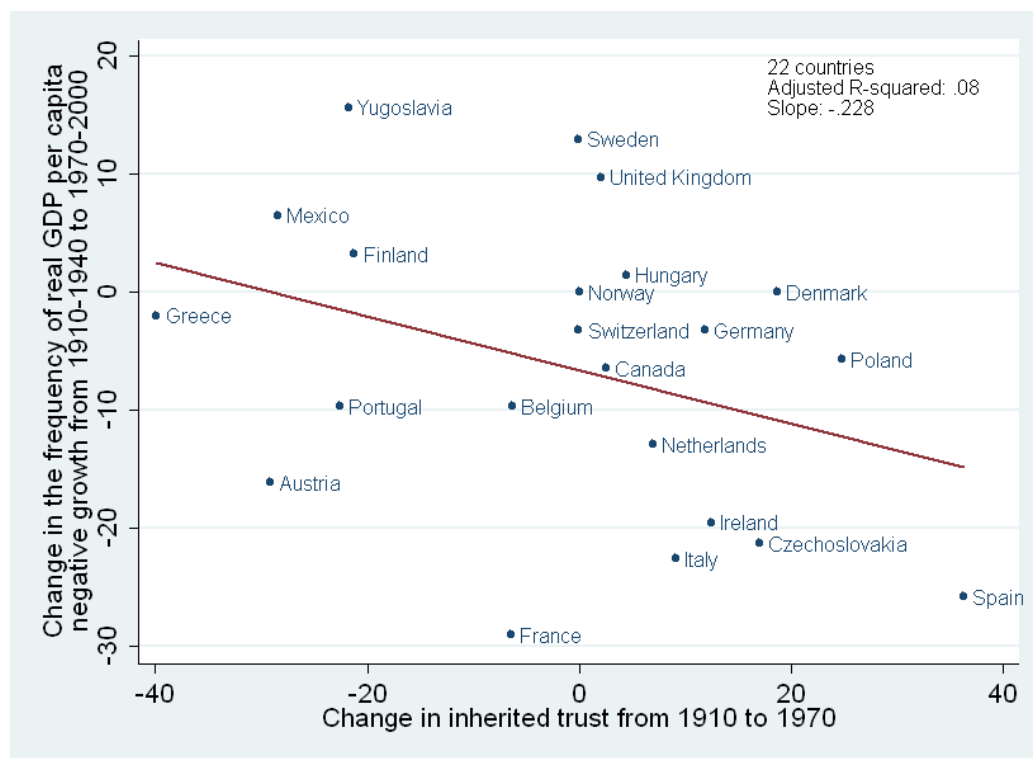
changes in macroeconomic volatility.

This result shows that changes in trust across time are also associated with opposite changes in macroeconomic volatility. Thus, the earlier results related in cross country regressions are also valid across time at the country level: increasing trust reduces macroeconomic volatility both in space and time.

2.5 Volatility of private investment

In this section, I first briefly present partial evidence to sustain the idea that trust reduces macroeconomic volatility through the investment channel mentioned in the introduction. I turn back to cross-section regressions and use the same sample of countries as for standard cross section estimates

Figure 2.3: Relationship between changes of the frequency of real GDP per capita negative growth from 1910-1940 to 1970-2000 and changes in inherited trust from 1910 to 1970.



Sources: Maddison database and General Social Survey (author's calculation).

presented in section 2.3.¹³ Then, I discuss how to test the hypothesis that trust reduces volatility through the length of business relations.

Table 2.6 displays the estimated coefficients of two seemingly unrelated regressions. The dependent variable is the standard deviation of real investment per capita growth rate in column 1. The second dependent variable is the standard deviation of real public expenditure per capita growth rate. Seemingly unrelated regressions allow error terms of both equations to be correlated as both variables are components of total macroeconomic volatility. The comparison of the two coefficients of trust determine which component

13. Results presented in this section also hold if the instrumental variable approach is used on the limited sample of countries.

Table 2.6: Cross country relationships between trust and volatility of investment and public expenditure.

Dependent variables are the volatility of investment and the volatility of public expenditure.		
	(1)	(2)
	Sd of investment	Sd of public expenditure
Trust	-0.17*** (0.05)	-0.06 (0.04)
Growth	-1.51*** (0.55)	-1.29*** (0.44)
Initial GDP	-3.09*** (0.72)	-3.57*** (0.57)
Observations	56	56
Adjusted R-squared	0.53	0.56

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors in parentheses. Seemingly unrelated equations. All regressions include a constant term. *Trust* is the share of people who answer “most people can be trusted” to the following question of the World Values Survey between 1981 and 2008: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” *Growth* is the average growth rate between 1970 and 2008. *Initial GDP* is the log of real GDP per capita in 1970. Dependent variables are defined over the period 1970-2008. *Sd of investment* is the standard deviation of real investment per capita growth rate. *Sd of public expenditure* is the standard deviation of real public expenditure per capita growth rate.

of GDP is the most sensitive to trust in terms of volatility.

As shown by estimated coefficients, there is no obvious relationship between trust and volatility of public expenditure. On the opposite, volatility of investment is highly sensitive to changes in trust. This suggests that trust has an effect on macroeconomic volatility through the investment channel, not through the public expenditure channel. This interpretation fosters the idea that trust acts as a social commitment which induces greater stability of private investment. This simultaneously invalidates the idea that governments create less economic turbulences in countries with higher trust.

As stressed in the introduction, I conjecture that trust lower macroeconomic volatility *via* the duration of business relations. In the framework of a standard production with two inputs represented by capital and labor, this hypothesis may be tested by looking at the length of contractual relations in which firms are engaged. An first empirical test of this hypothesis would be to look at the cross-country correlation between trust and the average duration of relations between firms at the country level. I would expect

both supply contracts to last longer and joint-venture agreements to run over longer periods of time in high-trust countries. To my best knowledge, such data are not easily available.

Another way to test this hypothesis would be to look at differences in average job tenure across countries, assuming that employers engaging in longer relations with workers also set up investments project over a longer time horizon. In such a case, a positive correlation between average job tenure and trust would provide a first validation of this reasoning. However, such a correlation is not straightforward as it can be deduced from insights drawn from Aghion et al. (2010). A way to interpret the work of these authors is that agents tend to secure jobs in low-trust societies more than in high-trust societies as they fear to further interact with other employers if they change job. As a consequence, job tenure would be longer in low-trust societies.

2.6 Conclusion

In a cross section of countries, trust has been shown to be negatively associated with macroeconomic instability. Higher trust reduces the number of occurrences of negative growth, weakens the standard deviation of real GDP per capita growth rate, and limit the size of extreme negative growth events. Using trust of Americans as a latent indicator of trust in their origin country, I provided additional evidence of these effects, avoiding potential reverse causality concerns. In particular, I showed that an increase in trust implies a decrease in the frequency of real GDP per capita negative growth at the country level. Finally, turning back to simple cross country regressions, trust seems to reduce the volatility of investment, but not of public expenditure. This advocates the idea that trust weakens economic volatility by stabilizing private investment activities. All in all, estimates presented in this paper suggest that trust is likely to be a key determinant of macroeconomic stability. This set of aggregate results calls for further research to investigate both theoretically and empirically how trust translate to more stable investment at the individual level.

2.7 Appendix

Table 2.7: Trust by country and wave.

	Wave	Number of respondents	Trust	Change in trust
Algeria	1999-2004	1230	11.22	
Argentina	1981-1984	912	26.1	
	1989-1993	961	23.31	-2.79
	1994-1999	1053	17.57	-5.74
	1999-2004	1248	15.87	-1.7
	2005-2007	983	16.89	1.02
Australia	1981-1984	1189	48.19	
	1994-1999	2025	40.05	
	2005-2007	1403	48.18	
Austria	1989-1993	1301	31.82	
	1999-2004	1415	33.43	
Bangladesh	1994-1999	1492	20.91	
	1999-2004	1483	23.53	2.62
Belgium	1981-1984	1001	29.17	
	1989-1993	2576	33.5	4.33
	1999-2004	1824	29.22	
Brazil	1989-1993	1766	6.46	
	1994-1999	1141	2.8	-3.65
	2005-2007	1478	9.2	
Canada	1981-1984	1217	48.48	
	1989-1993	1673	53.08	4.6
	1999-2004	1910	36.96	
	2005-2007	2107	42.15	5.18
Chile	1989-1993	1458	22.7	
	1994-1999	977	21.39	-1.31
	1999-2004	1169	23.01	1.62
	2005-2007	984	12.4	-10.61
China	1989-1993	985	60.3	
	1994-1999	1445	52.32	-7.99
	1999-2004	963	54.52	2.2
	2005-2007	1873	52.27	-2.25
Colombia	1994-1999	5981	10.8	
	2005-2007	2993	14.47	
Denmark	1981-1984	1059	52.69	
	1989-1993	992	57.66	4.97
	1999-2004	986	66.53	
Dominican Republic	1994-1999	397	26.45	
Egypt	1999-2004	2965	37.91	
	2005-2007	3045	18.42	-19.49
El Salvador	1994-1999	1210	14.63	
Finland	1981-1984	983	57.17	
	1989-1993	558	62.72	5.55
	1994-1999	969	48.81	-13.91
	1999-2004	1015	57.44	8.63
	2005-2007	1000	58.8	1.36
France	1981-1984	1117	24.8	
	1989-1993	939	22.79	-2.01
	1999-2004	1560	21.35	
	2005-2007	996	18.67	-2.67
Germany	1981-1984	1084	32.29	
	1989-1993	2893	32.91	.62

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(continued)

	Wave	Number of respondents	Trust	Change in trust
	1994-1999	1956	33.28	.38
	1999-2004	1937	37.53	4.25
	2005-2007	1898	34.09	-3.44
Ghana	2005-2007	1527	8.51	
Greece	1999-2004	986	23.73	
Guatemala	2005-2007	995	15.68	
Hungary	1981-1984	1409	33.57	
	1989-1993	968	24.59	-8.98
	1994-1999	642	22.74	-1.85
	1999-2004	980	22.35	-.39
India	1989-1993	2365	35.43	
	1994-1999	1769	37.87	2.44
	1999-2004	1898	40.99	3.12
	2005-2007	1778	23.28	-17.71
Indonesia	1999-2004	885	51.64	
	2005-2007	1775	42.54	-9.1
Ireland	1981-1984	1170	41.11	
	1989-1993	988	47.37	6.26
	1999-2004	992	35.99	
Israel	1999-2004	1168	23.46	
Italy	1981-1984	1302	26.8	
	1989-1993	1932	35.3	8.5
	1999-2004	1946	32.63	
	2005-2007	953	29.17	-3.46
Japan	1981-1984	1099	41.49	
	1989-1993	911	41.71	.22
	1994-1999	990	42.32	.61
	1999-2004	1254	43.06	.74
	2005-2007	1026	39.08	-3.98
Jordan	1999-2004	1197	27.65	
	2005-2007	1191	31.32	3.67
South Korea	1981-1984	918	38.02	
	1989-1993	1229	34.17	-3.84
	1994-1999	1247	30.31	-3.86
	1999-2004	1200	27.33	-2.98
	2005-2007	1184	30.15	2.82
Malaysia	2005-2007	1201	8.83	
Mali	2005-2007	1303	17.5	
Mexico	1981-1984	1772	17.49	
	1989-1993	1384	33.45	15.96
	1994-1999	2231	31.15	-2.3
	1999-2004	1497	21.84	-9.31
	2005-2007	1548	15.57	-6.28
Netherlands	1981-1984	1072	44.78	
	1989-1993	965	53.47	8.7
	1999-2004	997	60.08	
	2005-2007	996	44.48	-15.6
New Zealand	1994-1999	1162	49.05	
	2005-2007	905	51.16	
Norway	1981-1984	958	60.86	
	1989-1993	1156	65.05	4.2
	1994-1999	1118	65.3	.24
	2005-2007	1018	74.17	
Peru	1994-1999	1176	5.02	
	1999-2004	1490	10.67	5.65
	2005-2007	1480	6.42	-4.25

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(continued)

	Wave	Number of respondents	Trust	Change in trust
Philippines	1994-1999	1191	5.54	
	1999-2004	1185	8.61	3.07
Poland	1989-1993	1716	31.82	
	1994-1999	1089	17.91	-13.91
	1999-2004	1059	18.41	.51
	2005-2007	955	19.48	1.06
Portugal	1989-1993	1149	21.67	
	1999-2004	975	12.31	
Rwanda	2005-2007	1499	4.87	
Singapore	1999-2004	1496	14.71	
South Africa	1981-1984	1433	29.03	
	1989-1993	2594	29.14	.11
	1994-1999	2845	15.85	-13.29
	1999-2004	2956	13.09	-2.76
	2005-2007	2967	17.49	4.4
Spain	1981-1984	2157	35.14	
	1989-1993	3887	34.24	-.9
	1994-1999	1167	29.73	-4.51
	1999-2004	2295	36.25	6.52
	2005-2007	1184	19.93	-16.32
Sweden	1981-1984	876	56.74	
	1989-1993	944	66.1	9.37
	1994-1999	957	59.67	-6.44
	1999-2004	974	66.32	6.66
	2005-2007	963	68.02	1.69
Switzerland	1989-1993	863	42.64	
	1994-1999	1131	36.96	-5.68
	2005-2007	1187	51.05	
Thailand	2005-2007	1525	41.51	
Trinidad and Tobago	2005-2007	1000	3.8	
Turkey	1989-1993	1012	9.98	
	1994-1999	1892	5.5	-4.48
	1999-2004	4547	15.99	10.49
	2005-2007	1339	4.78	-11.21
Uganda	1999-2004	998	7.82	
United Kingdom	1981-1984	1425	43.3	
	1989-1993	1738	43.67	.37
	1994-1999	1073	29.64	-14.03
	1999-2004	1923	34.17	4.53
	2005-2007	1022	30.43	-3.73
United States	1981-1984	2259	40.5	
	1989-1993	1782	51.07	10.56
	1994-1999	1511	35.94	-15.13
	1999-2004	1188	36.28	.34
	2005-2007	1241	39.56	3.29
Uruguay	1994-1999	975	21.64	
	2005-2007	865	28.44	
Venezuela	1994-1999	1164	13.75	
	1999-2004	1193	15.93	2.18
Zambia	2005-2007	1403	11.55	
Zimbabwe	1999-2004	984	11.18	

This table presents the list of the 56 countries used in cross country regressions. *Trust* indicates the share of people who answer “*most people can be trusted*” to the following question of the World Values Survey: “*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*”. For countries which have been surveyed in two or more consecutive waves, *Change in trust* indicates the change of *trust* from one wave to the next.

Table 2.8: Summary statistics for cross section estimates.

	Mean	Standard deviation	Min	Max
Trust	27.69	16.22	3.8	66.35
Sd	4.25	2.59	1.57	15.14
Freq	6.26	7.03	0.07	34.78
Min	8.84	7.57	0.62	45.38
Growth	2.37	1.43	-1.28	7.78
Initial GDP	8.54	1.18	5.82	10.16
Initial public expenditure	70.78	14.09	32.78	102.02
Initial openness	42.99	40.71	9.16	271.50
Terms of trade volatility	18.77	16.05	2.31	65.62
Initial polity score	2.36	7.48	-9	10
Ethnolinguistic fractionalization	26.34	27.92	0	100
Education	6.06	2.79	0.48	11.41
Civil war	1.73	3.62	0	13
Gini index	39.4	9.19	24.7	58.72

Trust is the share of people who answer “most people can be trusted” to the following question of the World Values Survey between 1981 and 2008: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” *Sd* is the standard deviation of real GDP per capita growth rate over the period 1970-2008. *Freq* is the frequency of real GDP per capita negative growth over the period 1970-2008. *Min* is the absolute value of the largest drop in real GDP per capita over the period 1970-2008. *Growth* is the average growth rate of real GDP per capita over the period 1970-2008. *Initial GDP* is the log of real GDP per capita in 1970. *Initial public expenditure* is the share of public expenditure in GDP in 1970. *Initial openness* is the value of (Imports + Exports)/GDP in 1970. *Terms of trade volatility* is the standard deviation of terms of trade over the period 1970-2008. *Initial polity score* is the revised combined polity score in 1970 from the Polity IV project. *Ethnolinguistic fractionalization* is from Easterly and Levine (1997). *Education* is the average of schooling years in the total population aged 25 and over between 1970 and 2008 from Barro and Lee (2001). *Civil war* is the number of years in civil war over the period 1970-2008 from the UCDP/PRIO Armed Conflict Dataset. *Gini index* is from the World Development Indicators.

Table 2.9: Cross country relationship between trust and macroeconomic volatility, controlling for the level of democracy, fractionalization, education, civil war, and inequalities (continued).

Dependent variable is the frequency of real GDP per capita negative growth.					
	(1)	(2)	(3)	(4)	(5)
Trust	-0.07 (0.04)	-0.07* (0.04)	-0.07* (0.04)	-0.08** (0.04)	-0.04 (0.04)
Initial polity score	-0.02 (0.08)				
Ethnolinguistic fractionalization		0.01 (0.03)			
Education			0.05 (0.32)		
Civil war				-0.20 (0.21)	
Gini index					0.09 (0.09)
Observations	56	56	56	56	56
Adjusted R-squared	0.63	0.63	0.63	0.64	0.64

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. OLS regressions. All regressions include a constant term, average growth between 1970 and 2008 and real GDP per capita in 1970. *Trust* is the share of people who answer “*most people can be trusted*” to the following question of the World Values Survey between 1981 and 2008: “*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*” Dependent variable is defined over the period 1970-2008. *Initial polity score* is the revised combined polity score in 1970 from the Polity IV project. *Ethnolinguistic fractionalization* is from Easterly and Levine (1997). *Education* is the average of schooling years in the total population aged 25 and over from Barro and Lee (2001). *Civil war* is the number of years in civil war from the UCDP/PRIO Armed Conflict Dataset. *Gini index* is from the World Development Indicators.

Table 2.10: Cross country relationship between trust and macroeconomic volatility, controlling for the level of democracy, fractionalization, education, civil war, and inequalities (continued).

Dependent variable is the absolute value of the largest drop in real GDP per capita.					
	(1)	(2)	(3)	(4)	(5)
Trust	-0.11** (0.05)	-0.12** (0.05)	-0.12** (0.05)	-0.13*** (0.05)	-0.16** (0.07)
Initial polity score	-0.11 (0.09)				
Ethnolinguistic fractionalization		-0.07* (0.04)			
Education			-0.04 (0.39)		
Civil war				-0.18 (0.22)	
Gini index					-0.13 (0.14)
Observations	56	56	56	56	56
Adjusted R-squared	0.46	0.51	0.45	0.46	0.47

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses. OLS regressions. All regressions include a constant term, average growth between 1970 and 2008 and real GDP per capita in 1970. *Trust* is the share of people who answer “*most people can be trusted*” to the following question of the World Values Survey between 1981 and 2008: “*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*” Dependent variable is defined over the period 1970-2008. *Initial polity score* is the revised combined polity score in 1970 from the Polity IV project. *Ethnolinguistic fractionalization* is from Easterly and Levine (1997). *Education* is the average of schooling years in the total population aged 25 and over from Barro and Lee (2001). *Civil war* is the number of years in civil war from the UCDP/PRIO Armed Conflict Dataset. *Gini index* is from the World Development Indicators.

Table 2.11: Estimation of inherited trust of Americans in 1970.

The dependent variable is trust.			
Male	0.013** (0.006)	Germany	-0.086*** (0.003)
Age	0.010*** (0.002)	Greece	-0.143*** (0.004)
Age ²	-0.000*** (0.000)	Hungary	-0.093*** (0.004)
Married	0.045*** (0.008)	India	-0.308*** (0.015)
Protestant	0.009 (0.009)	Ireland	-0.086*** (0.004)
Catholic	0.031 (0.021)	Italy	-0.147*** (0.010)
Education	0.043*** (0.002)	Japan	-0.063** (0.028)
Employed	0.039*** (0.010)	Mexico	-0.106*** (0.015)
White	0.102*** (0.039)	Netherlands	-0.121*** (0.002)
Income	0.002 (0.002)	Norway	<i>Reference</i>
Austria	-0.070*** (0.006)	Philippines	-0.116*** (0.016)
Belgium	0.029*** (0.011)	Poland	-0.122*** (0.009)
Canada	-0.114*** (0.007)	Portugal	-0.169*** (0.007)
China	0.248*** (0.031)	Spain	-0.132*** (0.008)
Denmark	-0.097*** (0.003)	Sweden	-0.068*** (0.003)
Finland	-0.050*** (0.006)	Switzerland	-0.077*** (0.003)
France	-0.088*** (0.004)	United Kingdom	-0.067*** (0.003)
Observations			13,011
Pseudo R-squared			0.061

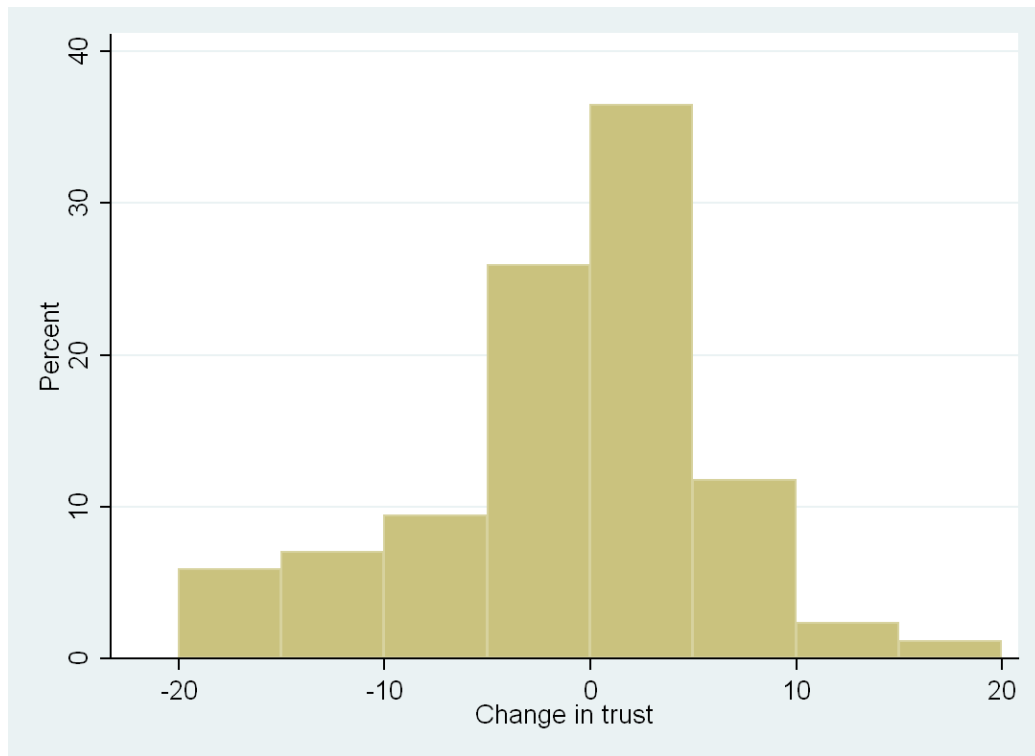
*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses, clustered by country of origin. Marginal effects of a probit regression. The regression also includes a fixed effect for each year of interview. The dependent variable is equal to 1 if the respondent answers “*most people can be trusted*” to the following question of the General Social Survey: “*Generally speaking, would you say that most people can be trusted or that you can’t be too careful in life?*” The sample is made of immigrants of second generation born before 1970, third generation immigrants born before 1995, and fourth generation immigrants.

Table 2.12: Summary statistics for cross section instrumental variables estimates.

	Mean	Standard deviation	Min	Max
Trust	37.49	15.16	7.07	66.35
Inherited trust	-22.9	26.35	-95.18	64.44
Sd	2.74	1.01	1.57	4.68
Freq	2.67	2.69	0.07	12.89
Min	4.74	3.76	0.62	12.87
Initial GDP	9.16	1.04	5.97	10.16
Initial polity score	4.50	7.91	-9	10
Europe	0.75	0.44	0	1

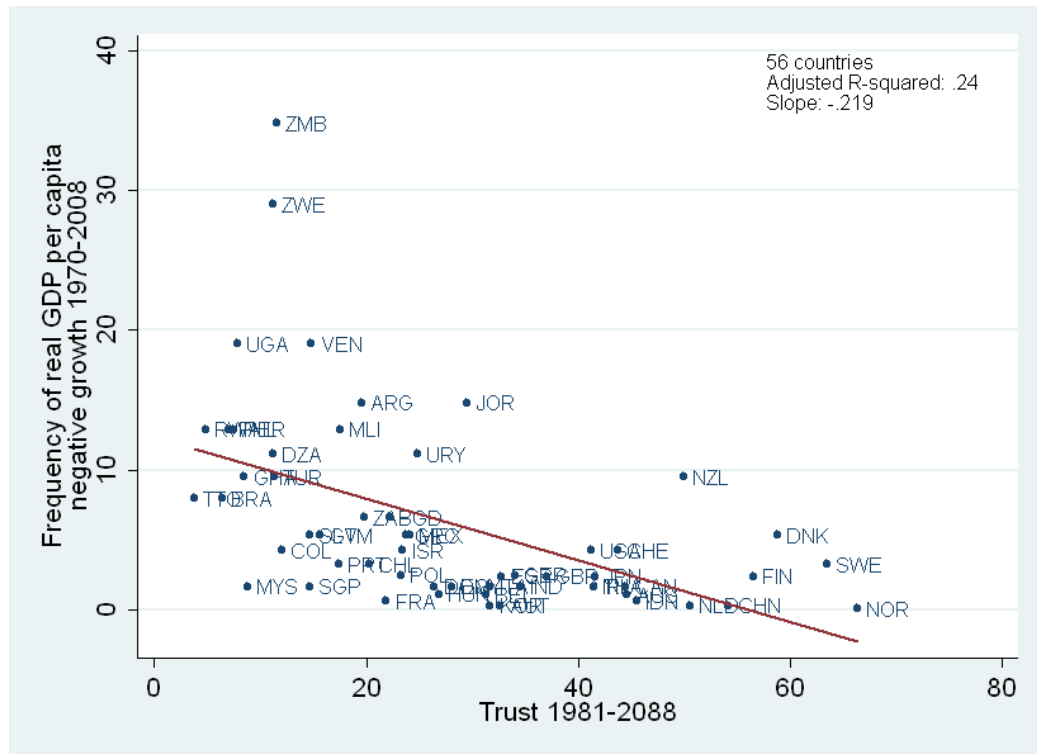
Trust is the share of people who answer “*most people can be trusted*” to the following question of the World Values Survey between 1981 and 2008: “*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*” *Inherited trust* is the difference in 1970 in trust of Americans with ancestors from various origins with respect to Americans with Norwegians ancestors. See the text for the relevant estimation method. *Sd* is the standard deviation of real GDP per capita growth rate over the period 1970-2008. *Freq* is the frequency of real GDP per capita negative growth over the period 1970-2008. *Min* is the the absolute value of the largest drop in real GDP per capita over the period 1970-2008. *Initial GDP* is the log of real GDP per capita in 1970. *Initial polity score* is the revised combined polity score in 1970 from the Polity IV project. *Europe* is a dummy variable that splits the sample between European and non-European countries.

Figure 2.4: Distribution of changes in trust at the country level from one wave to the next.



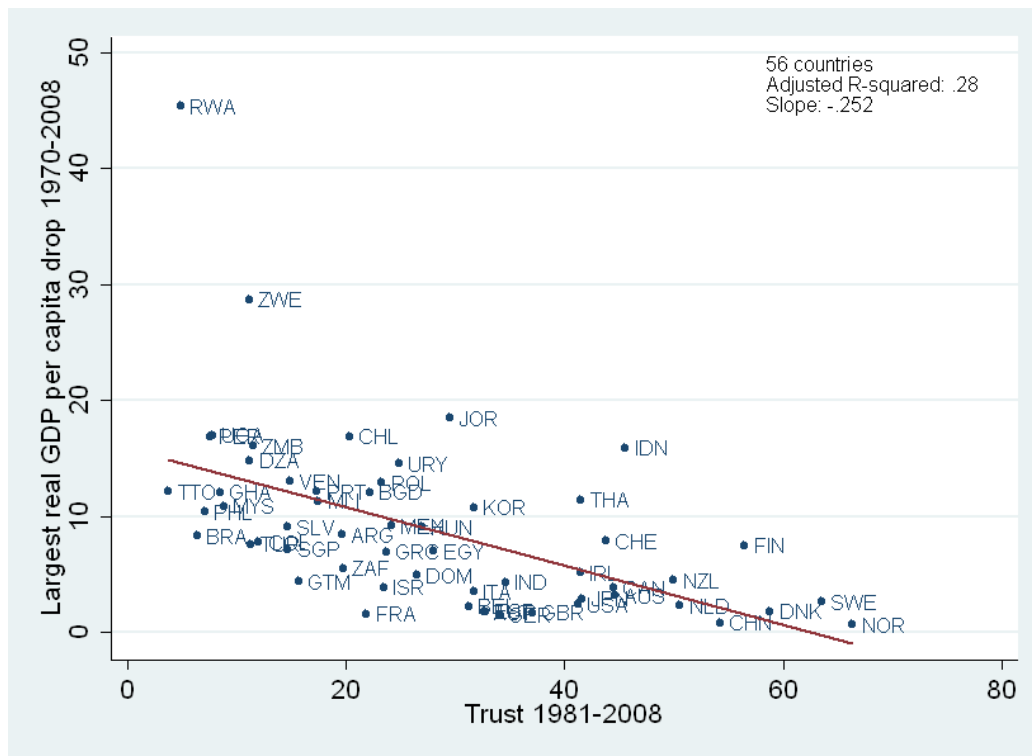
Source: World Values Survey. The figure plots the distribution of changes in the share of trusty people in a country between two consecutive waves. Data used are presented in table 2.7. The number of observations is 85, the mean of changes in trust is -1.27 , and the standard deviation equals 7.06 .

Figure 2.5: Relationship between the frequency of real GDP per capita negative growth (1970-2008) and trust (1981-2008).



Sources: World Values Survey and Penn World Table.

Figure 2.6: Relationship between the largest real GDP per capita drop (1970-2008) and trust (1981-2008).



Chapter 3

The co-evolution of social capital and financial development

This paper documents the co-evolution of social capital, measured as generalized trust, and financial development over the twentieth century. I use cross generations inherited trust of Americans with foreign ancestors to track trust in their home country in 1913 and 1990. The paper documents a positive cross-section relationship between trust and financial development in 1913. Then, I show that increasing trust is also associated with increasing financial development at the country level over the twentieth century. In other words, countries that experienced larger improvements in trust also experienced a stronger financial development. These results are robust to the introduction of real GDP per capita and trade openness as alternative determinants of financial development.

3.1 Introduction

As noted by Arrow (1972), “*virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time.*” This statement cannot be more valid than for financial transactions involving debtors and creditors that are mutually dependent as soon as a contract is concluded between them. Accordingly, trust and

financial development should evolve simultaneously over time.

Trust is a specific component of social capital. Financial development and social capital are two fields that have received a large interest during the recent years. However, the link between these two concepts has been directly addressed only by Guiso et al. (2004). These authors exploited social capital differences within Italy. In this paper, I document the co-evolution of social capital, measured as generalized trust, and financial development over the twentieth century at the country level. As in Rajan and Zingales (2003), financial development in 1913 and 1990 is measured using the ratio of deposits in commercial banks over GDP, the ratio of total stock market capitalization over GDP, and the number of listed companies per million inhabitants. I use changes in inherited trust among Americans immigrants of different generations to track changes in trust in their home country between 1913 and 1990. I first document a positive cross-section relationship between trust and financial development in 1913. Then, I show that increasing trust is also associated with increasing financial development at the country level over the twentieth century. In other words, countries that experienced larger improvements trust also experienced a stronger financial development. These results are robust to the introduction of real GDP per capita and trade openness as alternative determinants of financial development.

Most of recent studies about financial development have converged around the institutional question. Since the seminal works by Knack and Keefer (1997) and La Porta et al. (1997), a large number of paper have emphasized the crucial role of the legal and political systems as determinants of financial development. One of the most influential of those paper has been Rajan and Zingales (2003). According to these authors, financial development is partly determined by the degree of openness of an economy. The present paper sheds light on social capital as an alternative determinant of financial development.

Social capital as gained a large interest as a determinant of economic performance. Knack and Keefer (1997) showed that countries with higher social capital have also better institutions, higher and more equal incomes and a better educated population. Similar evidences have been provided by

Tabellini (2010) in the case of European regions. Guiso et al. (2006, 2008a, 2009) presented some evidences about the way economic experiences from the distant past may shape current economic performance, through transmission of adequate norms. Dincer and Uslander (2010) have found a positive relationship between trust and growth. More recently, Algan and Cahuc (2010) provide new evidences regarding the impact of trust on economic development. See also Zak and Knack (2001), Knack (2001), or Tabellini (2008) for additional developments. As pointed out by Guiso et al. (2004), financial behavior is a domain in which social capital, and the various norms of cooperation associated with this concept, is likely to have large impacts.

This paper is organized as follows. Section 3.2 presents the methodology and the data. Then, empirical results are presented in section 3.3. Finally, section 3.4 concludes the paper.

3.2 Data and methodology

This section, first presents the relationships which will be estimated. These estimations necessitate data on trust in the early twentieth century. Such data do not exist, but can be approximated by inherited trust of Americans. Finally, I briefly describe the data on financial development used in this paper.

The first relationship I am going to estimate is the cross-section relationship between trust and financial development in the early twentieth century. Thus, the estimated model is :

$$\text{FinDev}_i = \alpha + \beta_1 \text{Trust}_i + \varepsilon_i, \quad (3.1)$$

where FinDev_i denotes financial development in country i , Trust_i represents the level of trust in country i , and ε_i is the error term. The estimation of parameter β_1 will thus rely on differences in trust across countries. Parameter β_1 captures the effect of trust on financial development in space.

The second relation estimated in this paper is the within-country relationship between trust and financial development over the twentieth century.

In this case, the estimated model is :

$$\text{FinDev}_{it} = \alpha + \beta_2 \text{Trust}_{it} + \text{I}_i + \varepsilon_{it}, \quad (3.2)$$

where FinDev_{it} denotes financial development in country i at time t , Trust_{it} represents the level of trust in country i at time t , I_i is a country fixed effect, and ε_{it} is the error term. The estimation of parameter β_2 will thus rely on differences in trust across time at the country level. Parameter β_2 captures the effect of trust on financial development over time.

Most cross-country comparisons of the impact of social capital use the individual answers to subjective questions from surveys such as the World Values Survey or the European Social Survey for example. Individual answers are aggregated at the country level to obtain any indicator of social capital. These surveys have been conducted only since the eighties. This makes the computation of any time-varying indicator of social capital very difficult because individual values are widely recognized as variables that evolve very slowly over time, as deep parameters of any society. Beside this, a direct consequence of the period covered by these surveys is that trust indicators for the early twentieth century cannot be obtained directly.

This challenge can be overcome by using inherited trust of Americans. This method (used by Carroll et al. (1994) and Fernández and Fogli (2006, 2009) among others) relies on the epidemiological approach, i.e., individuals differing only in one dimension are observed in the same context. Differences in any outcome are thus attributed to differences in the dimension of interest. In this paper, I use Americans interviewed in the General Social Survey (GSS), taking into account the country of origin of their ancestors. Selecting different dates of birth and different generations of immigration, it is thus possible to assess differences in trust in origin countries for different periods. Namely, following Algan and Cahuc (2010), inherited trust at time T is estimated using immigrants of second generation born before T ; third generation immigrants born before $T + 25$; and fourth generation immigrants born before $T + 50$. This method necessitates to choose a sufficiently large time gap between periods to avoid any overlapping problems. I estimate in-

herited trust in 1913 and 1990 using this method.¹ This allow to obtain two observations per country for trust.

Concretely, I estimate the following probit model :

$$P(\text{Trust}_i^c = 1) = a_0 + \sum_{j=1}^n a_j x_{ji} + I_c + \varepsilon_i, \quad (3.3)$$

where $P(\text{Trust}_i^c = 1)$ is the probability that individual i , claiming that its ancestors came from country c , answers “*most people can be trusted*” to the following question of the GSS : “*Generally speaking, would you say that most people can be trusted or that you can’t be too careful in life ?*”. I_c is the origin country fixed effect, while Norway is the reference category², x_{ji} represents an individual characteristic³ of respondent i , and ε_i is the error term.

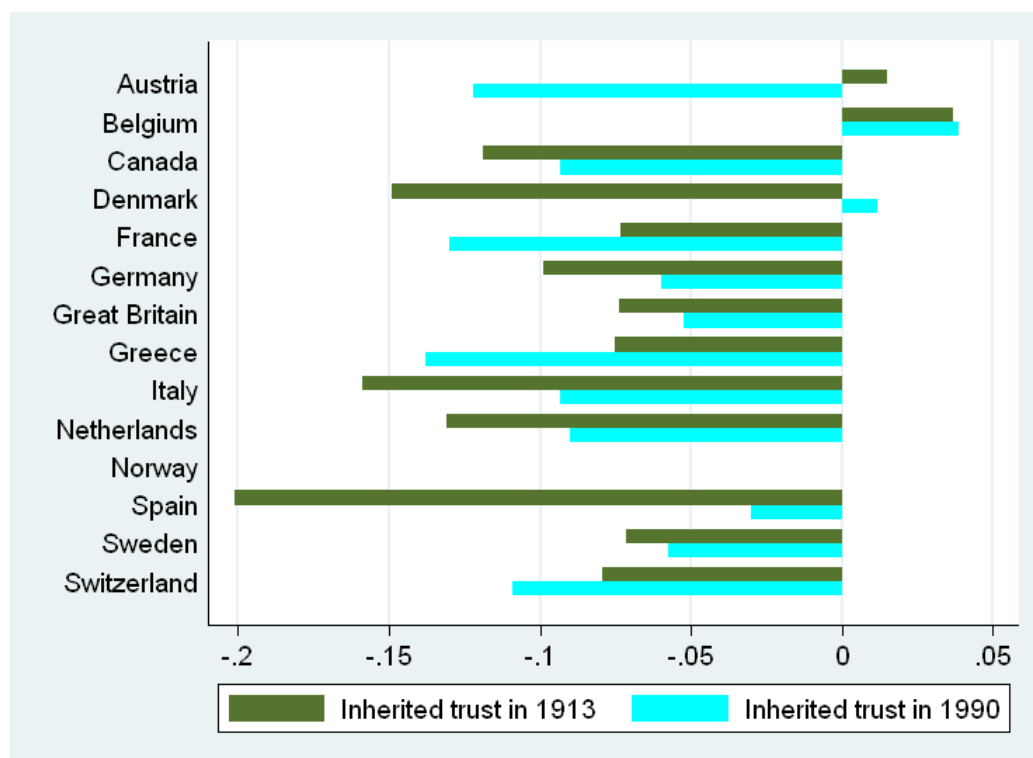
Marginal effects estimated according to equation (3.3) for 1913 and 1990 are presented in tables 3.3 and 3.4 in appendix. The marginal effects associated with origin countries in 1913 and 1990 are presented by figure 3.1. This figure and the tables should be read as follows : in 1913, Americans with Canadians ancestors are 12 percents less likely to be trusting than Americans with Norwegian ancestors ; in 1990, Americans with French ancestors are 13 percents less likely to answer “*most people can be trusted*” than Americans with Norwegian ancestors. Comparing inherited trust in 1913 and 1990 for a given country gives information of how trust in the country has evolved with respect to trust in Norway between these two dates. For example, the gap in trust with respect to Norway increased in Switzerland (the marginal effect moves from -0.08 to -0.11). Similarly, the gap with respect to Norway has vanished and became opposite in the case of Denmark (the marginal effects moves from -0.15 to 0.01).

1. Accordingly, trust in 1913 is estimated using Americans of second generation born before 1913, of third generation born before 1938, and of fourth generation born before 1963. Similarly, trust in 1990 is estimated using Americans of second generation born between 1913 and 1990, of third generation born after 1938, and of fourth generation born after 1963.

2. The choice of Norway as the reference origin country is arbitrary and does not drive our results.

3. I control for gender, education, age, age squared, religion, income, marital status, and employment status.

Figure 3.1: Inherited trust in 1913 and 1990.



Source: General Social Survey (author's calculation).

Following Rajan and Zingales (2003), I collected data on financial development in 1913 and 1990 for 14 countries. I used three different indicators of financial development. The first one is the ratio of deposits in commercial and savings banks to GDP. I updated the data of Rajan and Zingales (2003) using data from Mitchell (2003), Flandreau and Zumer (2004) and the United Nations Statistics Division. The two other indicators are the ratio between stock market capitalization and GDP and the number of listed firms per million people.⁴ See Rajan and Zingales (2003) for a discussion of these measures of financial development.

Comparing the evolution of trust and financial development over the

4. Total stock market capitalization and the number of listed companies are not available for Greece and Spain in 1913. As a consequence, all empirical results using these two variables will rely only on 12 countries.

twentieth century requires long period data for both financial development and trust. Data on financial development are remarkably limited for the early twentieth century. A similar remark applies to the data on trust which simply do not exist for this period. Given today's state of research, the only way to track trust differences in the distant past is to use inherited trust of Americans. This method is constrained both by the number of observations in the GSS and by the number of proposed "country of origin" in this questionnaire. Taking into account these two sets of constraints for available data, the richest regression presented in this paper only includes 14 countries. Since the both data sources are short, it would be virtually impossible (or at least extremely difficult) to assemble a larger data set.

3.3 Empirical results

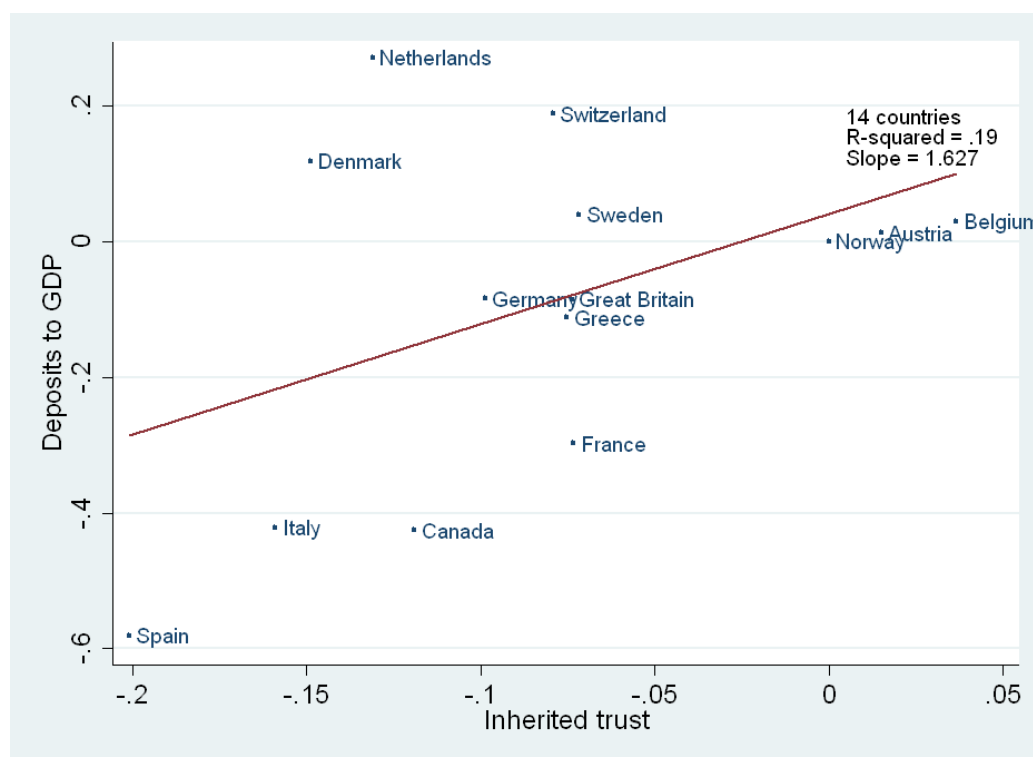
This section presents the empirical results. I first present the cross-section relationship between trust and financial development in 1913. Then, I look at the within-country relationship between trust and financial development between 1913 and 1990.

Inherited trust offers a unique opportunity to observe the relationship between trust and financial development in the early twentieth century. Figures 3.2, and 3.3 and 3.4 presented in appendix plot inherited trust and financial development in 1913. All figures exhibit a positive association between trust and financial development. This suggests that countries with higher generalized trust had a more developed financial system at the beginning of the twentieth century. According to these figures, differences in social capital explain between 15% and 26% of the cross-country differences in financial development in 1913.

However, this positive relationship could be determined by omitted variables. Table 3.1 presents the estimated coefficients of equation (3.1), controlling for differences in real GDP per capita and trade openness in 1913.⁵

5. Real GDP per capita is taken from the Maddison's database. Trade openness is calculated as the ratio of exports plus imports to GDP using data from Mitchell (2003).

Figure 3.2: Relationship between inherited trust and the ratio of deposits to GDP in 1913.



Sources: General Social Survey (author's calculation) and Rajan and Zingales (2003).

In columns 1, 3, and 5, only real GDP per capita is introduced as additional regressor. This reinforces the size and improve the significance level of the inherited trust coefficient when the dependent variable is either stock market capitalization over GDP or the number of listed firms per million people. In the case of the ratio of deposits to GDP, the coefficient of inherited trust decreases and becomes less significant but still very close to the 10 percents significance level (the p-value equals 0.113). In columns 2, 4, and 6, I introduce trade openness as an additional explanatory variable. The magnitude of the estimated coefficients of inherited trust is unchanged. Furthermore, the coefficient becomes significant at the 10 percents significance level when the dependent variable is the ratio of deposits to GDP. Summary statistics for these regressions are presented in table 3.5 in appendix. According to

Table 3.1: Relationship between trust and financial development, cross-section estimates in 1913.

Dependent variable :	<i>Deposits</i>		<i>Stock market capitalization</i>		<i>Listed companies</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
Inherited trust	1.438 (0.836)	1.632* (0.795)	2.012*** (0.530)	1.957*** (0.575)	244.3* (122.1)	273.4** (105.3)
Real GDP per capita	0.00789 (0.00624)	0.00209 (0.00562)	0.0316*** (0.00599)	0.0327*** (0.00616)	1.915** (0.719)	1.350* (0.586)
Openness		0.212*** (0.0425)		-0.0409 (0.0406)		21.94*** (5.592)
Constant	-0.0534 (0.0777)	-0.00814 (0.0769)	0.185 (0.112)	0.176 (0.113)	-0.0622 (10.83)	4.739 (9.439)
Observations	14	14	12	12	12	12
R-squared	0.286	0.548	0.795	0.803	0.512	0.761

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. OLS regressions. All variables are defined with respect to Norway.

column 3 of table 3.1, a 10 percentage points increase in trust with respect to Norway is associated with a 0.2 increase in stock market capitalization, which represents roughly one standard deviation of this variable. Similarly, according to the estimated coefficient of inherited trust presented in column 6, the effect of a 0.1 increase in trust is associated with a one standard deviation change in the number of listed companies. These results show that the positive cross-country relationship between trust and financial development is sizable and not driven by the simple difference in economic development. Furthermore, the relationship persists when taking into account differences in trade openness, a major determinant of financial development as argued by Rajan and Zingales (2003).

The remaining of this section presents findings regarding the within-country relationship between trust and financial development over the twentieth century. Figures 3.5, 3.6, and 3.7 in appendix present the relationship between changes in trust with respect to Norway and changes in financial development with respect to the same country over the period 1913-1990. The three slopes representing the linear relationships between variables are positive. This suggests that changes in inherited trust explain between 5 and 10 percents of changes in financial development.

Table 3.2: Relationship between trust and financial development over time at the country level, 1913-1990.

Dependent variable :	<i>Deposits</i>		<i>Stock market capitalization</i>		<i>Listed companies</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
Inherited trust	1.100 (1.245)	1.168 (1.387)	2.661*** (0.681)	2.292** (0.894)	116.4** (50.78)	142.7** (53.32)
Real GDP per capita	-0.00152 (0.00230)	-0.00147 (0.00377)	0.0137*** (0.00322)	0.0272** (0.0109)	1.176** (0.379)	0.870 (0.508)
Openness		0.0623 (0.0529)		-0.138 (0.105)		15.60 (8.704)
Time dummy		0.00830 (0.110)		0.392 (0.278)		-6.196 (10.07)
Constant	0.0103 (0.0999)	-8.89e-05 (0.181)	0.532*** (0.0821)	-0.102 (0.476)	-1.850 (5.440)	8.458 (17.80)
Observations	28	28	24	24	24	24
Number of countries	14	14	12	12	12	12
R-squared (within)	0.174	0.188	0.436	0.660	0.539	0.598

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses. OLS regressions with country fixed effects. All variables are defined with respect to Norway.

Table 3.2 confirms these findings by presenting the estimated coefficients of equation (3.2). In columns 1, 3, and 5, financial development in 1913 and 1990 is regressed on inherited trust and real GDP per capita for the same dates, together with country fixed effects. In columns 2, 4, and 6, I introduce a time dummy for 1990 to control for potential convergence in financial development across countries, as well as trade openness. The estimated coefficient of inherited trust is significant when the dependent variable is either total stock market capitalization or the number of listed companies. However, it is not significant in the case of the ratio of deposits to GDP. In the case of stock market capitalization, the estimated effect of a 0.1 change in inherited trust equals 0.25, which represent one half of a standard deviation for changes in stock market capitalization. For the number of listed companies, the comparable exercise leads to one third of a standard deviation. In other words, a 0.1 increase in the share of trusting people between 1913 and 1990 is associated with 11 more listed companies at the country level. When included simultaneously, neither real GDP per capita, nor trade openness, are found to be significantly correlated with financial development.

These results show that the positive relationship between trust and finan-

cial development is also valid at the country level across time and that the effect of trust on financial development is economically sizable. According to these estimates, the effect of trust on financial development outperform the effect of trade openness or economic development.

3.4 Conclusion

This paper shows that higher social capital, measured as generalized trust, is associated with larger financial development in 1913. Increasing trust is also associated with increasing financial development at the country level over the twentieth century. In other terms, countries that experienced larger improvements in trust also experienced a stronger financial development. This relationship is robust to the introduction of real GDP per capita and trade openness in empirical models.

These results confirm the evidence presented by Guiso et al. (2004) regarding the importance of social capital in financial development, and let room for future research concerning the channels through which social capital favors financial development. This research agenda involves theoretical, as well as empirical work to establish to what extent norms of cooperation are substitutes or necessary conditions to build institutions facilitating financial development.

3.5 Appendix

Table 3.3: Estimation of inherited trust in 1913.

Dependent variable is individual trust			
Austria	0.0149* (0.00820)	Male	-0.00534 (0.0123)
Canada	-0.119*** (0.0141)	Age	0.0128*** (0.00187)
Denmark	-0.149*** (0.00164)	Age squared	-9.08e-05*** (1.86e-05)
Great Britain	-0.0739*** (0.00180)	Married	0.0489*** (0.0109)
France	-0.0733*** (0.00713)	Protestant	0.0245 (0.0197)
Germany	-0.0988*** (0.00345)	Catholic	0.0494 (0.0459)
Greece	-0.0753*** (0.00715)	Education	0.0402*** (0.00163)
Italy	-0.159*** (0.0143)	Employed	0.0405** (0.0170)
Netherlands	-0.131*** (0.00276)	Income	0.000761 (0.00242)
Spain	-0.201*** (0.0121)		
Sweden	-0.0717*** (0.00228)	Observations	6769
Switzerland	-0.0793*** (0.00306)	Pseudo R-squared	0.0535
Belgium	0.0366** (0.0178)		

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses. Marginal effects of a probit model. For dummy variables, the reported coefficient denotes the effect of a discrete change. The reference origin country is Norway. The sample is made of Americans of second generation born before 1913, of third generation born before 1938, and of fourth generation born before 1963. A constant term and year fixed effects for the year of interview are also included.

Table 3.4: Estimation of inherited trust in 1990.

Dependent variable is individual trust			
Austria	-0.122*** (0.0101)	Male	0.0599*** (0.0208)
Canada	-0.0935*** (0.00708)	Age	0.00427 (0.00577)
Denmark	0.0118* (0.00688)	Age squared	-5.95e-06 (6.08e-05)
Great Britain	-0.0524*** (0.0104)	Married	0.0383 (0.0250)
France	-0.130*** (0.00695)	Protestant	-0.0101 (0.0179)
Germany	-0.0600*** (0.0124)	Catholic	-0.0208 (0.0167)
Greece	-0.138*** (0.0129)	Education	0.0447*** (0.00401)
Italy	-0.0932*** (0.0107)	Employed	0.0202* (0.0121)
Netherlands	-0.0900*** (0.00846)	Income	0.00272 (0.00312)
Spain	-0.0300*** (0.00727)		
Sweden	-0.0574*** (0.0119)	Observations	2859
Switzerland	-0.109*** (0.00902)	Pseudo R-squared	0.0597
Belgium	0.0385** (0.0160)		

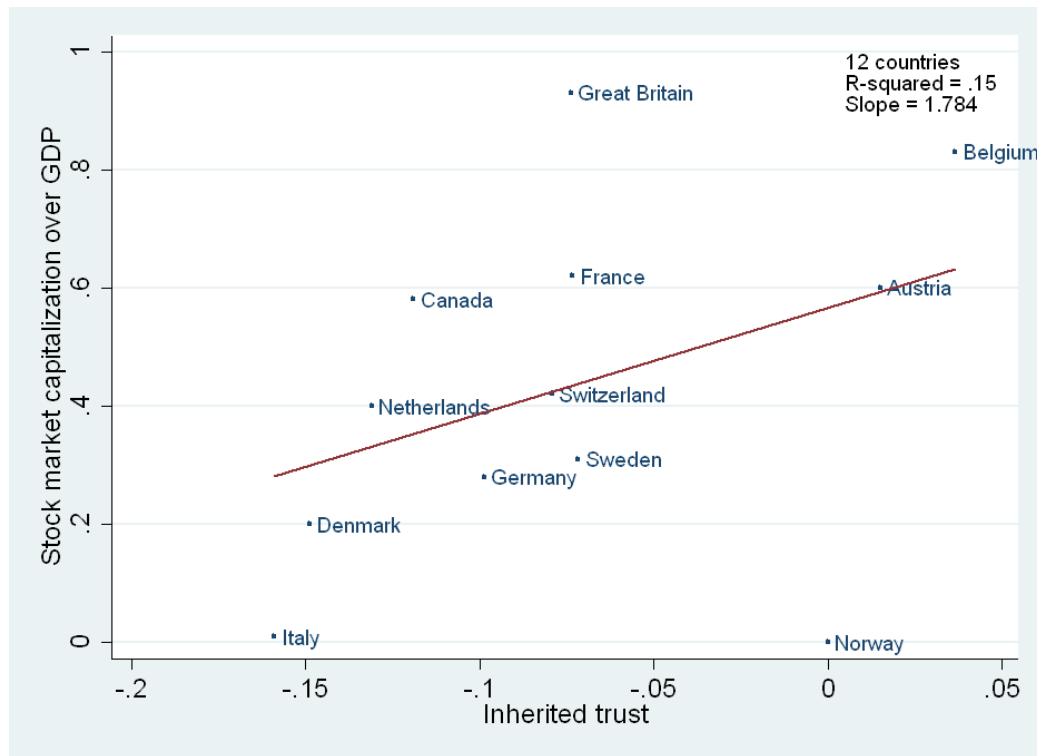
*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. Marginal effects of a probit model. For dummy variables, the reported coefficient denotes the effect of a discrete change. The reference origin country is Norway. The sample is made of Americans of second generation born between 1913 and 1990, of third generation born after 1938, and of fourth generation born after 1963. A constant term and year fixed effects for the year of interview are also included.

Table 3.5: Summary statistics for cross-section estimates in 1913.

	Obs	Mean	Std. Dev.	Min	Max
Deposits	14	.549	.249	.065	.916
Stock market capitalization	12	.592	.293	.16	1.09
Listed companies	12	39.205	28.618	6.32	108.7
Inherited trust	14	-.084	.067	-.201	.0366

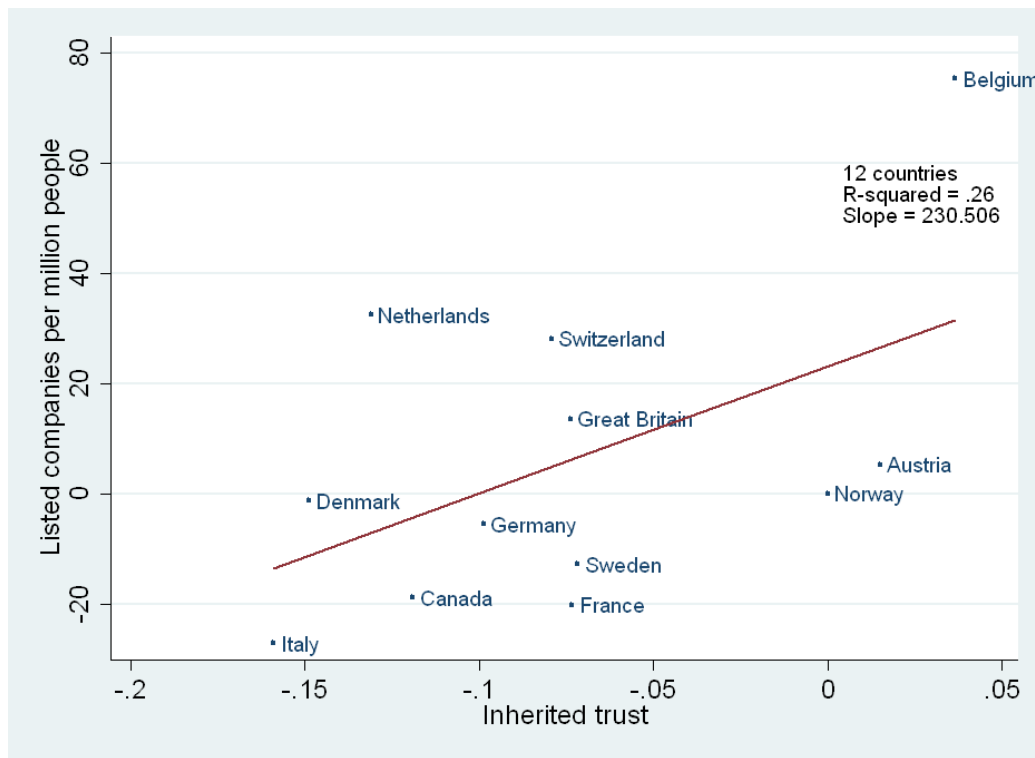
“Deposits” is the ratio of deposits in commercial banks to GDP. “Stock market capitalization” is the ratio of total stock market capitalization to GDP. “Listed companies” is the number of publicly traded domestic companies per million inhabitants. These variables are given in absolute terms whereas they are defined with respect to Norway in table 3.1.

Figure 3.3: Relationship between inherited trust and stock market capitalization over GDP in 1913.



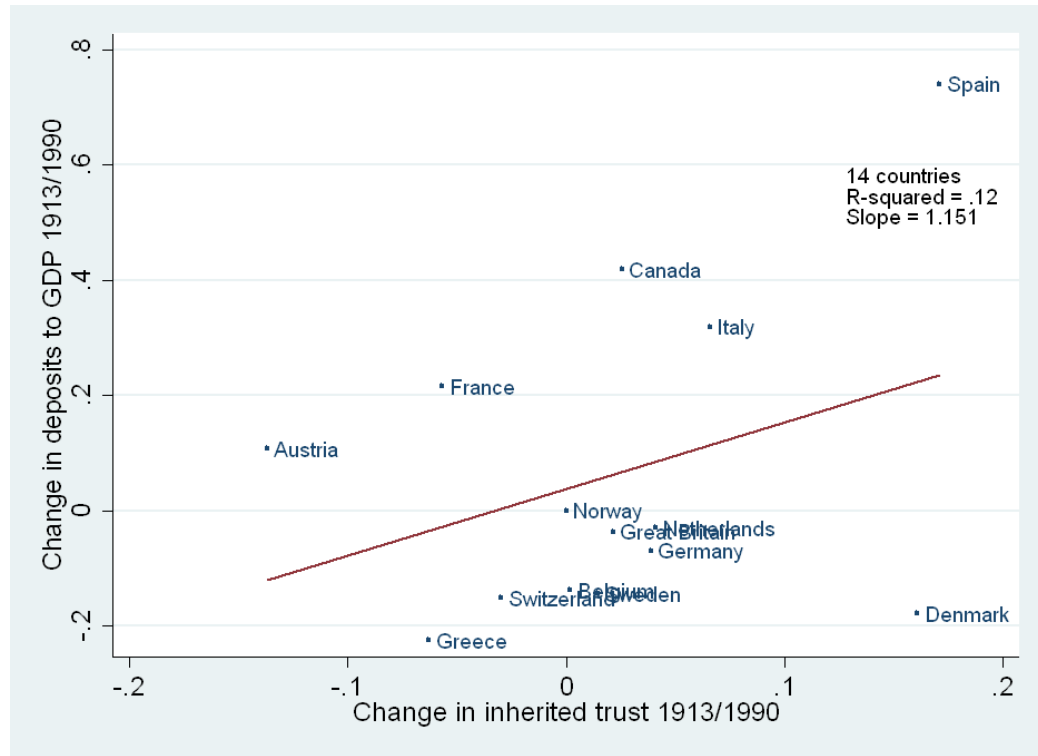
Sources: General Social Survey (author's calculation) and Rajan and Zingales (2003).

Figure 3.4: Relationship between inherited trust and the number of listed companies per million people in 1913.



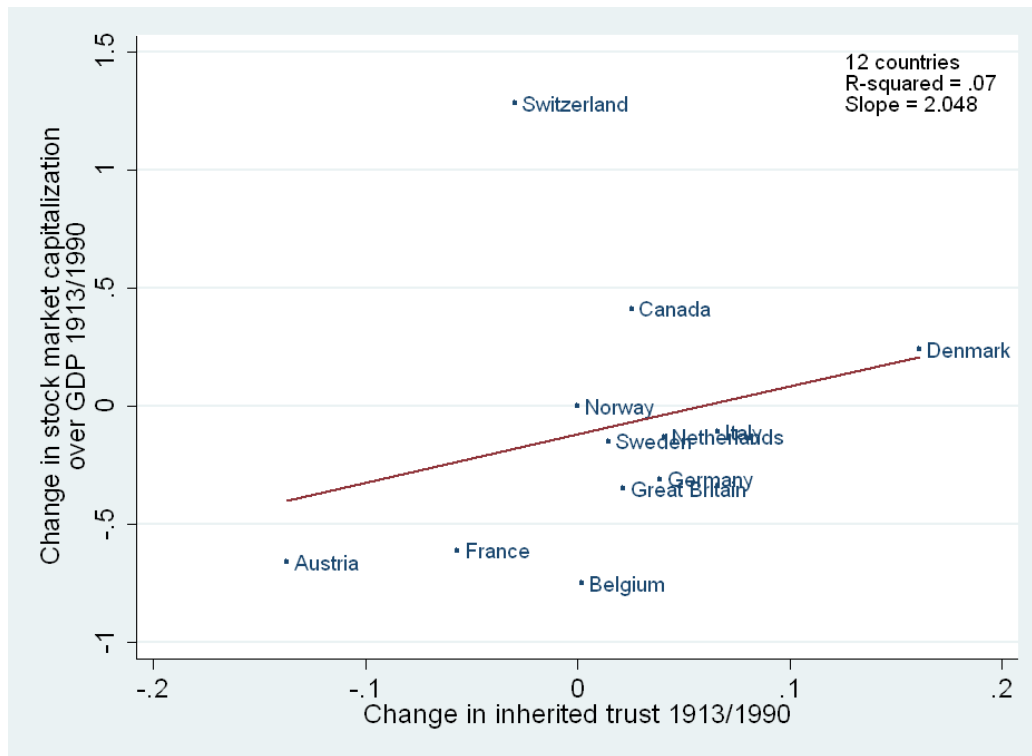
Sources: General Social Survey (author's calculation) and Rajan and Zingales (2003).

Figure 3.5: Changes in inherited trust and in the ratio of deposits to GDP 1913-1990.



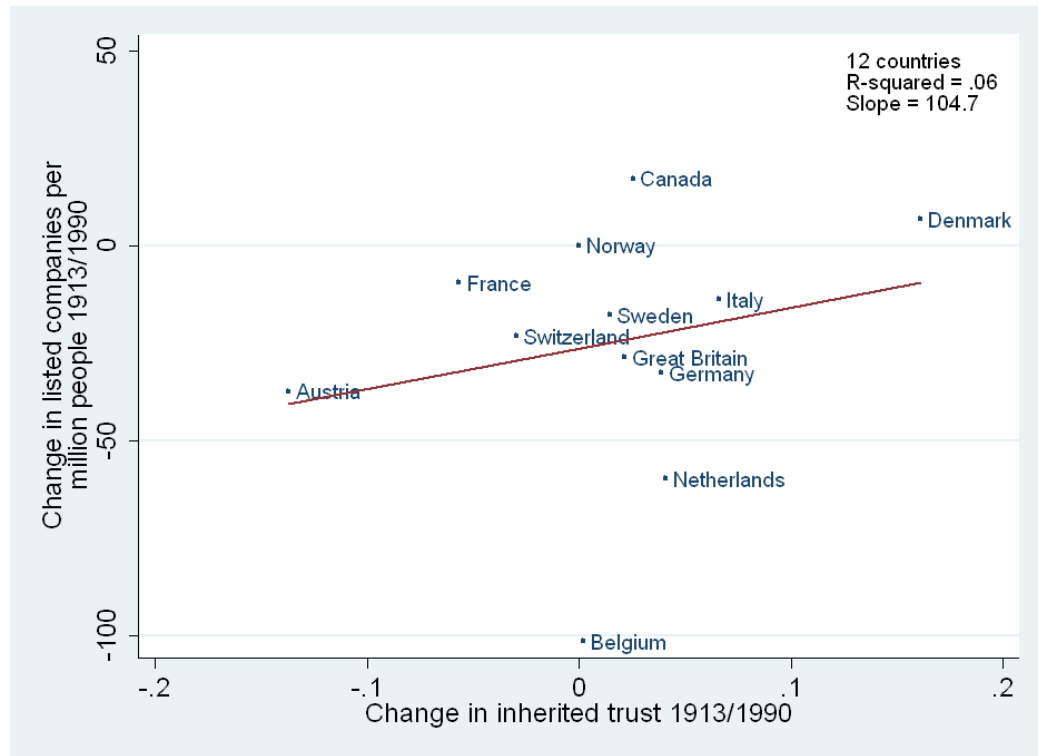
Sources: General Social Survey (author's calculation) and Rajan and Zingales (2003).

Figure 3.6: Changes in inherited trust and in stock market capitalization over GDP 1913-1990.



Sources: General Social Survey (author's calculation) and Rajan and Zingales (2003).

Figure 3.7: Changes in inherited trust and in the number of listed companies per million people 1913-1990.



Sources: General Social Survey (author's calculation) and Rajan and Zingales (2003).

Chapter 4

Efficient and inefficient welfare states¹

This paper provides evidence and rationalizes the existence of a non-monotonic relationship between trust and the size of welfare states. We show that generous, transparent and efficient welfare states in Scandinavian countries are based on the civicism of their citizens. In contrast, the generosity but low transparency of the Continental European welfare states survive thanks to the support of a large share of uncivic individuals who consider that it can be justifiable to misbehave with taxes and social benefits. We also explain why countries with an intermediate degree of trustworthiness of their citizens and of transparency of the government, like Anglo-Saxon countries, have small welfare states. Overall, this paper provides a rationale for the observed persistence of both efficient and inefficient welfare states, as a function of the civicism of the citizens.

4.1 Introduction

Why are welfare states so generous and transparent in Scandinavian countries? Why are Continental European welfare states as large as in Scandinavian countries, but perceived as much less transparent and efficient by

1. This chapter is based on a joint work with Yann Algan and Pierre Cahuc.

their citizens? Why do most Anglo-Saxon countries have relatively small welfare states? This paper shows that part of the answer to these questions can be explained by the cross country heterogeneity in trustworthiness that shapes the demand for redistribution and the efficiency of the welfare states. While previous contributions have been so far focused on the positive effect of trust on the demand for redistribution (see Hetherington 1998, Rothstein and Uslaner 2005, and Rothstein et al. 2010 among others), this paper provides evidence and rationalizes the existence of a non-monotonic relationship between trust and the size and efficiency of welfare states.

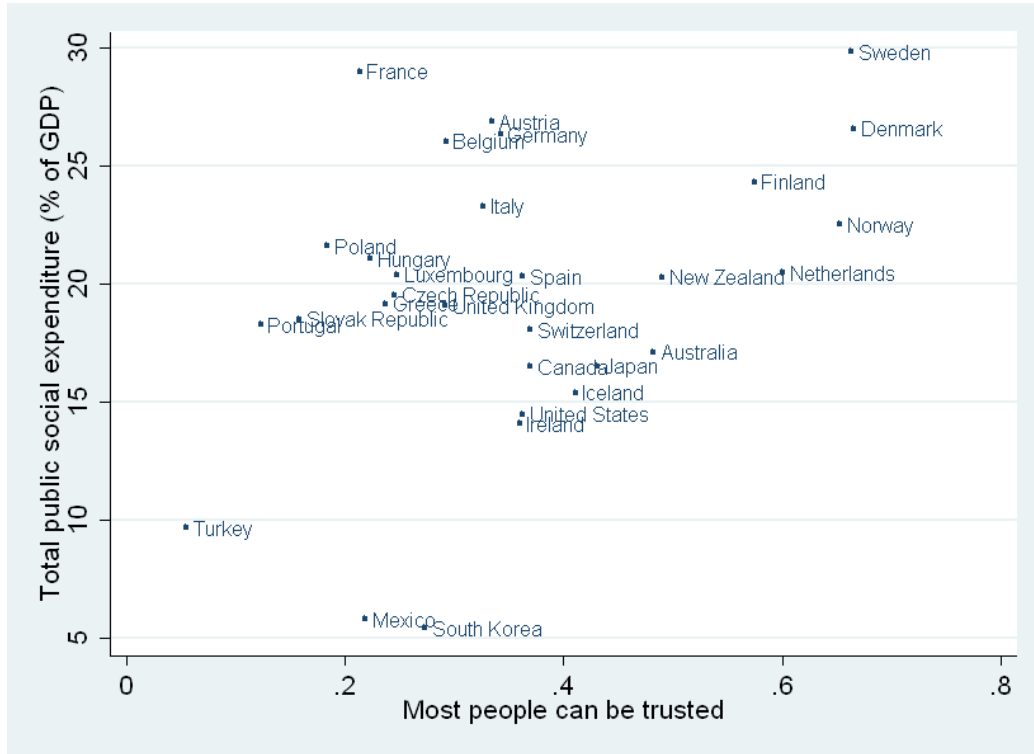
In a cross section of countries, we first show the existence of a non-monotonic relationship between trust and the generosity of the welfare states in OECD countries. Figure 4.1 shows the relationship between the share of social expenditure in GDP and the country level of trust in 2000.² The relation is first increasing for low trust countries, reaching a local maximum for countries with a relatively low level of trust like France, Belgium, Germany and Italy. The relation then becomes decreasing, reaching a local minimum for the Anglo-Saxon countries and Japan. Finally, the relationship starts increasing again with the country level of trust, reaching a peak for Scandinavian countries. Figure 4.2 shows a similar relationship between the transparency of the welfare state, measured with the corruption perception index,³ and the size of the welfare state.

These two figures show that countries with low trust and low transparency of the government can have welfare states as large as countries with high trust and high transparency of the government. Moreover, countries with intermediate levels of trust and transparency of the government have relatively small welfare states. Three main clusters of countries can be broadly distin-

2. Social expenditure is defined as total social public expenditure in the OECD Social Expenditure Database. The variable trust is measured as the answer to the following question of the World Values Survey: “*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*”. The answer can be either “*Most people can be trusted*”, which corresponds to the value 1, or “*Can’t be too careful*”, corresponding to the value 0.

3. This index has been computed by Transparency International. It can take on values from zero for the most corrupt governments to 1 for the least corrupt. The original index which takes on values from zero to 10 has been rescaled to ease comparisons with the measure of generalized trust.

Figure 4.1: Trust and public social expenditure in 2000.

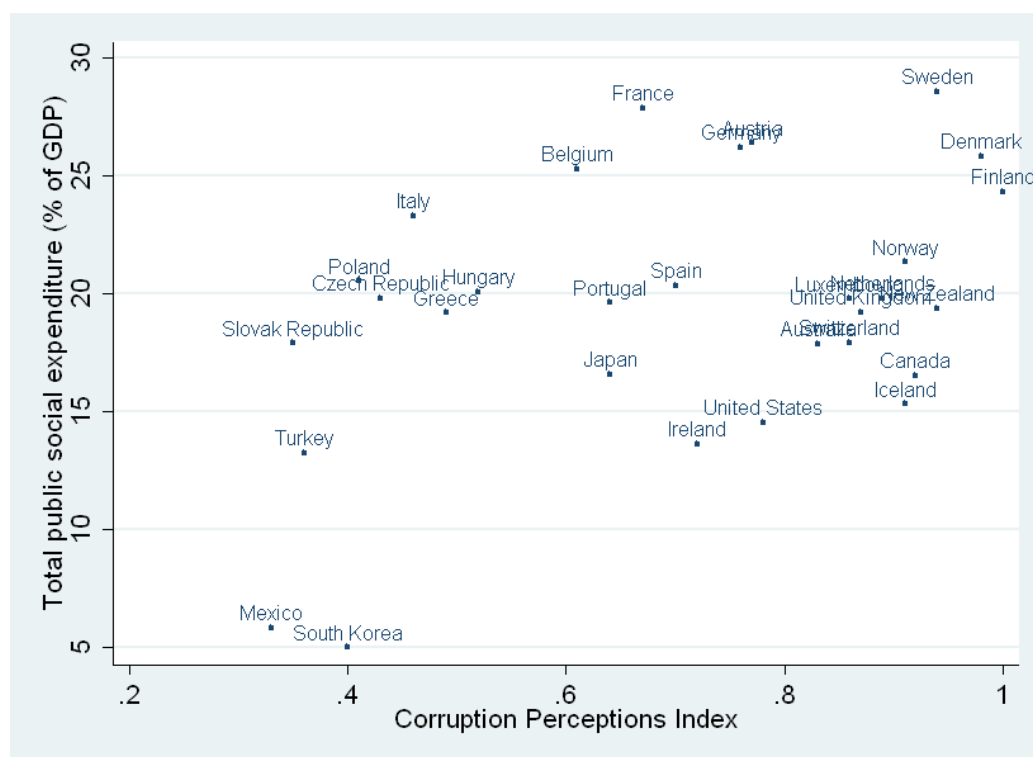


Sources: World Values Survey and OECD social expenditure DataBase. Kernel-weighted local polynomial smoothing.

guished. A group with low trust and large welfare state, which comprises mostly Continental European countries and Mediterranean countries. Another group with intermediate level of trust and relative small welfare state which includes Anglo-Saxon countries. And a third group with high trust and large welfare state which comprises Scandinavian countries. We show that this typology including three groups of countries exists for various measures of confidence in the welfare state. This typology also holds when one looks at the conditional levels of trust and transparency of the government, controlling for a large set of socio-economic variables such as education, income, occupation, religiosity and political orientation.

We then rationalize the (non-monotonic) relationship between trust and the scope of the welfare state. We begin by providing a simple political

Figure 4.2: Corruption Perception Index and public social expenditure in 2000.



Sources: Transparency International and OECD social expenditure DataBase. Kernel-weighted local polynomial smoothing.

economy model which analyzes the relation between trust and the scope of the welfare state. The model comprises civic (or trustworthy) and uncivic individuals. Civic individuals cheat neither on taxes nor on social benefits and they behave properly when they serve as officials. Uncivic individuals cheat on taxes and on social benefits if this is in their own interest. They do not behave properly when they serve as officials. The model predicts that everybody wants more social benefits when he expects to be surrounded by more civic individuals, because there is less fraud on taxes and benefits and officials are more efficient. However, uncivic individuals want more redistribution than civic individuals because they escape from taxes, but benefit from public transfers. This implies that a rise in the share of civic individ-

uals has two opposite effects on the demand for the welfare state. On one hand, everybody wants more redistribution, expecting to be surrounded by more civic individuals. On the other hand, the demand for redistribution is reduced because there are fewer uncivic individuals asking for a high level of transfers. These two opposite effects induce a non-monotonic relationship between the share of trustworthy individuals and the size of the welfare state. It is possible to get a large, but inefficient, welfare state in a society populated by numerous uncivic individuals who cheat on social benefits, escape from taxes and do not behave properly when they serve as officials. Conversely, the welfare state can be both large and efficient only if the share of civic individuals is sufficiently great. The model thus explains why big welfare states can be supported in both low and high trust countries, but with very contrasting perceptions of their degree of transparency as shown in figures 4.1 and 4.2.

We present stylized aggregate facts supporting the non-monotonic relationship in section 4.2. A formal test of the model at the macroeconomic level is hardly feasible because of the scarcity of comparable data on the generosity of the welfare state. We rather chose to test the underlying mechanisms and predictions of the model at the individual level using individual international social surveys. The most immediate prediction is that the support for the welfare state is related to generalized trust and to trust toward government institutions. Using the European Social Survey (ESS) and the World Values Survey (WVS), we find that individuals who think that they are surrounded by more civic people exhibit stronger support for the welfare state. Trust in the parliament, in politicians, in the legal system and in the efficiency and equity of the tax authorities is also positively associated with support for the welfare state. We find that uncivic individuals, who declare that it can be justifiable to claim government benefits to which one is not entitled, to avoid a fare on public transport, or to throw away litter in a public place, support more generous social programs than civic individuals who declare that such behaviors are never justifiable. Finally, we show that the perceived quality of services provided by the welfare state is higher in countries where there is more generalized trust and more confidence in government institutions.

Strikingly, a rise in social expenditure do not improve the perceived quality of public education, public health, public pensions and unemployment insurance if they are not accompanied by improvements in the trustworthiness of citizens and of the government.

Our contribution is related to at least two main literatures. The first seminal literature is that of political scientists who stress the existence of a positive and monotonic relationship between trust and the welfare state. For instance, Hetherington (1998, 2004) argues that declining political trust has played the central role in the demise of progressive public policy in the United States over the last several decades. Rothstein and Uslaner (2005) and Rothstein et al. (2010) argue that the scope of the welfare state in OECD countries is limited by trust toward “other people” and toward government institutions. According to these authors, the survival of large welfare states in the Scandinavian countries is explained by high social trust and high quality of government. The narrative of this idea can be traced back to at least Adam Smith, who stressed in *The Wealth of Nations*, “*in those corrupted governments where there is at least a general suspicion of much unnecessary expense, and great misapplication of the public revenue, the laws which guard it are little respected*”.⁴ In the same book, Smith noticed that taxes were easy to levy in Hamburg because in places “*where the people have entire confidence in their magistrates, are convinced of the necessity of the tax for the support of the state, and believe that it will be faithfully applied to that purpose, such conscientious and voluntary payment may sometimes be expected*”.⁵ This explanation fits well with the specific group of very high-trusting countries. But it cannot account for the existence of fairly large welfare states in the OECD countries characterized by relatively low levels of trust, like in France or in Italy. Our paper is distinguished from this research in at least two central ways. First, we document and provide a rationale for the existence of a non-monotonic relationship between trust and the welfare state. Besides, we explain why large welfare states might be supported in both high-trusting and low-trusting countries, but are transparent and efficient in the former

4. Smith (1904), book V, chapter II.

5. Ibid., see Evensky (2005) for a thorough discussion.

group of countries only. Second, we provide micro evidence to identify the specific relationship running from trust to the demand for the welfare state. We identify the independent component of individual trust on the demand for redistribution by using inherited trust of immigrants in Europe.

The second literature is the economics of redistribution. The seminal economic explanations of the support for redistribution are based on the distribution of incomes before taxes and transfers (see Alesina and Glaeser 2004) and on the beliefs on income mobility (Piketty 1995, Bénabou and Ok 2001, Alesina and La Ferrara 2005). Alternative explanations of the demand for redistribution have stressed the role of fairness (Corneo and Gruner 2002, Alesina and Angeletos 2005, Luttens and Valfort 2008), reciprocal altruism (Fong 2001, Fong et al. 2006), inherited preference ingrained in past historical experience (Corneo and Gruner 2002, Alesina and Fuchs-Schündeln 2007, Luttmer and Singhal 2011, Alesina and Giuliano 2011), ethnic fragmentation and group loyalty (Luttmer 2001 and Alesina and Glaeser 2004), the desire to act in accordance with public values (Corneo and Gruner 2002), or the role of the electoral system (Alesina et al. 2001 and Persson and Tabellini 2002).

The papers most related to ours for the identification of the independent role of beliefs are those which focus on cultural attitudes towards redistribution. In particular, Alesina and Fuchs-Schündeln (2007) show that, after the German reunification, East Germans are more in favor of redistribution than West Germans, even by controlling for economic incentives. Luttmer and Singhal (2011) document the effect of culture on the demand for income redistribution by estimating the preferences of immigrants in European countries. Using the ESS database, they show that the preferences of immigrants correlate strongly with the demand for redistribution in their country of origin. We show in this paper that it is mainly the inherited cultural beliefs that matter for first generation immigrants. However, support for the welfare state of second generation immigrants is no more correlated to the support for the welfare state in their country of origin, but is strongly correlated with generalized trust and the trust in institutions prevailing in their resi-

dence country.⁶ This result suggests that the support for the welfare state is driven by beliefs about the behavior of compatriots that progressively adapt to the local context and by inherited cultural preferences. After about one generation, the immigrants' beliefs about the behavior of compatriots and about the transparency of the welfare state are in line with those of natives of their country of residency. Besides, we check that trust plays a major role in explaining the demand for redistribution compared to economic characteristics or alternative beliefs.

The paper is organized as follows. Section 4.2 documents the cross country correlation between various measures of trust and the generosity of the welfare states. Section 4.3 presents the model to rationalize this relationship through a mechanism running from trustworthiness to the support for the welfare state. Section 4.4 tests the predictions of the model on individual data. Section 4.5 compares the role of trustworthiness with alternative beliefs and cultural preferences. Section 4.6 concludes.

4.2 Basic Facts

This section documents the non-monotonic relationship between trust and the size of the welfare state. Figures 4.1 and 4.2 mentioned in the introduction use the country average level of trust in others and in institutions. In this section, we first check the robustness of these relationships by using the conditional average level of trust, controlling for individual characteristics. We regress the various measures of trust on gender, age, education, income, occupation, family situation, religiosity and political orientation⁷, and coun-

6. This result is consistent with those of Nannestad et al. (2008), Dinesen and Hooghe (2010) and Dinesen (2011) who find that both parental transmission of trust as well as perceptions of institutional fairness matter for the level of trust of young immigrants, but the impact of perceptions of institutional fairness is stronger.

7. Education is the highest educational level attained, classified in 8 levels. Income is defined on a scale that comprises 10 levels. Occupation comprises the following categories: employed, unemployed, in education, retired and others. Family situation can be married, separated/divorced, widowed, never married. Religiosity provides information about the frequency of attendance at religious service, going from never to more than once a week, classified in 8 levels of frequency. Political orientation corresponds to the answer to the following question: “*In political matters, people talk of the left and the right. How would*

try fixed effects taking Norway as the reference country. Table 4.13, reported in appendix, shows the probit estimates for generalized level of trust, measured by this question from the World Values Survey: “*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*”. The answer is equal to 1 for “*Most people can be trusted*”, and 0 for “*Can’t be too careful*”. Estimated coefficients show that the country fixed effects are the main factors driving the variation in trust across individuals living in different countries.⁸ The country fixed effects that measure the conditional average level of generalized trust are thus almost perfectly correlated with the simple country average measure (country fixed effects explain 87 percent of the cross country variance of trust). We also look at the conditional average level of confidence in institutions as a measure for the quality of institutions. From the World Values Survey, we use the questions on the level of confidence in “*The Parliament*”, “*The Civil services*” and “*The Justice system*”. For each question, the answer ranges from 1 for “*A great deal*”, 2 for “*quite a lot*”, 3 for “*not very much*” to 4 for “*none at all*”. We reorder the answers so that a higher score denotes a higher level of confidence in the institution. We measure the index *confidence in institutions* as the first principal component of the three questions. Table 4.14, presented in appendix, shows the OLS estimates of the index *confidence in institutions* on individual characteristics and country fixed effects. The country fixed effects account once again for most of the cross country heterogeneity in the confidence in institutions (68 percent).

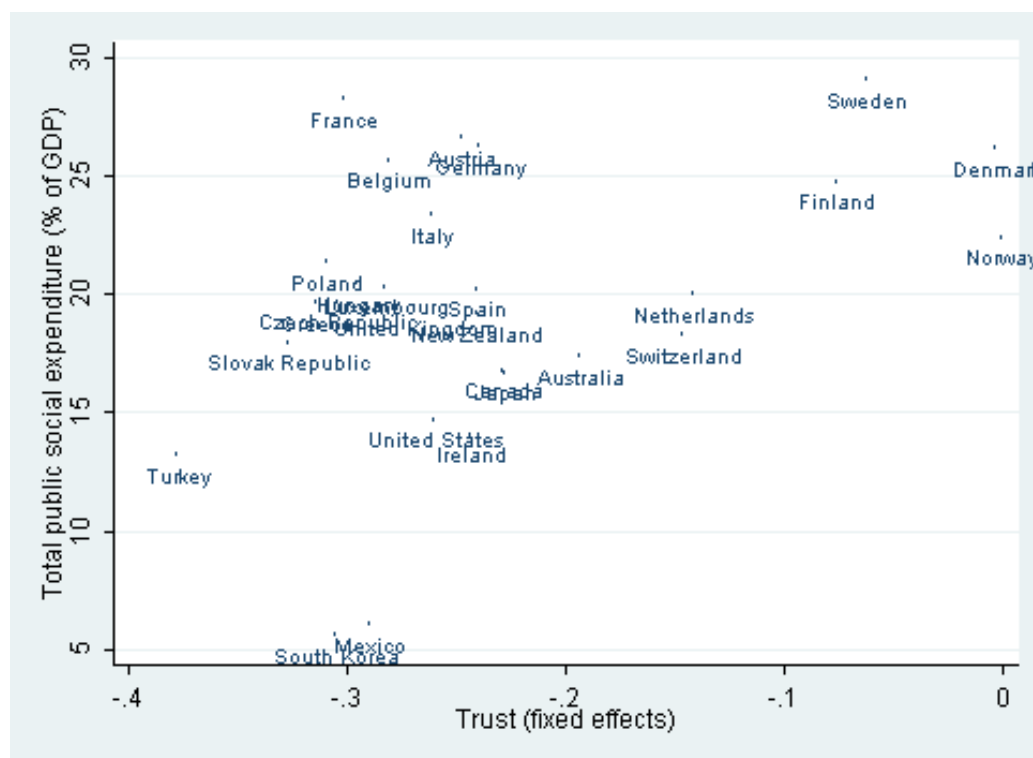
Figures 4.3 and 4.4 show the relationship between those conditional average measures of trust in others and trust in institutions, and the share of social spending in GDP. We find the same non-monotonic relationship pattern as the one found in figures 4.1 and 4.2 with the simple country average level of trust.⁹

you place your views on this scale (going from one for left to 10 for right), generally speaking?”.

8. Portugal is missing because of the lack of information on income and education in the WVS for this country.

9. This non-monotonic relationship also holds for alternative measures of the generosity of the welfare state such as the *overall generosity score* computed by Scruggs (2004) or tax wedges for single individuals or couples from the OECD.

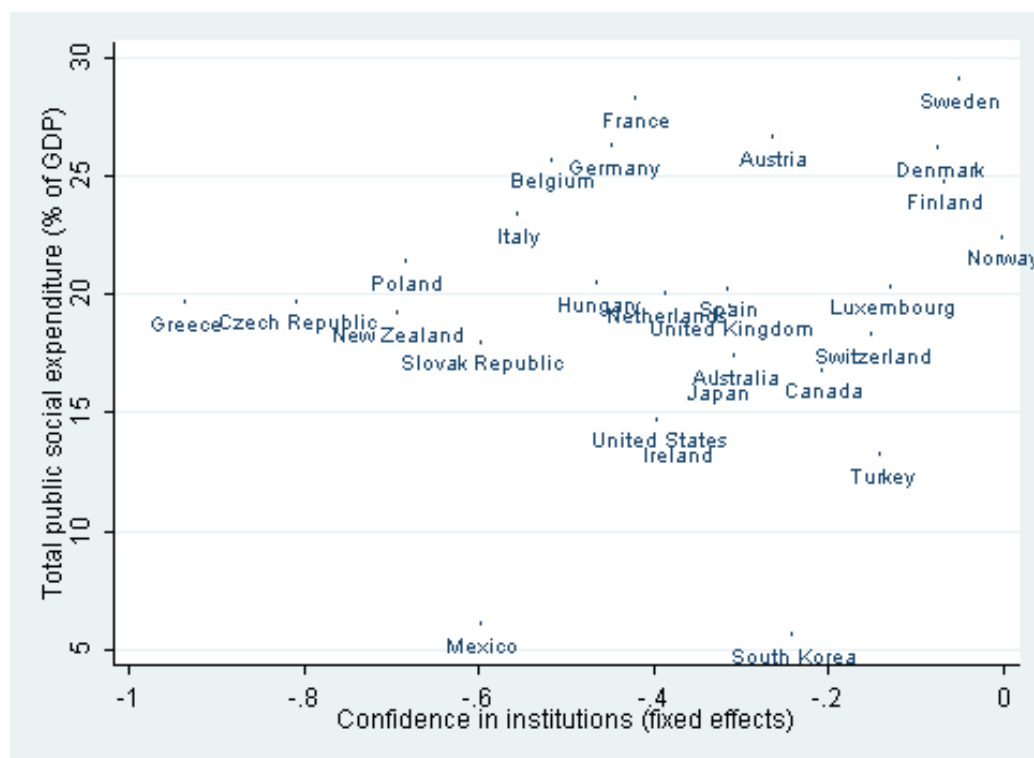
Figure 4.3: Trust and public social expenditure in 2000.



Sources: World Values Survey (authors' calculation) and OECD social expenditure DataBase.

We then document that this non-monotonic relationship holds for alternative measures of the generosity of the welfare state. We first use the *overall generosity score* computed by Scruggs (2004). The generosity index summarizes the generosity of three social insurance programs: sickness, unemployment and pension. Calculations are based on an average productive worker. For each program and each country, a score is assigned following the program's characteristics (replacement rate, qualification conditions, duration, etc.) and coverage. The final index is computed as the sum of the three scores and reflects increasing generosity of the system. Figures 4.5 and 4.6 document the relationship between the overall generosity score in 2000 and the conditional average measures of trust in others and confidence in institutions. According to figure 4.5, countries with relatively low levels of trust, like Belgium and France, as well as countries with high levels of trust,

Figure 4.4: Confidence in institutions and public social expenditure in 2000.



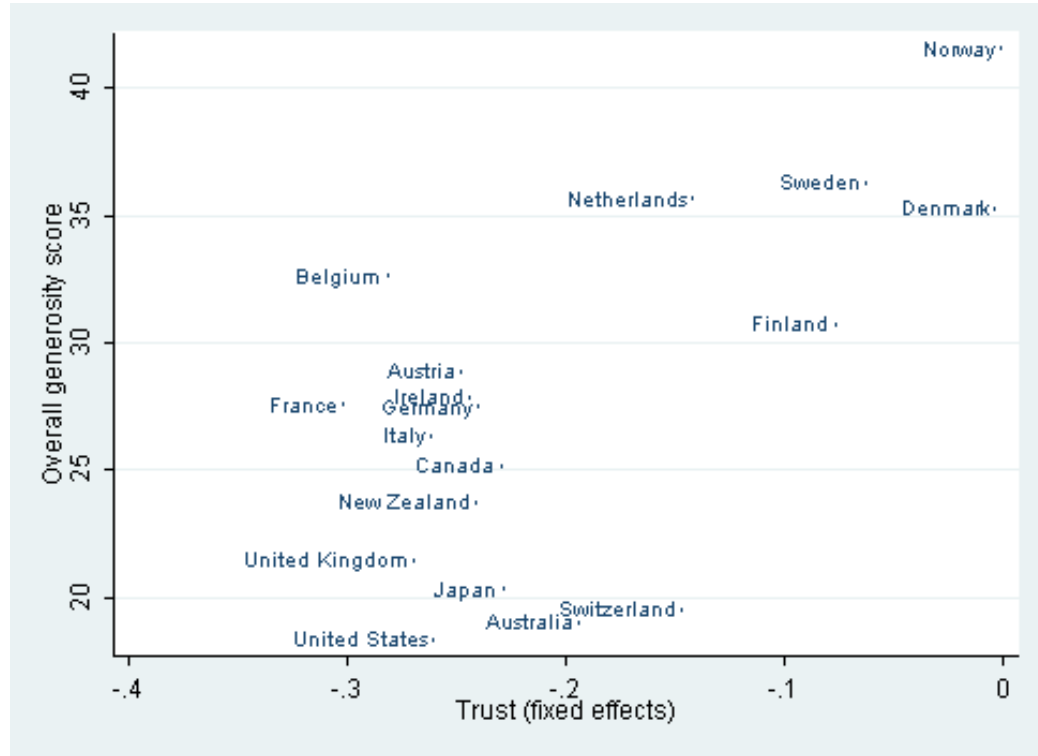
Sources: World Values Survey (authors' calculation) and OECD social expenditure DataBase.

like Sweden, Denmark, Finland and Norway, have generous welfare states. Countries with intermediate levels of trust have less generous welfare states. Figure 4.6 shows the same relationship pattern between the conditional level of confidence in institutions and the Scruggs index of welfare generosity. The size of the welfare state is minimum for countries with intermediate levels of confidence in institutions, like the United States and the United Kingdom.

Figures 4.12 to 4.15, presented in appendix, show the association between tax wedges for single individuals or couples and the conditional average level of trust in others and in institutions. These figures confirm the non-monotonic relation between the scope of the welfare state and the various indicators of trust.

These basic facts raise two main issues. First, how can we explain the non-monotonic relationship between the size of the welfare state and the level of

Figure 4.5: Trust and overall generosity score in 2000.



Sources: World Values Survey (authors' calculation) and Welfare State Entitlements Dataset.

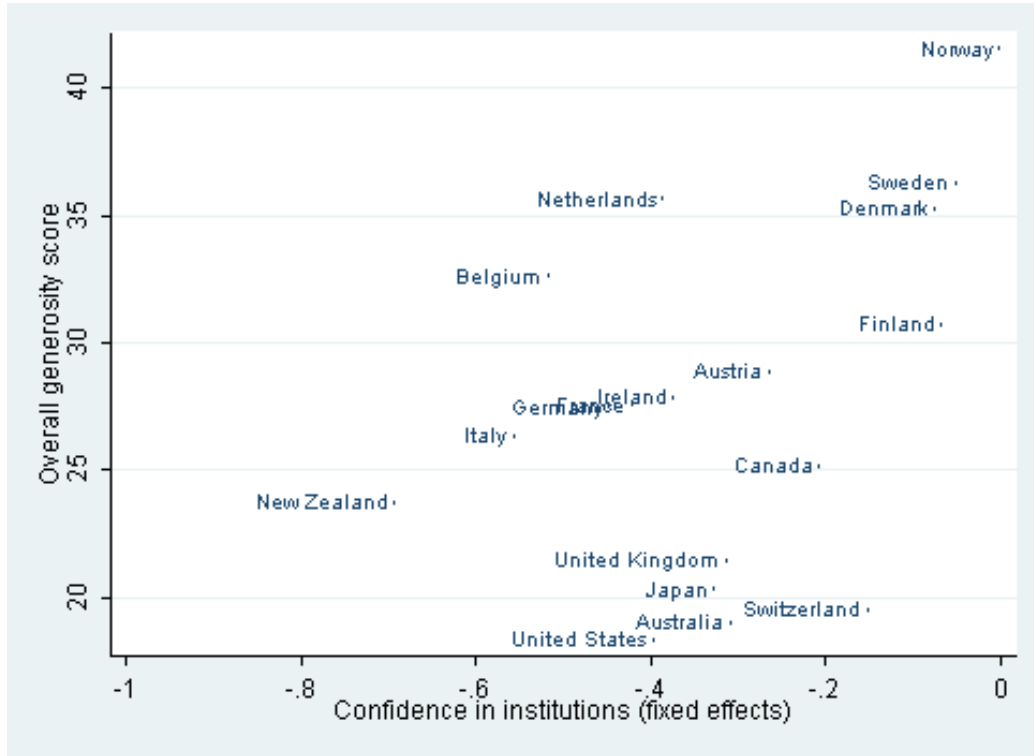
trust? Second, how can large welfare states survive despite the heterogeneity in their degree of transparency and efficiency?

The next sections rationalize both theoretically and empirically these findings by identifying the relationship running from trust to the welfare state that transits through the demand for redistribution as a function of trust and civicness.

4.3 The model

This section presents a simple model which highlights the relations between generalized trust, trust toward government institutions and the scope of the welfare state.

Figure 4.6: Confidence in institutions and overall generosity score in 2000.



Sources: World Values Survey (authors' calculation) and Welfare State Entitlements Dataset.

4.3.1 The setup

There is a continuum of individuals of measure one and a government which levies taxes and provides social benefits.

Every individual is either civic or uncivic. The share of civic individuals is denoted by $\alpha \in [0, 1]$. Civic individuals pay taxes and only claim benefits to which they are entitled. Uncivic individuals are purely opportunistic: they cheat on taxes and benefits when this is worthwhile. All individuals have the same preferences over consumption, which are represented, for the sake of simplicity, by the logarithmic utility function $\ln(c)$, where c stands for consumption.

Every individual produces $y > 0$ units of the consumption good with probability $\pi \in (0, 1)$ and a lower level, denoted by $y_0 \in (0, y)$ with prob-

ability $1 - \pi$. Productive individuals, who produce $y > 0$, must pay a tax, denoted by t , to finance benefits provided to those who produce nothing. Productive individuals can hide their production with probability $1 - p$. For instance, they can have the possibility to work in the informal sector, where production cannot be observed by the government. Civic individuals always declare their true level of production. Thus, they pay the required tax if they are productive and they claim benefits only if they produce the low level y_0 . Uncivic individuals able to hide their production never pay taxes and always claim benefits whatever their level of production.

Taxes are levied by officials. Every individual is working during the day and is an official at night. To represent the fact that uncivic officials do not do their duty, we assume that only the share $\alpha \in [0, 1]$ of taxes is transformed into social benefits. The complementary share $1 - \alpha$ is a dead weight loss.¹⁰ This assumption allows us to account in a simple way for the fact that the share of uncivic officials is more likely to be higher when there are more uncivic individuals in the society as a whole. And, accordingly, that governments are less efficient in countries where there are more uncivic individuals.

The timing of events is as follows. First, individuals are born either civic or uncivic. Second, individuals vote on benefits and taxes. Third, a share π of individuals produce y and a share $1 - \pi$ produce nothing. Then, taxes are paid and benefits are distributed.

4.3.2 The support for the welfare state

Let us first look at the support for the welfare state of civic and uncivic individuals. Every individual prefers the tax and benefits that maximize her expected utility subject to the budget constraint of the government. The tax receipt of the government is made of the tax paid by the $\pi\alpha$ productive

10. Alternatively, it could be assumed that officials capture taxes. This leads to the same qualitative results (see the discussion below). It could also be assumed that the probability to hide production decreases with the share of civic officials to the extent that civic officials are more conscientious. This does not change the result that the relation between trust and the scope of the welfare state is not monotonic.

civic individuals and of the $p\pi(1 - \alpha)$ productive uncivic individuals whose production cannot be hidden. Since taxes managed by uncivic individuals are lost, the total amount of resources available to provide social benefits is equal to $\alpha\pi t[\alpha + p(1 - \alpha)]$. Benefits are provided to the $(1 - \pi)$ unproductive individuals and to the $\pi(1 - p)(1 - \alpha)$ productive uncivic individuals who can claim benefits because their production can be hidden. Accordingly, the budget constraint is

$$\alpha\pi t[\alpha + p(1 - \alpha)] = [(1 - \pi) + \pi(1 - p)(1 - \alpha)]b. \quad (4.1)$$

- Civic individuals expect to pay the tax t if they are productive and to get benefits b otherwise. They choose non negative taxes and benefits which maximize¹¹

$$\pi \ln(y - t) + (1 - \pi) \ln(y_0 + b),$$

subject to the budget constraint (4.1). The optimal tax is

$$t = (1 - \pi)y - \frac{1 - \pi + \pi(1 - p)(1 - \alpha)}{\alpha[\alpha + p(1 - \alpha)]}y_0 \geq 0. \quad (4.2)$$

This equation shows that the optimal tax chosen by civic individuals increases with the share of civic individuals and is positive only if the share of civic individuals is above a threshold that will be denoted by $\alpha_{\text{civic}} \in (0, 1)$.¹² It is useful to write the ratio of consumption of unproductive individuals, $y_0 + b$, over consumption of productive individuals, $y - t$, chosen by civic individuals. Let us call this ratio

11. Notice that the logarithmic utility function implies that the optimal tax always satisfies $t < y$. This condition holds true for civic and uncivic individuals.

12. Since the term $(1 - \pi)y - \frac{1 - \pi + \pi(1 - p)(1 - \alpha)}{\alpha[\alpha + p(1 - \alpha)]}y_0$ is increasing with respect to α , equal to $-\infty$ when $\alpha \rightarrow 0$ and to $(1 - \pi)(y - y_0) > 0$ when $\alpha = 1$, there exists a unique value of $\alpha \in (0, 1)$, denoted by α_{civic} , such that the optimal tax is positive if $\alpha > \alpha_{\text{civic}}$ and equal to zero otherwise.

ρ_{civic} . It can be written:

$$\rho_{\text{civic}} = \frac{y_0 + b}{y - t} = \begin{cases} \phi(\alpha) & \text{if } \alpha > \alpha_{\text{civic}} \\ \frac{y_0}{y} & \text{otherwise} \end{cases} \quad (4.3)$$

where $\phi(\alpha) = \frac{\alpha[\alpha+p(1-\alpha)]}{1+\frac{\pi}{(1-\pi)}(1-p)(1-\alpha)}$ increases with α and satisfies $\phi(\alpha_{\text{civic}}) = y_0/y$, $\phi(1) = 1$. This equation shows that the demand for social insurance of civic individuals increases with the share of civic individuals. At the limit, there is full insurance, i.e. $y_0 + b = y - t$, when everyone is civic ($\alpha = 1$). When there are uncivic individuals, there is partial insurance or no insurance at all. When the share of civic individuals is too small ($\alpha \leq \alpha_{\text{civic}}$) civic individuals consider that it is not worth paying taxes.

- Uncivic individuals choose non negative taxes and benefits which maximize

$$\pi [p \ln(y - t) + (1 - p) \ln(y + b)] + (1 - \pi) \ln(y_0 + b),$$

subject to the budget constraint (4.1). The solution satisfies the budget constraint and

$$\rho_{\text{uncivic}} = \frac{y_0 + b}{y - t} = \begin{cases} \frac{\phi(\alpha)}{p} \left(1 + \frac{1}{1-\pi} \frac{y_0+b}{y+b}\right) & \text{if } \alpha > \alpha_{\text{uncivic}} \\ \frac{y_0}{y} & \text{otherwise} \end{cases} \quad (4.4)$$

where $\alpha_{\text{uncivic}} < \alpha_{\text{civic}}$ is the share of civic individuals below which the tax chosen by uncivic individuals is equal to zero.¹³ It turns out that

13. The first order solution of the program of uncivic individuals is

$$-\frac{p\pi}{y-t} + \frac{(1-p)\pi a}{y+at} + \frac{(1-\pi)a}{y_0+at} = 0,$$

where $a = \frac{\alpha\pi[\alpha+p(1-\alpha)]}{[(1-\pi)+\pi(1-p)(1-\alpha)]}$. This condition implies that $\lim_{\alpha \rightarrow 0} t = -\infty$. Differentiating this equation shows that t increases with α . Therefore, there exists a unique value of α , denoted by $\alpha_{\text{uncivic}} \in (0, 1)$ such that the tax chosen by uncivic individual is positive if $\alpha \geq \alpha_{\text{uncivic}}$ and equal to zero otherwise. Comparison of the first order condition of the program of uncivic individuals with that of civic individuals, equation (4.2), shows that $\alpha_{\text{uncivic}} < \alpha_{\text{civic}}$.

$\rho_{\text{uncivic}} \geq \rho_{\text{civic}}$, i.e. uncivic individuals want more redistribution than civic individuals because the ratio $(y_0 + b)/(y - t)$ defined by equation (4.4) is larger than that defined by equation (4.3). Uncivic individuals want more redistribution for two reasons. First, they benefit from public transfers more frequently than civic individuals since they claim benefits when their production can be hidden. Second, they do not bear all the burden of taxation since they escape from taxes when this is possible.¹⁴ It also appears that the support for the welfare state of uncivic individuals increases when the share of civic individuals is larger.

At this stage, the predictions of the model are that uncivic individuals want *more* redistribution than civic individuals and that all individuals want more redistribution when they expect to be surrounded by more civic individuals and when they face a more efficient welfare state.

4.3.3 The outcome of the vote

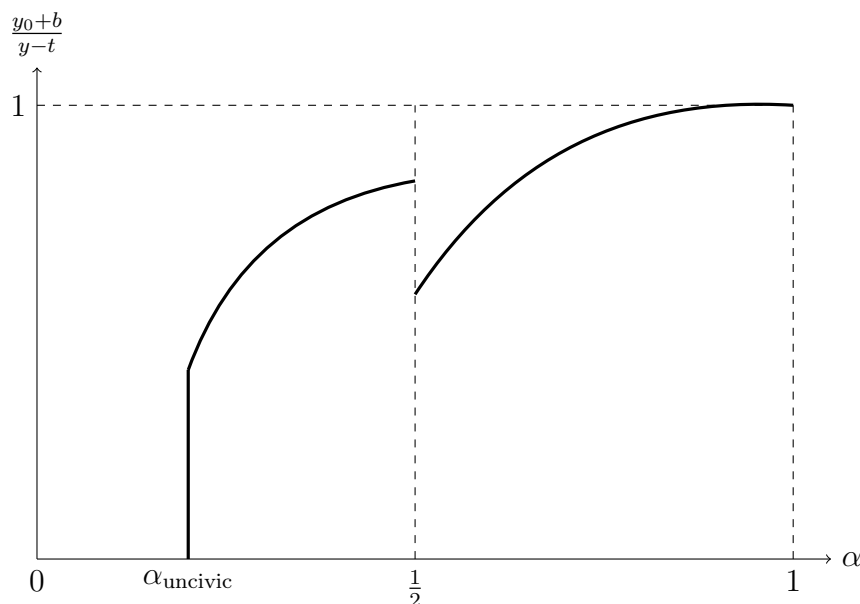
Individuals vote on the level of taxes and benefits compatible with the budget constraint. Since preferences are single peaked, we can assume that the outcome of the vote is defined by the median voter. Thus, taxes are determined by uncivic individuals if the share of civic individuals is smaller than $1/2$ and by civic individuals otherwise. The outcome is represented on figure 4.7.¹⁵ It shows that the relation between the share of civic individuals and the level of social insurance is not monotonic because the support for the welfare state of uncivic individuals is greater than that of civic individuals. It is possible to have large welfare states supported by a majority of uncivic individuals who cheat on taxes and benefits. This can explain why countries with a large share of uncivic individuals and weakly efficient government, like Italy, France and Belgium, can have welfare states as large as civic countries like the Scandinavian countries.

Moreover, when the median voter is uncivic, the size of the welfare state is

14. Uncivic individuals would have a third reason to prefer higher taxes and benefits than civic individuals if uncivic individuals captured taxes when they are officials.

15. From now on it is assumed that $\alpha_{\text{uncivic}} < 1/2$.

Figure 4.7: The relation between the share of civic individuals and the scope of the welfare state.



inefficiently high to the extent that maximization of any convex combination of the utilities of civic and uncivic individuals yields a lower tax level than that decided by the median voter.

4.3.4 Interactions between civic values and the welfare state

Until now, the share of civic individuals has been assumed exogenous. However, civic values and institutions interact. For instance, a larger welfare state, which provides more generous social insurance, can induce individuals to abuse social benefits more often, which can deteriorate civic values in the long run.¹⁶ Accordingly, it is not obvious that large inefficient welfare states sustained by a majority of uncivic individuals can survive in the long run. Let us now shed some light on this issue by providing a simple framework

¹⁶ On this issue, see Lindbeck et al. (1999), Lindbeck and Nyberg (2006), Tabellini (2008), and Michau (2009).

which enables us to analyze the survival of welfare states when interactions between the formation of civic values and institutions are taken into account.

We analyze the formation of civic values across generations. It is assumed that each generation lives one period and that the static model used so far represents how the economy works for each period $t = 0, 1, \dots, \infty$. In every generation, each individual has one child and can inculcate civic values to him. An individual who benefited from civic education gets a supplement of utility ψ that he loses if he behaves in a non civic way. It is assumed that $\psi > \ln[(1 + \pi)/\pi]$ to ensure that civic individuals always pay the required taxes and do not abuse social benefits.

Providing civic education is costly. The utility cost of civic education, denoted by $e > 0$, is specific to each individual-child pair. The cumulative distribution function of e , denoted by G , is stationary, identical across generations. Parents choose the civic values that maximize the expected utility of their child minus the utility cost to provide civic values.

The expected utility of a civic child is

$$u_c = \pi \ln(y - t) + (1 - \pi) \ln(y_0 + b) + \psi.$$

The expected utility of an uncivic child is

$$u_n = \pi [p \ln(y - t) + (1 - p) \ln(y + b)] + (1 - \pi) \ln(y_0 + b).$$

Parents prefer to educate their child as civic if and only if

$$u_c - u_n > e,$$

or

$$e < E \equiv \psi + \pi(1 - p) [\ln(y - t) - \ln(y + b)], \quad (4.5)$$

so that the share of civic individuals is equal to $G(E)$.

In every period, the equilibrium values of α , the share of civic individuals, t , the tax and b , the benefits are defined either by equations (4.1), (4.3) and $\alpha = G(E)$ if the majority of individuals are civic in equilibrium, or by

equation (4.1), 4.4 and $\alpha = G(E)$ if the majority of individuals are uncivic in equilibrium.

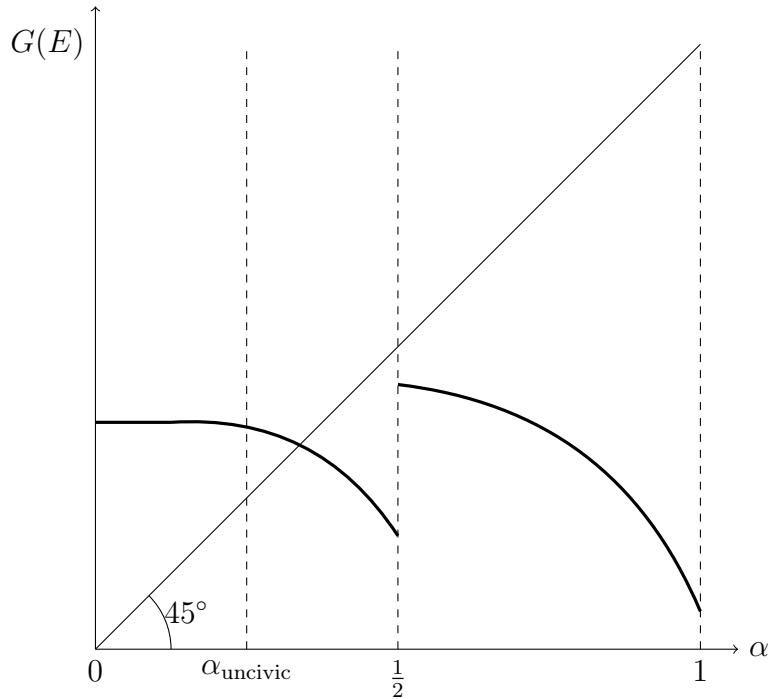
It is convenient to analyze the solution in the $(G(E), \alpha)$ plane because it can be easily deduced from the previous sub-section that equations (4.1), (4.3) and (4.4) define E as a non-monotonic function of α , equal to ψ when $\alpha = \alpha_{\text{uncivic}}$ (because $b = t = 0$ in that case). It is decreasing on the two intervals $[0, 1/2)$ and $(1/2, 0]$, with a discontinuity at $\alpha = 1/2$. It is worth noting that the shape of E is influenced by the expectations of parents on the behavior of the next generation. The returns of civic education decrease with the expected size of the welfare state because the gains to avoid paying taxes and abusing benefits increases with the expected generosity of the welfare state. Accordingly, parents have less incentives to educate their children in a civic way if the welfare state is expected to be larger for the next generation.

Figures 4.8, 4.9 and 4.10 show the different possible configurations of equilibria. On figure 4.8, the only equilibrium defines a share of civic individuals below one half. This situation arises if the cost of civic education is relatively high. In the opposite case, where the cost of civic education is relatively low, there is a majority of civic individuals in equilibrium, as displayed on figure 4.9.

It is also possible to have a situation with two equilibria, as shown on figure 4.10. One equilibrium, which corresponds to point A , where a minority of parents provide civic education. At the other equilibrium, which corresponds to point B , a majority of parents provide civic education. In the low equilibrium, there are less parents providing civic education than in the high equilibrium because the welfare state is larger and then the incentives to be civic are smaller in the low equilibrium. The multiplicity of equilibria can only arise if the high equilibrium, with a majority of civic individuals, induces a smaller welfare state than the low equilibrium, with a majority of uncivic individuals. From this point of view, this model suggests that continental European countries might be coordinated on a bad equilibrium with respect to anglo-saxon countries.

All in all, this analysis suggests that not only large and efficient welfare states, sustained by transparent institutions and civic citizens, but also large

Figure 4.8: Long run equilibrium with a minority of civic individuals.

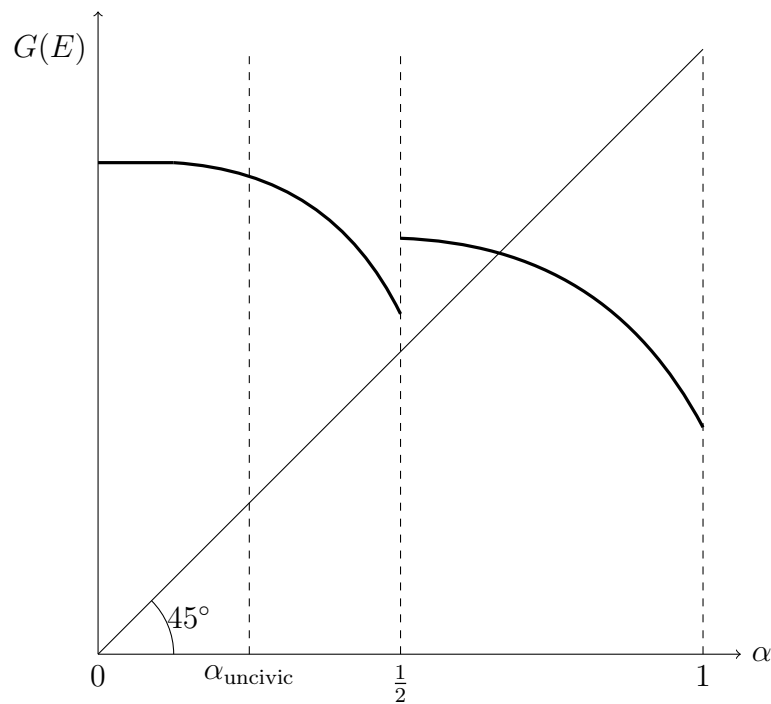


and inefficient welfare states, sustained by a majority of uncivic citizens and corrupt institutions, can survive in the long run.

4.4 Empirical results

In this section, we seek to establish the main predictions of the model at the individual level. First, there is a positive relation between generalized trust and the perceived civicness of the fellow citizens on one hand, and the support for the welfare state on the other hand. Second, trust in government institutions is positively associated to the support for the welfare state. Third, less civic individuals want more redistribution. We seek to identify through these three predictions the causal impact of trust on the welfare state working through popular demand. Finally, we test the fourth prediction according to which welfare states are less efficient in countries where there is

Figure 4.9: Long run equilibrium with a majority of civic individuals.



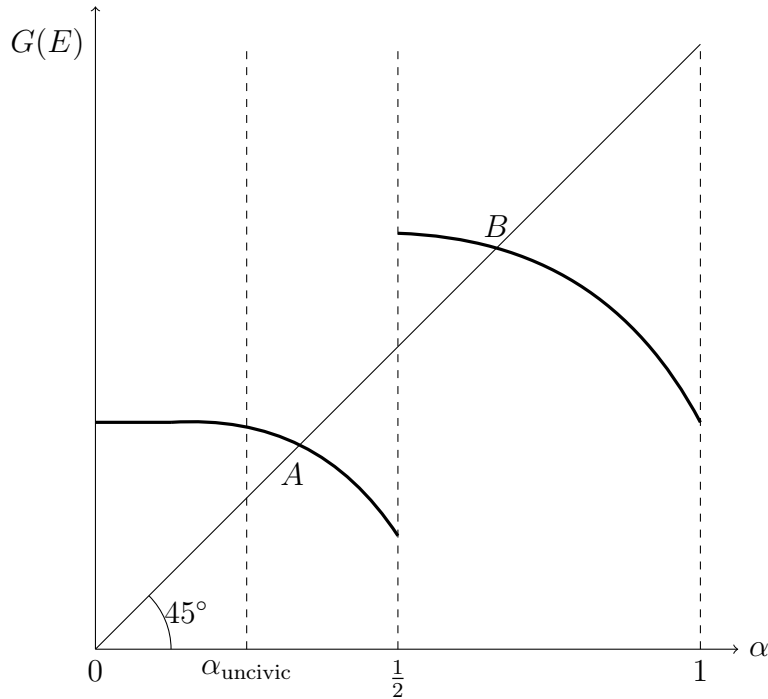
low confidence in government institutions and low trust among people.

4.4.1 Data

Most of the analysis is based on the fourth round of the European Social Survey which provides a specific module on attitudes towards the welfare state and was conducted in 2008 and 2009. We use 24 countries¹⁷ for which the variables we are interested in are available. This survey provides information about a large set of socioeconomic characteristics and beliefs. Our measure of the support for the welfare state relies on the answer to the following question: “ *Many social benefits and services are paid for by taxes. If the government had to choose between increasing taxes and spending more on*

17. Belgium, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Israel, Latvia, Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom.

Figure 4.10: Long run multiple equilibria.



social benefits and services, or decreasing taxes and spending less on social benefits and services, which should they do?”. Answers range from 0, “Government should decrease taxes a lot and spend much less on social benefits and services”, to 10, “Government should increase taxes a lot and spend much more on social benefits and services”. This scale clearly reflects an increasing support for the welfare state. Its formulation has the advantage of stressing both the costs and the benefits of the welfare state. This question is also much more explicit regarding the demand for the welfare state than the ones related to the role of government in reducing inequalities, traditionally used in the literature (see Alesina and Giuliano 2011). It should also be noticed that this question implicitly makes reference to the government of the country where the interview takes place. It is preceded by a series of questions about social benefits and tax authorities which make explicit reference to the country where people are interviewed.

Although we are using qualitative variables as dependent variables, all coefficients presented in this paper are obtained using ordinary least squares to estimate a linear model. We chose to do so in order to ease the direct interpretation of coefficients.¹⁸ This method is close to results that would be obtained using ordered probit or ordered logit models if the dependent variable is somehow continuous. In addition, this amounts to assume that this is equivalent to move from one category to the other at each rung of the scale. However, the differences between estimation's results from the different approaches vanishes as the size of the scale of the dependent variable increases. Here, the main dependent variable presented in the above paragraph is defined over a 11 items scale. Figure 4.16, presented in appendix, plots the distribution of support for the welfare among respondents interviewed in the ESS. Although a large share of respondents chose to answer 5, all items are used and none of them is never used by respondents.¹⁹

4.4.2 Generalized trust and perceived behavior of compatriots

The model predicts that there is a positive relation between generalized trust and the perceived civiness of the fellow citizens on one hand, and the support for the welfare state on the other hand. This prediction is tested in this subsection.

Table 4.1, shows the relationship between trust and the support for the welfare state. The dependent variable is the ESS question on the support for the welfare state. In columns 1 and 2, the explanatory variable of interest is the level of trust measured by the question: “*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*”. The variable ranges from 0 for “*You can't be too careful*” to 10 for “*Most people can be trusted*”. We include controls for age,

18. The emblematic empirical results of this paper using ordered logit and probit models are presented in tables 4.19, 4.20, 4.21, and 4.22 in appendix.

19. See Peel et al. (1998) and van Praag and Ferrer-i-Carbonell (2006) for additional discussions around the equivalence between linear models estimated using ordinary least squares and ordered response models.

gender, education, income of the household, family status, employment status, political orientation and religiosity. All these covariates are defined in table 4.15 presented in appendix. Column 1 shows the results of the estimation without country fixed effects while such effects are included in column 2. The coefficient associated with trust is positive and significant at the 1% level in both columns. The size of the coefficient of trust is economically significant. In column 2, the fact of claiming that “*Most people can be trusted*” rather than “*You can’t be too careful*” is associated with an increase in the support for the welfare state which is five times larger than the demand for redistribution of the unemployed relative to employees. The coefficient associated with political orientation shows that right wing individuals express less support for the welfare state. The coefficients of trust and of political orientation have the same magnitude. This means that a rise by one point in the 0-10 distrust-trust scale is associated with the same change in the support for the welfare state as an increase by one point in the 0-10 left-right scale. It is worth noting that the coefficient associated with the income of the household is negative, but not significantly different from zero, suggesting that the support for the welfare state is not significantly influenced by income. Education is positively correlated with the support for the welfare state, but the coefficient associated with education is five times smaller than the coefficient associated with trust.

The ESS also provides a large set of detailed questions about the trustworthiness and the perceived civicism of compatriots. In columns 3 and 4 of table 4.1 we use the following question on fairness of others: “*Do you think that most people would try to take advantage of you if they got the chance, or would they try to be fair?*”. The variable is equal to 0 if the respondent answered “*Most people would try to take advantage of me*” and 10 if it is answered “*Most people would try to be fair*”. Columns 3 and 4 of table 4.1 show that we get similar results as before with this measure of trust. In columns 5 and 6 of table 4.1, we also look at a broad question on civicism: “*Would you say that most of the time people try to be helpful or that they are mostly looking out for themselves?*”. The variable is equal to 0 if the respondent answered “*People mostly look out for themselves*” and 10 if it is

Table 4.1: Relationship between the support for the welfare state and different measures of trust.

Dependent variable: support for the welfare state						
	(1)	(2)	(3)	(4)	(5)	(6)
Most people can be trusted	0.111*** (0.025)	0.071*** (0.013)				
Most people try to be fair			0.093*** (0.029)	0.052*** (0.013)		
Most people try to be helpful					0.081*** (0.024)	0.047*** (0.012)
Age	0.011*** (0.002)	0.010*** (0.001)	0.011*** (0.002)	0.010*** (0.001)	0.012*** (0.002)	0.010*** (0.001)
Male	-0.045 (0.040)	-0.049 (0.037)	-0.028 (0.039)	-0.039 (0.038)	-0.033 (0.039)	-0.041 (0.038)
Education	0.005 (0.010)	0.015** (0.007)	0.009 (0.011)	0.017** (0.007)	0.012 (0.010)	0.018** (0.007)
Income	-0.004 (0.012)	0.002 (0.010)	-0.002 (0.013)	0.004 (0.010)	0.003 (0.012)	0.006 (0.009)
Religiosity	0.005 (0.015)	0.014** (0.006)	0.007 (0.014)	0.015** (0.006)	0.005 (0.015)	0.015** (0.006)
Political orientation	-0.109*** (0.027)	-0.117*** (0.029)	-0.109*** (0.026)	-0.118*** (0.029)	-0.108*** (0.027)	-0.117*** (0.029)
Married	Reference	Reference	Reference	Reference	Reference	Reference
Separated / Divorced	-0.009 (0.061)	-0.028 (0.050)	-0.005 (0.061)	-0.031 (0.049)	-0.005 (0.059)	-0.030 (0.048)
Widowed	-0.141** (0.064)	-0.102** (0.044)	-0.153** (0.063)	-0.107** (0.042)	-0.157** (0.066)	-0.106** (0.044)
Never married	0.114** (0.048)	0.094*** (0.031)	0.123** (0.049)	0.093*** (0.030)	0.137** (0.050)	0.100*** (0.031)
Employed	Reference	Reference	Reference	Reference	Reference	Reference
Unemployed	0.144* (0.073)	0.167** (0.061)	0.130* (0.072)	0.163** (0.062)	0.110 (0.075)	0.157** (0.061)
In education	0.174 (0.106)	0.195** (0.091)	0.180* (0.103)	0.200** (0.089)	0.198* (0.100)	0.208** (0.088)
Disabled	0.248* (0.136)	0.304*** (0.096)	0.235 (0.139)	0.285*** (0.099)	0.223 (0.134)	0.283*** (0.095)
Retired	0.075 (0.067)	0.164*** (0.046)	0.055 (0.068)	0.156*** (0.046)	0.047 (0.069)	0.152*** (0.046)
Other	0.097 (0.106)	0.082 (0.058)	0.084 (0.104)	0.081 (0.058)	0.074 (0.101)	0.081 (0.058)
Constant	4.545*** (0.275)	4.422*** (0.166)	4.489*** (0.290)	4.418*** (0.171)	4.527*** (0.269)	4.861*** (0.189)
Country fixed effects		Yes		Yes		Yes
Observations	30605	30605	30505	30505	30570	30570
R-squared	0.037	0.094	0.032	0.091	0.029	0.091

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors (clustered at the country level) in parentheses. OLS regressions. Data from European Social Survey, round 4. The support for the welfare state is measured using the following question: “Many social benefits and services are paid by taxes. If the government had to choose between increasing taxes and spending more on social benefits and services, or decreasing taxes and spending less on social benefits and services, which should they do?”. Answers range from 0, “Government should decrease taxes a lot and spend much less on social benefits and services”, to 10, “Government should increase taxes a lot and spend much more on social benefits and services”. The variable “most people can be trusted” is the answer, on a scale from 0 to 10, to the following question: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?”. The variable “most people try to be fair” is the answer, on a scale from 0 to 10, to the following question: “Do you think that most people would try to take advantage of you if they got a chance, or would they try to be fair?”. The variable “most people try to be helpful” is the answer, on a scale from 0 to 10, to the following question: “Would you say that most of the time people try to be helpful or that they are mostly looking out for themselves?”. Other covariates are described in the appendix.

answered “*People mostly try to be helpful*”. Perceived civicness of compatriots is positively associated with the demand for redistribution. The coefficient is statistically significant at 1% level.

We then turn to three more specific questions on the behavior of compatriots toward social benefits. The first question we use reads: “*Many people manage to obtain benefits and services to which they are not entitled*”. The variable is equal to 1 if the respondent agrees strongly, 2 if he agrees, 3 if he neither agrees nor disagrees, 4 if he disagrees and 5 if he disagrees strongly. We include the same individual covariates as before. Columns 1 and 2 of table 4.2 show the results without country fixed effect and with country fixed effect respectively. The belief in the way compatriots (mis)use social benefits is steadily associated with the individual support for the welfare state. The effect is substantial: according to estimated coefficients presented in column 2, the fact of agreeing strongly rather than disagreeing strongly with the claim “*Many people manage to obtain benefits and services to which they are not entitled*” is associated with a reduction in the demand for redistribution that is twice as large as the gap between the demand for redistribution of unemployed workers and employees. The second question reads “*Most unemployed people do not really try to find a job*”. The variable takes values ranging from 1 if the respondent agrees strongly, to 5 if he disagrees strongly. Columns 3 and 4 of table 4.2 show that the demand for redistribution is statistically significant and positively associated with the fact of believing that unemployed workers make efforts to find a job. The third question reads “*Employees often pretend they are sick in order to stay at home*”. The answer still ranges from 1 for “*strongly agree*”, to 5 for “*strongly disagree*”. Columns 5 and 6 of table 4.2 show the same highly significant relation between the beliefs in the efforts of employees and the support for the welfare state.

All these results show that there is a strong positive relation between perceived civicness of compatriots and the support for the welfare state. The support for the welfare state turns out to be particularly sensitive to beliefs in free riding on public transfers of compatriots.

Table 4.2: Relationship between the support for the welfare state and perceived civicness.

Dependent variable: support for the welfare state						
	(1)	(2)	(3)	(4)	(5)	(6)
Many people manage [...]	0.269*** (0.048)	0.203*** (0.027)				
Most unemployed people [...]			0.285*** (0.043)	0.231*** (0.037)		
Employees often [...]					0.197*** (0.043)	0.178*** (0.027)
Age	0.013*** (0.003)	0.011*** (0.002)	0.012*** (0.002)	0.010*** (0.001)	0.012*** (0.003)	0.010*** (0.002)
Male	-0.044 (0.042)	-0.051 (0.038)	-0.049 (0.043)	-0.050 (0.038)	-0.035 (0.042)	-0.036 (0.037)
Education	0.010 (0.011)	0.016** (0.007)	0.008 (0.010)	0.012* (0.007)	0.011 (0.011)	0.015* (0.007)
Income	0.002 (0.012)	0.004 (0.009)	0.003 (0.011)	0.004 (0.010)	0.005 (0.013)	0.004 (0.009)
Religiosity	0.006 (0.015)	0.016** (0.006)	0.006 (0.015)	0.017*** (0.006)	0.008 (0.015)	0.019*** (0.006)
Political orientation	-0.103*** (0.025)	-0.112*** (0.028)	-0.093*** (0.024)	-0.104*** (0.027)	-0.103*** (0.025)	-0.112*** (0.028)
Married	Reference	Reference	Reference	Reference	Reference	Reference
Separated / Divorced	-0.010 (0.061)	-0.038 (0.048)	-0.006 (0.057)	-0.036 (0.048)	0.009 (0.063)	-0.025 (0.050)
Widowed	-0.150** (0.062)	-0.094** (0.041)	-0.149** (0.065)	-0.098** (0.043)	-0.159** (0.070)	-0.098** (0.045)
Never married	0.153** (0.056)	0.108*** (0.033)	0.147*** (0.052)	0.102*** (0.032)	0.164*** (0.057)	0.108*** (0.032)
Employed	Reference	Reference	Reference	Reference	Reference	Reference
Unemployed	0.080 (0.075)	0.129** (0.060)	0.006 (0.085)	0.084 (0.055)	0.071 (0.079)	0.134** (0.063)
In education	0.189* (0.103)	0.195** (0.089)	0.198* (0.098)	0.193** (0.089)	0.210** (0.097)	0.205** (0.086)
Disabled	0.175 (0.135)	0.247** (0.092)	0.225* (0.129)	0.274*** (0.093)	0.197 (0.136)	0.241** (0.097)
Retired	0.056 (0.070)	0.160*** (0.045)	0.080 (0.065)	0.175*** (0.045)	0.059 (0.067)	0.173*** (0.042)
Other	0.081 (0.106)	0.073 (0.059)	0.057 (0.098)	0.071 (0.056)	0.077 (0.099)	0.086 (0.054)
Constant	4.236*** (0.276)	4.095*** (0.171)	4.031*** (0.249)	3.997*** (0.161)	4.269*** (0.260)	4.431*** (0.162)
Country fixed effects		Yes		Yes		Yes
Observations	29795	29795	30394	30394	29882	29882
R-squared	0.037	0.097	0.043	0.102	0.032	0.097

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors (clustered at the country level) in parentheses. OLS regressions. Data from European Social Survey, round 4. The support for the welfare state is measured using the following question: “Many social benefits and services are paid by taxes. If the government had to choose between increasing taxes and spending more on social benefits and services, or decreasing taxes and spending less on social benefits and services, which should they do?”. Answers range from 0, “Government should decrease taxes a lot and spend much less on social benefits and services”, to 10, “Government should increase taxes a lot and spend much more on social benefits and services”. The first three independent variables are approvals to the following statements: “Many people manage to obtain benefits and services to which they are not entitled”, “Most unemployed people do not really try to find a job”, and “Employees often pretend they are sick in order to stay at home”. Answers range from 1 if the respondent agrees strongly, to 5 if he disagrees strongly. Other covariates are described in the appendix.

4.4.3 Trust in government institutions

The model predicts that the second driving force of the demand for a generous welfare state is not just the level of trust in compatriots, but also the level of trust in government institutions. We exploit two sets of questions related to those beliefs.

First, respondents are asked “*how much do you personally trust each of the institutions I read out. 0 means you do not trust an institution at all, and 10 means you have complete trust*”. We look at trust toward the parliament, politicians, and the legal system. Table 4.3 shows that there is a strong positive relation between trust toward these institutions and the demand for redistribution. The size of the coefficient is economically very significant. The order of magnitude is the same as for generalized trust.

Second, there are two specific questions about tax authorities. One question is about the efficiency of tax authorities: “*How efficient do you think the tax authorities are at things like handling queries on time, avoiding mistakes and preventing fraud?*”. The answer ranges from 0 if the respondent considers that tax authorities are extremely inefficient in doing their job, to 10 if tax authorities are considered as extremely efficient. The other question is about the equity of tax authorities: “*Tell me whether you think the tax authorities in your country give special advantages to certain people or deal with everyone equally?*”. The answer ranges from 0 if the respondent considers that tax authorities give special advantages to certain people, to 10 if he believes that tax authorities deal with everyone equally. In addition, we use a question related to the perceived efficiency of health care: “*Still thinking about the provision of social benefits and services, please tell me how efficient you think the provision of health care in your country is*”. The answer ranges from 0 if the respondent considers that the provision of health care is extremely inefficient, to 10 if the provision of health care is considered as extremely efficient. Table 4.4 shows that both beliefs in the efficiency of tax authorities or health care, and beliefs in the equity of tax authorities are strongly positively associated with the support for the welfare state.

Table 4.3: Relationship between the support for welfare state and trust in institutions.

Dependent variable: support for the welfare state						
	(1)	(2)	(3)	(4)	(5)	(6)
Trust in the parliament	0.113*** (0.019)	0.071*** (0.011)				
Trust in the legal system			0.112*** (0.019)	0.067*** (0.009)		
Trust in politicians					0.111*** (0.022)	0.071*** (0.012)
Age	0.012*** (0.002)	0.010*** (0.001)	0.013*** (0.002)	0.011*** (0.001)	0.012*** (0.003)	0.011*** (0.001)
Male	-0.074* (0.043)	-0.057 (0.038)	-0.065 (0.044)	-0.053 (0.039)	-0.050 (0.042)	-0.047 (0.038)
Education	0.013 (0.009)	0.015** (0.007)	0.012 (0.009)	0.017** (0.007)	0.013 (0.011)	0.017** (0.007)
Income	-0.006 (0.012)	0.002 (0.010)	-0.003 (0.012)	0.002 (0.010)	-0.003 (0.012)	0.004 (0.010)
Religiosity	-0.005 (0.015)	0.012* (0.006)	-0.001 (0.014)	0.013* (0.006)	-0.003 (0.015)	0.012* (0.006)
Political orientation	-0.112*** (0.027)	-0.121*** (0.029)	-0.113*** (0.027)	-0.120*** (0.028)	-0.113*** (0.027)	-0.122*** (0.029)
Married	Reference	Reference	Reference	Reference	Reference	Reference
Separated / Divorced	0.006 (0.061)	-0.025 (0.052)	-0.009 (0.059)	-0.035 (0.049)	0.005 (0.061)	-0.018 (0.051)
Widowed	-0.134* (0.067)	-0.104** (0.044)	-0.130* (0.064)	-0.101** (0.045)	-0.148** (0.065)	-0.105** (0.044)
Never married	0.120** (0.051)	0.095*** (0.033)	0.132** (0.049)	0.104*** (0.031)	0.117** (0.052)	0.095*** (0.031)
Employed	Reference	Reference	Reference	Reference	Reference	Reference
Unemployed	0.117* (0.066)	0.161** (0.063)	0.135* (0.070)	0.180*** (0.061)	0.122* (0.066)	0.156** (0.063)
In education	0.159 (0.100)	0.181* (0.088)	0.175* (0.101)	0.199** (0.089)	0.162 (0.105)	0.181* (0.089)
Disabled	0.240* (0.137)	0.285*** (0.094)	0.243* (0.131)	0.290*** (0.093)	0.227 (0.142)	0.289*** (0.096)
Retired	0.054 (0.071)	0.148*** (0.046)	0.074 (0.064)	0.156*** (0.043)	0.044 (0.068)	0.144*** (0.045)
Other	0.037 (0.090)	0.082 (0.060)	0.067 (0.089)	0.098 (0.060)	0.066 (0.107)	0.082 (0.061)
Constant	4.503*** (0.219)	4.974*** (0.194)	4.385*** (0.222)	4.404*** (0.166)	4.618*** (0.237)	4.960*** (0.194)
Country fixed effects		Yes		Yes		Yes
Observations	30351	30351	30265	30265	30420	30420
R-squared	0.040	0.095	0.042	0.095	0.037	0.094

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors (clustered at the country level) in parentheses. OLS regressions. Data from European Social Survey, round 4. The support for the welfare state is measured using the following question: “Many social benefits and services are paid by taxes. If the government had to choose between increasing taxes and spending more on social benefits and services, or decreasing taxes and spending less on social benefits and services, which should they do?”. Answers range from 0, “Government should decrease taxes a lot and spend much less on social benefits and services”, to 10, “Government should increase taxes a lot and spend much more on social benefits and services”. The first three independent variables are answers to the following question: “How much do you personally trust each of the institutions I read out. 0 means you do not trust an institution at all, and 10 means you have complete trust. The parliament. The legal system. The politicians”. Other covariates are described in the appendix.

Table 4.4: Relationship between the support for the welfare state and the perceived efficiency of the welfare state.

Dependent variable: support for the welfare state						
	(1)	(2)	(3)	(4)	(5)	(6)
Efficiency tax system	0.101*** (0.019)	0.075*** (0.013)				
Advantages tax system			0.107*** (0.017)	0.070*** (0.010)		
Efficiency health care					0.118*** (0.022)	0.083*** (0.011)
Age	0.013*** (0.003)	0.011*** (0.002)	0.012*** (0.003)	0.011*** (0.002)	0.012*** (0.003)	0.011*** (0.001)
Male	-0.047 (0.044)	-0.049 (0.039)	-0.047 (0.045)	-0.048 (0.038)	-0.072* (0.041)	-0.064* (0.037)
Education	0.015 (0.011)	0.019** (0.007)	0.011 (0.010)	0.017** (0.007)	0.018* (0.010)	0.020*** (0.007)
Income	0.007 (0.012)	0.007 (0.009)	-0.001 (0.011)	0.004 (0.010)	0.002 (0.012)	0.007 (0.009)
Religiosity	0.001 (0.015)	0.012* (0.007)	0.004 (0.015)	0.013* (0.007)	-0.001 (0.015)	0.011* (0.006)
Political orientation	-0.115*** (0.026)	-0.122*** (0.029)	-0.120*** (0.027)	-0.124*** (0.029)	-0.110*** (0.025)	-0.119*** (0.028)
Married	Reference	Reference	Reference	Reference	Reference	Reference
Separated / Divorced	-0.008 (0.065)	-0.040 (0.052)	-0.039 (0.062)	-0.058 (0.048)	-0.020 (0.063)	-0.040 (0.049)
Widowed	-0.159** (0.062)	-0.118*** (0.039)	-0.181** (0.065)	-0.141*** (0.041)	-0.132* (0.068)	-0.107** (0.045)
Never married	0.150** (0.054)	0.092*** (0.030)	0.135** (0.053)	0.098*** (0.033)	0.126** (0.050)	0.095*** (0.031)
Employed	Reference	Reference	Reference	Reference	Reference	Reference
Unemployed	0.066 (0.076)	0.131* (0.064)	0.084 (0.070)	0.132** (0.060)	0.104 (0.071)	0.163** (0.060)
In education	0.205** (0.090)	0.217** (0.078)	0.163* (0.094)	0.189** (0.081)	0.171* (0.083)	0.176** (0.070)
Disabled	0.199 (0.136)	0.262** (0.096)	0.139 (0.128)	0.211** (0.095)	0.190 (0.134)	0.279** (0.099)
Retired	0.032 (0.071)	0.145*** (0.042)	0.045 (0.067)	0.138*** (0.042)	0.037 (0.073)	0.143*** (0.047)
Other	0.078 (0.102)	0.090 (0.061)	0.069 (0.101)	0.090 (0.058)	0.056 (0.100)	0.082 (0.059)
Constant	4.322*** (0.232)	4.788*** (0.200)	4.456*** (0.238)	4.375*** (0.187)	4.230*** (0.240)	4.826*** (0.186)
Country fixed effects		Yes		Yes		Yes
Observations	29108	29108	29077	29077	30396	30396
R-squared	0.035	0.095	0.043	0.097	0.039	0.095

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors (clustered at the country level) in parentheses. OLS regressions. Data from European Social Survey, round 4. The support for the welfare state is measured using the following question: “Many social benefits and services are paid by taxes. If the government had to choose between increasing taxes and spending more on social benefits and services, or decreasing taxes and spending less on social benefits and services, which should they do?”. Answers range from 0, “Government should decrease taxes a lot and spend much less on social benefits and services”, to 10, “Government should increase taxes a lot and spend much more on social benefits and services”. The variable “efficiency tax system” is the answer, on a scale from 0 to 10, to the following question: “How efficient do you think the tax authorities are at things like handling queries on time, avoiding mistakes and preventing fraud?”. The variable “advantages tax system” is the answer, on a scale from 0 to 10, to the following question: “Tell me whether you think the tax authorities in your country give special advantages to certain people or deal with everyone equally?”. The variable “efficiency health care” is the answer, on a scale from 0 to 10, to the following question: “Still thinking about the provision of social benefits and services, please tell me how efficient you think the provision of health care in your country is”. Other covariates are described in the appendix.

4.4.4 Civic spirit

Our model predicts that uncivic individuals want more redistribution than civic individuals because they escape from taxes and they abuse social benefits. The European Social Survey does not comprise the relevant information needed to analyze the relation between civic spirit and the demand for redistribution. Accordingly, we use the World Values Survey, which allows us to measure civiness using the answer to the following question: *“Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between, using this card.”* We use answers to following statements: *“Claiming government benefits to which you are not entitled”*; *“Avoiding a fare on public transport”*; *“Cheating on taxes when you have a chance”*; *“Someone accepting a bribe in the course of their duties”*; *“Throwing away litter in a public place”*; *“Buying stolen goods”*. The answers range from 1 for *“never justifiable”* to 10 for *“always justifiable”*. As shown by figure 4.17 in the appendix, a very large share of respondents answer *“never justifiable”* to those questions. Other answers are chosen by individually small and equally distributed shares of respondents. We thus distinguish two main types of individuals: those who claim that the behaviors described in the questions are *“never justifiable”* and those who say that they can be justifiable under any form. Hence, for each question, we create a variable measuring civic spirit which is equal to 1 if the answer is *“never justifiable”* and 0 for all other answers.

The WVS provides information about the support for the welfare state with a question close to that of the ESS: *“I’d like you to tell me your views on various issues. How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between. Incomes should be made more equal versus We need larger income differences as incentives”*. We reverse the scale of the answers such that a higher score indicates a higher support for the welfare state. We check that the WVS yields the same positive relation between trust and the demand for redistribution as that obtained from the ESS.

In the WVS, trust is measured with a question similar to that of the ESS: “*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*”. The answer can take either the value 1 for “*Most people can be trusted*”, or the value 0 for “*Can’t be too careful*”.²⁰ Column 1 of table 4.5 shows a positive and statistically significant relationship between generalized trust and the support for the welfare state as measured by the question of the WVS. The relation between civic spirit and the support for the welfare state is displayed in columns 2 to 7 of table 4.5. The explanatory variable of interest is civic spirit. All specifications include individual characteristics (not reported here, but defined in table 4.16 presented in appendix), country fixed effects and time fixed effects for the year of interview. For all statements, the estimated coefficient of civic spirit is negative and statistically significant. This means that more civic individuals want less redistribution, as predicted by the model. In terms of magnitude, the estimated effect of being civic on the support for the welfare state is as large (or even larger in some specifications) as the effect of gender or as the effect of being unemployed instead of employed.

4.4.5 Efficiency of welfare states

The model predicts that welfare states are less efficient in countries where there is less generalized trust, less trust toward government institutions and less transparency of the government. This prediction is tested in this subsection. We measure the efficiency of the welfare state using information about the perceived quality of services provided by the welfare state. We use the following four questions of the ESS: “*What do you think overall about the standard of living of pensioners?*”; “*What do you think overall about the standard of living of unemployed?*”; “*What you think overall about the state of education ?*”; “*What you think overall about the state of health services?*”. For all these questions, the answer ranges from 0 if the respondent chooses “*extremely bad*” to 10 if the respondent chooses “*extremely good*”.

20. In the ESS, the respondents choose an answer on a scale going from 0 for “*You can’t be too careful*” to 10 for “*Most people can be trusted*”.

Table 4.5: Relationship between the support for the welfare state and civism, measured using different questions.

Dependent variable: support for the welfare state							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Trust	0.166*** (0.030)						
Civ. (benefits)		-0.162*** (0.035)					
Civ. (transport)			-0.149*** (0.037)				
Civ. (taxes)				-0.072** (0.036)			
Civ. (bribe)					-0.082** (0.035)		
Civ. (litter)						-0.292*** (0.076)	
Civ. (stolen g.)							-0.188*** (0.056)
Age	0.000 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.002 (0.003)	-0.001 (0.002)
Male	-0.087*** (0.020)	-0.101*** (0.021)	-0.099*** (0.022)	-0.098*** (0.021)	-0.097*** (0.021)	-0.205*** (0.051)	-0.097** (0.036)
Education	-0.107*** (0.009)	-0.108*** (0.009)	-0.105*** (0.008)	-0.106*** (0.009)	-0.106*** (0.009)	-0.136*** (0.021)	-0.133*** (0.013)
Income	-0.094*** (0.009)	-0.090*** (0.009)	-0.095*** (0.009)	-0.092*** (0.009)	-0.092*** (0.009)	-0.086*** (0.013)	-0.099*** (0.017)
Religiosity	0.001 (0.005)	0.003 (0.006)	0.002 (0.006)	0.003 (0.006)	0.003 (0.005)	0.035** (0.013)	0.011 (0.009)
Pol. orient.	-0.137*** (0.010)	-0.138*** (0.010)	-0.138*** (0.011)	-0.137*** (0.010)	-0.138*** (0.010)	-0.174*** (0.022)	-0.150*** (0.019)
Married	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Sep. / Div.	-0.000 (0.042)	0.000 (0.042)	-0.009 (0.042)	0.003 (0.042)	0.000 (0.043)	-0.095 (0.108)	-0.021 (0.089)
Widowed	0.057 (0.041)	0.057 (0.042)	0.045 (0.043)	0.057 (0.042)	0.061 (0.042)	-0.026 (0.085)	0.104 (0.076)
Never marr.	0.011 (0.028)	0.007 (0.028)	0.013 (0.030)	0.021 (0.028)	0.022 (0.028)	-0.003 (0.070)	-0.068 (0.050)
Employed	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Unemployed	0.145*** (0.039)	0.139*** (0.038)	0.137*** (0.040)	0.136*** (0.039)	0.138*** (0.039)	0.087 (0.060)	0.160** (0.077)
In education	0.066 (0.047)	0.054 (0.049)	0.052 (0.050)	0.050 (0.049)	0.044 (0.048)	-0.135 (0.095)	0.065 (0.096)
Retired	0.129*** (0.045)	0.130*** (0.046)	0.114** (0.044)	0.128*** (0.046)	0.130*** (0.045)	0.180 (0.107)	0.199*** (0.066)
Other	0.046 (0.035)	0.065** (0.033)	0.066* (0.034)	0.071** (0.032)	0.070** (0.032)	0.000 (0.060)	0.032 (0.063)
Observations	144291	138965	133242	141945	142192	22538	47757
R-squared	0.113	0.111	0.109	0.110	0.110	0.154	0.105

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors (clustered by country \times wave) in parentheses. OLS regressions. Data from World Values Survey. All regressions include year and country fixed effects, and a constant term. The support for the welfare state is measured using the following question: "I'd like you to tell me your views on various issues. How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between. We need larger income differences as incentives versus Incomes should be made more equal". Trust is measured using the following question: "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" The variable equals 1 for "Most people can be trusted" and 0 for "Can't be too careful". "Civ." stands for "Civism". These variables equal 1 if the respondent answers "never justifiable" to the following question: "Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between, using this card"; variables equal 0 for all other answers. Statements used are: "Claiming government benefits to which you are not entitled"; "Avoiding a fare on public transport"; "Cheating on taxes when you have a chance"; "Someone accepting a bribe in the course of their duties"; "Throwing away litter in a public place"; "Buying stolen goods". Other covariates are described in the appendix.

In table 4.6, we regress the answer to each of these questions on the average levels of generalized trust, of trust toward the legal system, and of the perceived fairness of tax authorities in each country, and on the transparency of the government measured by the corruption perception index. For each question, we introduce as explanatory variable the national expenditure (in percentage of GDP) relevant for the left-hand side variable. Namely, we use old age expenditure for the standard of living of pensioners, unemployment expenditure for the standard of living of unemployed, education expenditure for the state of education, and health expenditure for the state of health services. In addition, we also introduce a different measure of needs related to each item. For the standard of living of pensioners, we use the ratio of the population older than 65 to working-age population. For the standard of living of unemployed people, we use the unemployment rate. For the state of educational system, we use the ratio of the population younger than 15 to the working-age population. For the state of the health system, we use the ratio of populations older than 65 and younger than 15 to the working-age population. All regressions also include individual characteristics (not reported here).

As shown by estimated coefficients presented in table 4.6, generalized trust, trust in the legal system, trust in the fairness of tax authorities, and the transparency of the government are almost always positively and significantly correlated with the perceived quality of services provided by the welfare state. Only trust in the legal system is not significantly related to the perceived standard of living of unemployed people and to the state of the education system. By contrast, the share of each expenditure in GDP is not systematically correlated with the perceived quality of services provided by welfare states. These results mean that welfare states are perceived as more efficient in countries with more trustworthy citizens and more trustworthy government. More strikingly, they also indicate that increases in public social expenditure do not improve the perceived quality of public education, public health, and public pensions if they are not accompanied by improvements in trust or in the quality of government institutions.

Table 4.6: Relationship between the average perceived transparency of the state and its efficiency.

Dependent variable:	Standard of living of pensioners				Standard of living of unemployed			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Most people can be trusted	0.409*** (0.130)				0.283*** (0.097)			
Corruption perceptions index		0.295*** (0.065)				0.182* (0.088)		
Trust in the legal system			0.335*** (0.100)				0.019 (0.103)	
Fairness of tax authorities				0.337** (0.130)				0.220* (0.107)
Old age expenditure	-0.248* (0.130)	-0.201 (0.123)	-0.320** (0.135)	-0.302** (0.134)				
Dependence ratio (old)	0.102* (0.055)	0.056 (0.052)	0.157*** (0.040)	0.149*** (0.045)				
Unemployment expenditure					0.334*** (0.111)	0.280** (0.115)	0.449*** (0.094)	0.371*** (0.100)
Unemployment rate					-0.160*** (0.035)	-0.142** (0.049)	-0.208*** (0.044)	-0.185*** (0.041)
Observations	26,614	26,614	26,614	26,614	26,383	26,383	26,383	26,383
R-squared	0.132	0.138	0.127	0.128	0.188	0.188	0.175	0.185
Dependent variable:	State of education				State of health services			
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Most people can be trusted	0.726*** (0.158)				0.426** (0.155)			
Corruption perceptions index		0.310** (0.125)				0.329*** (0.113)		
Trust in the legal system			0.641** (0.224)				0.236 (0.184)	
Fairness of tax authorities				0.781*** (0.157)				0.479*** (0.137)
Education expenditure	0.054* (0.030)	0.002 (0.033)	0.039 (0.032)	0.044* (0.022)				
Dependence ratio (young)	-0.018 (0.036)	-0.021 (0.033)	-0.056* (0.029)	-0.047*** (0.015)				
Health expenditure					0.089 (0.188)	-0.123 (0.233)	0.164 (0.204)	0.152 (0.171)
Dependence ratio					0.076** (0.033)	0.053 (0.034)	0.075** (0.035)	0.071** (0.029)
Observations	27,308	26,020	27,308	27,308	26,668	26,668	26,668	26,668
R-squared	0.118	0.080	0.081	0.132	0.087	0.098	0.063	0.095

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors (clustered at the country level) in parentheses. OLS regressions. Data from European Social Survey, round 4. All regressions include age, gender, education, income, religiosity, political orientation, marital status, employment status, and a constant term. The standard of living of the pensioners (unemployed) is measured using the following question: “*What do you think overall about the standard of living of pensioners (of people who are unemployed)?*”. Answers range from 0, “*Extremely bad*”, to 10, “*Extremely good*”. The state of education (health services) in your country nowadays?”. Variables “*Most people can be trusted*”, “*Trust in the legal system*”, and “*Fairness of tax authorities*” are country averages of variables presented in tables 4.1, 4.3, and 4.4. The corruption perceptions index is from Transparency International data. Old age, unemployment, education, and health expenditure are expressed in percentage of GDP using data from the OECD. Unemployment rate and dependence ratios are from the World Development Indicators.

4.5 Robustness checks

The previous section has shown that the support for the welfare state is strongly associated with generalized trust and trust toward government institutions. We have shown that these beliefs are substantial determinants of the support for the welfare state. We now investigate the robustness of this analysis to alternative explanations.

4.5.1 Culture or trust?

First, we explore whether the support for the welfare state is shaped by culture or by the actual institutional and social environment. Using the ESS database, Luttmer and Singhal (2011) show that the demand for redistribution of immigrants is correlated with the demand for distribution in their country of origin. Demand for redistribution would thus be ingrained in cultural preferences. To sort out the respective role of the current context, including the behavior of compatriots and the efficiency of institutions, and culture, we focus on the support for the welfare state of immigrants in the ESS. This data set comprises information about the country of residence, the country of birth, and the country of birth of the mother and of the father. These information allows us to identify first generation and second generation immigrants. We observe individuals from 28 different countries. They live in the 24 countries already used.

We regress the support of immigrants for the welfare state on the average level of beliefs (trust toward others and trust toward institutions) in their country of residence and on the average demand for redistribution in their country of origin.²¹ These two variables allow us to evaluate the relative weight of the beliefs in their country of origin and of the beliefs in their country of residence for explaining the individual demand for redistribution. The influence of the average demand for redistribution in their country of

21. For second generation immigrants, the average demand for redistribution in the country of origin is equal to the average demand for redistribution in the countries of birth of parents. If parents are born in different countries, we take the average of the two countries.

origin reflects the influence of culture. The influence of beliefs in their country of residence reflects the influence of the actual environment where immigrants are currently living.

Table 4.7 shows the results when we focus on the role of generalized trust in the country of residence. We find that for first generation immigrants, the support demand for redistribution in their country of origin is correlated with the support for the welfare state they express although living in a different country. Trust in the country of residence is weakly correlated with the support for the welfare state of these immigrants. It is thus mainly the inherited cultural beliefs that matters. Yet, when we turn to the demand for redistribution of second generation immigrants, only the local level of trust is statistically significant. These results suggest that the support for the welfare state is driven by beliefs that adapt to the local context and by cultural preferences whose influence disappears for second generation immigrants.

Table 4.8 reports the estimates when we focus on the level of trust in institutions instead of generalized trust in the country of residence. We find similar results as before: the support for the welfare state of first generation immigrants is statistically significantly correlated to the demand for redistribution in their country of origin but not to trust in institutions in their country of residence. However, for second generation immigrants, the correlation with the support for redistribution in the country of origin vanishes and the correlation with trust in institutions in their country of residence becomes significant.

All in all, tables 4.7 and 4.8 suggest that individual support for the welfare state is shaped both by inherited culture and by the current environment. Moreover, they suggest that the influence of culture disappears after one generation.

Table 4.9 confirms this finding by showing that the individual demand for redistribution is in line with the local average demand for redistribution and with the average demand for redistribution in the country of origin for first generation immigrants. The first column of table 4.9 presents the estimation of a regression where the left-hand side variable is the support for the welfare state of first generation immigrants measured by the answer to the question

Table 4.7: Relationship between the demand for redistribution by first and second generation immigrants and different measures of trust in their residence country, controlling for support for the welfare state in their origin country.

Dependent variable: support for the welfare state						
	(1)	(2)	(3)	(4)	(5)	(6)
Generation:	First	Second	First	Second	First	Second
Most people can be trusted in residence country	0.282** (0.126)	0.398*** (0.108)				
Most people try to be fair in residence country			0.093 (0.105)	0.192* (0.102)		
Most people try to be helpful in residence country					0.058 (0.081)	0.287** (0.131)
Support for the welfare state in origin country	0.302** (0.131)	0.085 (0.197)	0.343** (0.136)	0.266 (0.190)	0.354*** (0.124)	0.248 (0.198)
Observations	1476	1292	1476	1292	1476	1292
R-squared	0.029	0.055	0.018	0.035	0.017	0.040

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors (clustered at the country level) in parentheses. OLS regressions. Data from European Social Survey, round 4. All regressions include age, gender, marital status, employment status, income, and a constant term. The support for the welfare state is measured using the following question: “Many social benefits and services are paid by taxes. If the government had to choose between increasing taxes and spending more on social benefits and services, or decreasing taxes and spending less on social benefits and services, which should they do?”. Answers range from 0, “Government should decrease taxes a lot and spend much less on social benefits and services”, to 10, “Government should increase taxes a lot and spend much more on social benefits and services”. Support for the welfare state in origin country is the country average of this variable in the respondent’s origin country. Variables “most people can be trusted”, “most people try to be fair”, and “most people try to be helpful” are country average of variables presented in table 4.1.

of the ESS, and where the right hand side comprises individual controls for age, education and employment status. The right hand side also comprises the average support for the welfare state, GDP per capita in 2000 and the share of social expenditure in GDP in 2000 in the country of origin and in the country of residence. It appears that the support for the welfare state of first generation immigrants is correlated with the average support for the welfare state in the country of origin at 10 percent level of confidence and in the country of residence at 1 percent level of confidence. Moreover, the coefficient associated with the country of residence is more than twice as large as the coefficient associated with the country of origin. Column 2 presents the result of the estimation of the same equation for second generation immigrants.

Table 4.8: Relationship between the demand for redistribution by first and second generation immigrants and different measures of trust in institutions in their residence country, controlling for support for the welfare state in their origin country.

Dependent variable: support for the welfare state						
	(1)	(2)	(3)	(4)	(5)	(6)
Generation:	First	Second	First	Second	First	Second
Trust in the legal system in residence country	0.140 (0.101)	0.381*** (0.133)				
Trust in politicians in residence country			0.157 (0.136)	0.292** (0.131)		
Trust in the parliament in residence country					0.186 (0.114)	0.294*** (0.088)
Support for the welfare state in origin country	0.353** (0.133)	0.102 (0.221)	0.350** (0.128)	0.151 (0.175)	0.358*** (0.120)	0.145 (0.178)
Observations	1476	1292	1476	1292	1476	1292
R-squared	0.022	0.056	0.023	0.047	0.027	0.051

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors (clustered at the country level) in parentheses. OLS regressions. Data from European Social Survey, round 4. All regressions include age, gender, marital status, employment status, income, and a constant term. The support for the welfare state is measured using the following question: “Many social benefits and services are paid by taxes. If the government had to choose between increasing taxes and spending more on social benefits and services, or decreasing taxes and spending less on social benefits and services, which should they do?”. Answers range from 0, “Government should decrease taxes a lot and spend much less on social benefits and services”, to 10, “Government should increase taxes a lot and spend much more on social benefits and services”. Support for the welfare state in origin country is the country average of this variable in the respondent’s origin country. Variables “trust in the legal system”, “trust in politicians”, and “trust in the parliament” are country average of variables presented in table 4.3.

Their support for the welfare state is not correlated with the support for the welfare state prevailing in their country of origin, but it is strongly correlated with that of their country of residence. In Columns 3 and 4, we run the same regressions for first and second generation immigrants respectively, where the right hand side comprises, in addition to individual controls and the average country of origin support for the welfare state, country of residence fixed effects instead of average support for welfare state, GDP per capita and the share of social expenditure in GDP in the country of residence. The coefficient associated with the support for the welfare state in the country of origin is not different from zero for either generation. In Columns 5 and 6, the right hand side comprises, in addition to individual controls and the

Table 4.9: Relationship between the individual support for the welfare state by first and second generation immigrants and the support for the welfare state in origin and residence countries.

Dependent variable: support for the welfare state						
	(1)	(2)	(3)	(4)	(5)	(6)
Generation:	First	Second	First	Second	First	Second
Support for the welfare state in origin country	0.603*** (0.168)	-0.028 (0.268)	0.607*** (0.174)	0.018 (0.297)		
Real GDP per capita in origin country	0.085 (0.226)	0.228 (0.408)	0.013 (0.224)	0.285 (0.419)		
Total social expenditure in origin country	0.014 (0.018)	-0.014 (0.037)	0.016 (0.017)	-0.016 (0.036)		
Support for the welfare state in residence country	0.679** (0.274)	0.520** (0.206)			0.710** (0.264)	0.420** (0.196)
Real GDP per capita in residence country	-0.991** (0.407)	0.447 (0.343)			-0.951** (0.430)	0.731** (0.341)
Total social expenditure in residence country	-0.008 (0.016)	-0.051*** (0.017)			0.001 (0.017)	-0.072*** (0.018)
Residence country fixed effects			Yes	Yes		
Origin country fixed effects					Yes	Yes
Observations	785	873	785	873	785	873
R-squared	0.070	0.063	0.100	0.083	0.096	0.076

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors (clustered at the country level) in parentheses. OLS regressions. Data from European Social Survey, round 4. All regressions include age, gender, marital status, employment status, income, and a constant term. The support for the welfare state is measured using the following question: “Many social benefits and services are paid by taxes. If the government had to choose between increasing taxes and spending more on social benefits and services, or decreasing taxes and spending less on social benefits and services, which should they do?”. Answers range from 0, “Government should decrease taxes a lot and spend much less on social benefits and services”, to 10, “Government should increase taxes a lot and spend much more on social benefits and services”. Support for the welfare state in origin and residence countries is the country average of this variable in the respondent’s origin or residence country. Rel GDP per capita is the log of real GDP per capita. Total social expenditure are expressed in percentage of GDP using data from the OECD.

average country of residence support for the welfare state, country of origin fixed effects instead of average support for welfare state, GDP per capita and the share of social expenditure in GDP in the country of origin. The coefficient associated with the average support for the welfare state in the country of residence is strongly significant.

Table 4.10: Relationship between the support for the welfare state and trust, taking into account the perception of success.

Dependent variable: support for the welfare state		
	(1)	(2)
Trust	0.302*** (0.070)	0.180*** (0.034)
Luck	-0.005 (0.014)	-0.008 (0.011)
Country fixed effects		Yes
Observations	89602	89602
R-squared	0.046	0.110

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors (clustered by country \times wave) in parentheses. OLS regressions. Data from World Values Survey. All regressions include age, gender, marital status, employment status, education, income, religiosity, political orientation, year fixed effects, and a constant term. The support for the welfare state is measured using the following question: *"I'd like you to tell me your views on various issues. How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between. We need larger income differences as incentives versus Incomes should be made more equal"*. Trust is measured using the following question: *"Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?"* The variable equals 1 for "Most people can be trusted" and 0 for "Can't be too careful". Luck is the answer, on a scale from 1 to 10, to the following question: *"How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can chose any number in between. Hard work brings success."* On the scale, 1 is associated with *"In the long run, hard work usually brings a better life"*, and 10 is associated with *"Hard work doesn't generally bring success - it's more a matter of luck and connections"*.

4.5.2 Trust or alternative beliefs?

Beliefs in the determinants of success and in social mobility have been shown to be strong determinants of the demand for redistribution. In this sub-section, we investigate whether the correlation between trust and the demand for redistribution persists when those alternative beliefs are taken into account.

Alesina and La Ferrara (2005) have shown that beliefs in the determinants of success in life are strongly correlated with the demand for redistribution. More precisely, the belief that success is more likely to be determined by luck than by effort induces a higher demand for redistribution. On the contrary, people who think that they can climb the social ladder by their own hard work are more likely to demand less redistribution by the state. As the ESS

does not include a question giving information about such beliefs, we use the WVS, as in table 4.5 where we investigated the relationship between civicness and the demand for redistribution. In table 4.10, the dependent variable is the individual support for the welfare state, measured with the answer to the question about the desired degree of income inequality. We measure the feeling that success is determined by hard work rather than by chance using the following question from the WVS: “*Hard work brings success*”. Possible answers are on a scale between 1 and 10, 1 means “*In the long run, hard work usually brings a better life*”, whereas 10 means “*Hard work does not generally bring success - it’s more a matter of luck and connections*”. In table 4.10, the two explanatory variables of interest are trust and the belief in chance as a determinant of success, which we call “luck”. Both specifications include individual control variables. In addition, country fixed effects are included in column 2. The estimated coefficient of luck is not statistically significant. In contrast, the estimated coefficients of trust are very close to those presented in table 4.5. This result has two implications: first, it means that the effect of trust on the support for the welfare state is robust when we control for the individual beliefs in the determinants of success; second, it means that the effect of trust is much larger than the effect of luck, which is found to be non-significant.

In table 4.11, we replicate the same exercise using luck and our different measures of civicness as main explanatory variables. The different waves of the WVS including question about luck and civicness do not perfectly overlap. Hence, the number of observations is strongly reduced in some columns of table 4.11. The results of these regressions suggest two comments. First, once civicness is controlled for, luck has no effect on the support for the welfare state. Indeed, luck is found to be non-significant in all specifications. Second, despite the smaller size of the sample, the correlation between civicness and the support for the welfare state still holds when controlling for luck. It is always negative and is statistically different from zero at the 1% confidence level for three out of our six measures of civicness.

Using British data, Clark and D’Angelo (2010) have shown that climbing the social ladder with respect to parents is also an indicator of social

Table 4.11: Relationship between the support for the welfare state and civism, taking into account the perception of success.

Dependent variable: support for the welfare state						
	(1)	(2)	(3)	(4)	(5)	(6)
Luck	-0.010 (0.011)	-0.005 (0.011)	-0.008 (0.011)	-0.007 (0.011)	-0.018 (0.022)	-0.015 (0.012)
Civism (benefits)	-0.166*** (0.047)					
Civism (transport)		-0.126*** (0.046)				
Civism (taxes)			-0.074 (0.050)			
Civism (bribe)				-0.062 (0.045)		
Civism (litter)					-0.415 (0.179)	
Civism (stolen goods)						-0.207*** (0.058)
Observations	87720	86528	89187	89319	3907	44638
R-squared	0.110	0.113	0.109	0.109	0.079	0.111

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors (clustered by country \times wave) in parentheses. OLS regressions. Data from World Values Survey. All regressions include age, gender, marital status, employment status, education, income, religiosity, political orientation, year fixed effects, country fixed effects, and a constant term. The support for the welfare state is measured using the following question: "I'd like you to tell me your views on various issues. How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between. We need larger income differences as incentives versus Incomes should be made more equal". Luck is the answer, on a scale from 1 to 10, to the following question: "How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can chose any number in between. Hard work brings success." On the scale, 1 is associated with "In the long run, hard work usually brings a better life", and 10 is associated with "Hard work doesn't generally bring success - it's more a matter of luck and connections". Civism related variables are presented in table 4.5.

mobility associated with political preferences that reflects weaker support for the welfare state. Such mobility can be observed using the difference between the education of the respondent and the education of his parents. This measure of social mobility is likely to reflect realized and expected increasing (or decreasing) social mobility. In line with this reasoning, if an individual has a higher level of education than his parents, then his demand for redistribution should be weaker. In table 4.12, we use the ESS and show that the correlation between trust and the support for the welfare state is still statistically significant when mobility is taken into account. In order

to capture social mobility, we construct dummy variables for each difference between the level of education of the respondent and that of his parents. This approach takes into account all the possible upward or downward mobilities. We measure education using a 7 items scale which ranges from “not completed primary education” to “second stage of tertiary”. The interaction between respondent’s education and parents’ education gives a set of 49 dummy variables. We replicate the same exercise using the education of the father and the education of the mother. In table 4.12, we alternatively include the two sets of social mobility measures in regressions of the support for the welfare state on the different measures of trust used in table 4.1. All specifications include individual control variables and country fixed effects. The estimated coefficients of the different measures of trust are similar when using either education of the mother or education of the father. Moreover, the estimated coefficients are virtually identical to those estimated in table 4.1 using country fixed effects. These results mean that the effect of trust on the support for the welfare state persists when realized or expected social mobility is taken into account.

4.6 Conclusion

In this paper, we argue that there is a non-monotonic relationship between trust and the support for the welfare state. Until this point, we showed separately that higher trust fosters the support for the welfare state and that higher civicness reduces it. For the non-monotonic relationship to exist, the effects must offset each other as trust increases. To check this, we need comparable data for trust and civicness. As already pointed out, such data are only available in the World Values Survey. Table 4.17 in appendix presents the estimated coefficient from a regression of the support for the welfare state on individual trust and civism. Both variables are defined using dummies variables as in previous regressions. An additional dummy variable takes the interaction between trust and civism into account. The regression also includes individual covariates used in other regressions, as well as country fixed effects. The estimated coefficients of the variables of interest are statistically

Table 4.12: Relationship between the support for the welfare state and different measures of trust, taking into account differences in education within the family.

Dependent variable: support for the welfare state						
	(1)	(2)	(3)	(4)	(5)	(6)
Most people can be trusted	0.074*** (0.013)	0.072*** (0.013)				
Most people try to be fair			0.049*** (0.013)	0.051*** (0.013)		
Most people try to be helpful					0.048*** (0.013)	0.049*** (0.013)
Educ. \times father's educ.	Yes		Yes		Yes	
Educ. \times mother's educ.		Yes		Yes		Yes
Observations	28776	29438	28694	29343	28750	29409
R-squared	0.095	0.095	0.092	0.092	0.091	0.092

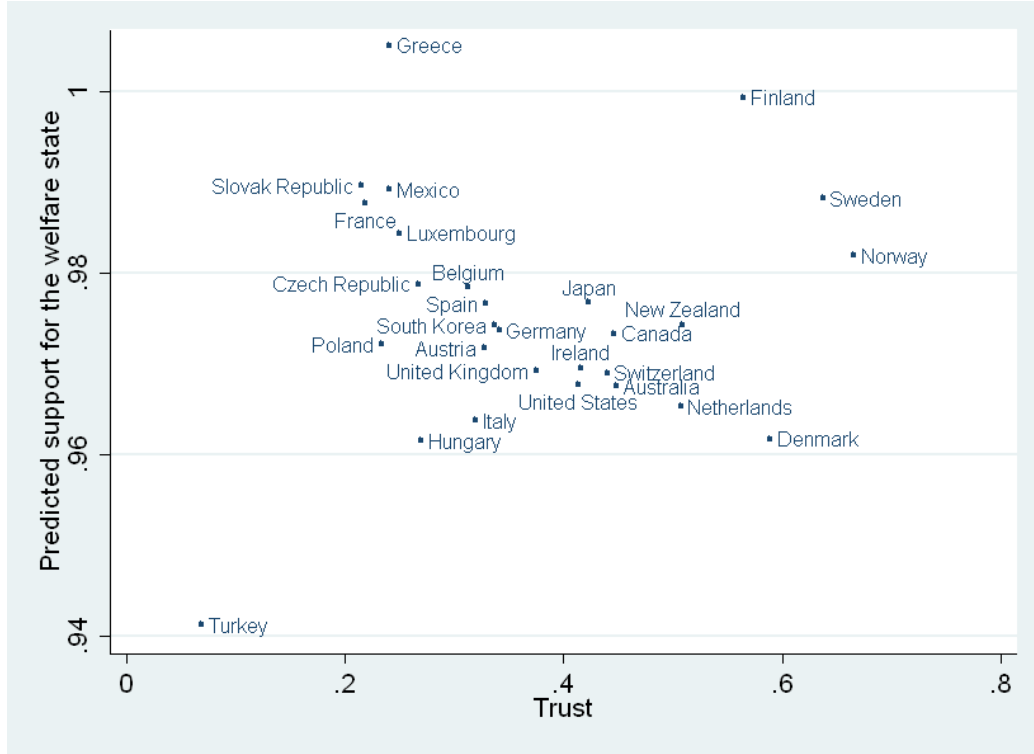
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors (clustered at the country level) in parentheses. OLS regressions. Data from European Social Survey, round 4. All regressions include age, gender, marital status, employment status, income, religiosity, political orientation, country fixed effects and a constant term. The support for the welfare state is measured using the following question: “Many social benefits and services are paid by taxes. If the government had to choose between increasing taxes and spending more on social benefits and services, or decreasing taxes and spending less on social benefits and services, which should they do?”. Answers range from 0, “Government should decrease taxes a lot and spend much less on social benefits and services”, to 10, “Government should increase taxes a lot and spend much more on social benefits and services”. The variable “most people can be trusted” is the answer, on a scale from 0 to 10, to the following question: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?”. The variable “most people try to be fair” is the answer, on a scale from 0 to 10, to the following question: “Do you think that most people would try to take advantage of you if they got a chance, or would they try to be fair?”. The variable “most people try to be helpful” is the answer, on a scale from 0 to 10, to the following question: “Would you say that most of the time people try to be helpful or that they are mostly looking out for themselves?”. Interactions terms are a set of dummy variables that represents all possible differences between the respondent's and its parents education.

significant and behave as expected. According to the estimated coefficients, the support for the welfare state by individual i can be written as a function of trust and civism as follows:

$$\text{Support}_i = 0.12 \times \mathbb{1}\{\text{Trust}\}_i - 0.07 \times \mathbb{1}\{\text{Civism}\}_i - 0.09 \times \mathbb{1}\{\text{Civism}\}_i \times \mathbb{1}\{\text{Trust}\}_i + \mathbb{K},$$

where \mathbb{K} is an arbitrary constant, $\mathbb{1}\{\text{Trust}\}_i$ equals 1 if the respondent answers “most people can be trusted” to the trust question, and $\mathbb{1}\{\text{Civism}\}_i$ equals 1 if the respondent answers “never justifiable” to the question related

Figure 4.11: Predicted support for the welfare state and trust.



Source: World Values Survey (authors' calculation).

to civicism. It follows that the predicted average support for the welfare state in a given country can be written as:

$$\begin{aligned} \overline{\text{Support}} = & 0.12 \times \overline{\text{Trust}} - 0.07 \times \overline{\text{Civism}} \\ & - 0.08 \times \overline{\text{Trust \& Civism}} + \mathbb{K}, \end{aligned} \quad (4.6)$$

where $\overline{\text{Trust}}$ is the share of trusty people, $\overline{\text{Civism}}$ the share of civic people, and $\overline{\text{Trust \& Civism}}$ the share of people who are both trusty and civic in the country.

We used shares of trusty and civic individuals living in the countries already used in section 4.2 to compute the predicted support for the welfare state as defined by equation (4.6) and setting $\mathbb{K} = 1$. Figure 4.11 plots this predicted support for the welfare state against the share of trusty people in

every country. As expected, the relationship between trust and the support for the welfare state is U-shaped once the effect of civicness is taken into account. Table 4.18, presented in appendix, displays underlying data used to construct this figure. A closer look at the shares of trusty and civic individuals in the different countries confirms that the support for the welfare state is high in countries with low levels of trust if the share of civic individuals is sufficiently low. For example, France has a relatively low level of trust and a high share of uncivic citizens. The predicted support for the welfare state in France is as high as the one in Sweden. However, the support for the welfare state in Sweden relies on higher trust and on a small share of uncivic individuals.

All in all, this paper shows that the scope of welfare states is associated with trust in a non trivial way. Large and inefficient welfare states survive thanks to the support of a majority of uncivic individuals. The creation of large and efficient welfare states needs a large majority of civic citizens.

These findings suggest that the large welfare states of Continental European countries are inefficiently large. Our results show that increases in public expenditure do not improve the perceived quality of public education, public health, public pensions and unemployment insurance if they are not accompanied by improvements in the reliability of government institutions. However, improvements in the reliability of government institutions and in the trustworthiness of citizens are associated with better quality of services provided by the welfare state. Accordingly, the priority of political reforms in Continental European countries should be to improve pro-social behavior of citizens and the transparency of government institutions. This is a way to improve the efficiency of welfare states, but also to reduce their size. A recipe worth keeping in mind in a period of large and often unsustainable public debts.

4.7 Appendix

Table 4.13: Determinants of trust in others.

Dependent variable: trust			
Norway	Reference	Spain	-0.240*** (0.023)
Australia	-0.193*** (0.030)	Sweden	-0.062*** (0.023)
Austria	-0.247*** (0.016)	Switzerland	-0.146** (0.059)
Belgium	-0.281*** (0.013)	Turkey	-0.378*** (0.016)
Canada	-0.229*** (0.021)	United Kingdom	-0.269*** (0.014)
Czech Republic	-0.304*** (0.012)	United States	-0.260*** (0.021)
Denmark	-0.003 (0.035)	Age	0.002*** (0.000)
Finland	-0.076** (0.034)	Male	-0.010* (0.005)
France	-0.301*** (0.011)	Education	0.032*** (0.003)
Germany	-0.239*** (0.020)	Income	0.011*** (0.002)
Greece	-0.314*** (0.008)	Religiosity	0.009*** (0.001)
Hungary	-0.295*** (0.010)	Political orientation	-0.008*** (0.002)
Ireland	-0.243*** (0.016)	Married	Reference
Italy	-0.261*** (0.017)	Separated / Divorced	-0.018** (0.008)
Japan	-0.228*** (0.023)	Widowed	-0.015 (0.011)
South Korea	-0.305*** (0.013)	Never married	0.005 (0.007)
Luxembourg	-0.283*** (0.011)	Employed	Reference
Mexico	-0.289*** (0.025)	Unemployed	-0.059*** (0.011)
Netherlands	-0.141*** (0.032)	In education	0.037* (0.019)
New Zealand	-0.240*** (0.023)	Retired	-0.052*** (0.009)
Poland	-0.309*** (0.012)	Other	-0.028*** (0.009)
Slovak Republic	-0.327*** (0.009)		
		Observations	58873
		Pseudo R-squared	0.113

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors (clustered by country \times wave) in parentheses. Marginal effects from the estimation of a probit model. Data from World Values Survey. The regression includes year fixed effects. Trust is measured using the following question: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” The variable equals 1 for “Most people can be trusted” and 0 for “Can’t be too careful”. Other covariates are described in the appendix.

Table 4.14: Determinants of confidence in institutions.

Dependent variable: confidence in institutions			
Norway	Reference	Spain	-0.315*** (0.070)
Australia	-0.307*** (0.101)	Sweden	-0.050 (0.102)
Austria	-0.263** (0.103)	Switzerland	-0.150*** (0.055)
Belgium	-0.516*** (0.103)	Turkey	-0.139*** (0.031)
Canada	-0.205** (0.100)	United Kingdom	-0.312*** (0.107)
Czech Republic	-0.806*** (0.101)	United States	-0.396*** (0.097)
Denmark	-0.075 (0.102)	Age	0.001 (0.000)
Finland	-0.065 (0.188)	Male	-0.007 (0.013)
France	-0.420*** (0.103)	Education	0.012** (0.005)
Germany	-0.446*** (0.104)	Income	0.011*** (0.003)
Greece	-0.934*** (0.105)	Religiosity	0.035*** (0.003)
Hungary	-0.463*** (0.100)	Political orientation	0.017*** (0.006)
Ireland	-0.372*** (0.105)	Married	Reference
Italy	-0.555*** (0.145)	Separated / Divorced	-0.071*** (0.013)
Japan	-0.326*** (0.109)	Widowed	0.015 (0.018)
South Korea	-0.241*** (0.084)	Never married	-0.023 (0.015)
Luxembourg	-0.128 (0.103)	Employed	Reference
Mexico	-0.597*** (0.108)	Unemployed	-0.065*** (0.023)
Netherlands	-0.385*** (0.110)	In education	0.072*** (0.022)
New Zealand	-0.692*** (0.106)	Retired	0.032* (0.018)
Poland	-0.683*** (0.114)	Other	0.062** (0.029)
Slovak Republic	-0.595*** (0.104)	Constant	-0.108 (0.190)
		Observations	47666
		R-squared	0.104

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors (clustered by country \times wave) in parentheses. OLS regressions. Data from World Values Survey. The regression includes year fixed effects. Confidence in the institutions is the first principal component of answers to the three following questions: “*I am going to name a number of organisations. For each one, could you tell me how much confidence you have in them: is it a great deal of confidence, quite a lot of confidence, not very much confidence or none at all? The parliament. The civil services. The justice system.*” For each question, the answer can be either 1, “*none at all*”, 2, “*not very much*”, 3, “*quite a lot*”, or 4, “*a great deal*”. Other covariates are described in the appendix.

Table 4.15: Definitions of covariates from the European Social Survey.

Age	Respondent's age in years.
Gender	Respondent's gender. Equals 1 for males, and 0 for females.
Education	Respondent's years of full-time education completed.
Income	Respondent's income decile. From 1 to 10.
Religiosity	Answer to the following question: <i>"How religious are you?"</i> . Answers range from 0, <i>"Not at all religious"</i> , to 10, <i>"Very religious"</i> .
Political orientation	Answer to the following question: <i>"In politics people sometimes talk of 'left' and 'right'. Using this card, where would you place yourself on this scale, where 0 means the left and 10 means the right?"</i> . Answers range from 0, <i>"Left"</i> , to 10, <i>"Right"</i> .
Marital status	Respondent's marital status, coded using three dummy variables for "separated / divorced", "widowed", and "never married". "Married" is the reference category.
Employment status	Respondent's employment status, coded using five dummy variables for "unemployed", "in education", "disabled", "retired", and "other". "Employed" is the reference category.

Table 4.16: Definitions of covariates from the World Values Survey.

Age	Respondent's age in years.
Gender	Respondent's gender. Equals 1 for males, and 0 for females.
Education	Respondent's highest educational level attained. The scale ranges from 1, "inadequately completed primary education", to 8, "university with degree/higher education".
Income	Respondent's income decile. From 1 to 10.
Religiosity	Answer to the following question: <i>"Apart from weddings, funerals and christenings, about how often do you attend religious services these days?"</i> . Answers range from 0, <i>"Never practically never"</i> , to 7, <i>"More than once a week"</i> .
Political orientation	Answer to the following question: <i>"In political matters, people talk of 'the left' and 'the right.' How would you place your views on this scale, generally speaking?"</i> . Answers range from 0, <i>"Left"</i> , to 10, <i>"Right"</i> .
Marital status	Respondent's marital status, coded using three dummy variables for "separated / divorced", "widowed", and "never married". "Married" is the reference category.
Employment status	Respondent's employment status, coded using five dummy variables for "unemployed", "in education", "disabled", "retired", and "other". "Employed" is the reference category.

Table 4.17: Relationship between the support for the welfare state, trust, and civism.

Dependent variable: support for the welfare state	
	(1)
Trust	0.116** (0.055)
Trust \times Civism	-0.089* (0.052)
Civism	-0.074* (0.044)
Observations	44,979
R-squared	0.121

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors (clustered by country \times wave) in parentheses. OLS regression. Data from World Values Survey. The regression includes age, gender, marital status, employment status, education, income, religiosity, political orientation, year and country fixed effects, and a constant term. The support for the welfare state is measured using the following question: *"I'd like you to tell me your views on various issues. How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between. We need larger income differences as incentives versus Incomes should be made more equal"*. Trust is measured using the following question: *"Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?"* The variable equals 1 for "Most people can be trusted" and 0 for "Can't be too careful". Civism equals 1 if the respondent answers *"never justifiable"* to the following question: *"Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between, using this card"*; variables equal 0 for all other answers. Statement used is: *"Claiming government benefits to which you are not entitled"*.

Table 4.18: Predicted support for the welfare state as a function of shares of trusty and civic individuals.

	Trust	Civism	Trust & civism	Predicted support for the welfare state
Australia	.448	.739	.331	.968
Austria	.327	.643	.207	.972
Belgium	.312	.558	.182	.978
Canada	.446	.679	.313	.973
Czech Republic	.267	.536	.139	.979
Denmark	.589	.849	.488	.962
Finland	.565	.53	.3	.999
France	.219	.397	.092	.988
Germany	.341	.639	.206	.974
Greece	.241	.245	.052	1.005
Hungary	.27	.711	.19	.962
Ireland	.416	.705	.295	.97
Italy	.319	.706	.234	.964
Japan	.423	.655	.265	.977
Luxembourg	.25	.463	.115	.984
Mexico	.24	.419	.085	.989
Netherlands	.507	.791	.39	.965
New Zealand	.508	.706	.362	.974
Norway	.665	.717	.471	.982
Poland	.234	.572	.14	.972
Slovak Republic	.215	.383	.078	.99
South Korea	.337	.63	.203	.974
Spain	.328	.602	.188	.977
Sweden	.637	.656	.414	.988
Switzerland	.44	.711	.327	.969
Turkey	.069	.83	.058	.941
United Kingdom	.375	.684	.264	.969
United States	.414	.711	.308	.968

Data are from the World Values Survey. “Trust” is the share of individuals who answer “*most people can be trusted*” to the following question: “*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*”. “Civism” is the share of individuals who answer “*never justifiable*” to the following question: “*Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between, using this card*”; variables equal 0 for all other answers. Statement used is: “*Claiming government benefits to which you are not entitled*”. “Trust & civism” is the share of individuals who answer “*most people can be trusted*” and “*never justifiable*”. “Predicted support for the welfare state” is computed using equation (4.6) with $\mathbb{K} = 1$.

Table 4.19: Relationship between the support for the welfare state and trust in others, ordered logit.

Dependent variable: support for the welfare state											
	$\mathbb{P}(y = 0)$	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$	$\mathbb{P}(y = 4)$	$\mathbb{P}(y = 5)$	$\mathbb{P}(y = 6)$	$\mathbb{P}(y = 7)$	$\mathbb{P}(y = 8)$	$\mathbb{P}(y = 9)$	$\mathbb{P}(y = 10)$
Most people can be trusted	-0.001*** (0.000)	-0.002*** (0.000)	-0.003*** (0.000)	-0.004*** (0.001)	-0.004*** (0.001)	-0.002*** (0.000)	0.003*** (0.001)	0.005*** (0.001)	0.004*** (0.001)	0.001*** (0.000)	0.002*** (0.000)
Age	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.000*** (0.000)	0.000*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Male	0.001 (0.001)	0.001 (0.001)	0.002 (0.001)	0.003 (0.002)	0.002 (0.002)	0.001 (0.001)	-0.002 (0.002)	-0.003 (0.002)	-0.003 (0.002)	-0.001 (0.001)	-0.001 (0.001)
Education	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.001 (0.000)	-0.001 (0.000)	-0.000 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.000 (0.000)	0.000 (0.000)
Income	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Religiosity	-0.000*** (0.000)	-0.000*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.000*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Political orientation	0.003*** (0.001)	0.003*** (0.001)	0.005*** (0.001)	0.007*** (0.002)	0.007*** (0.002)	0.003*** (0.001)	-0.006*** (0.002)	-0.008*** (0.002)	-0.007*** (0.002)	-0.002*** (0.001)	-0.003*** (0.001)
Married	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Separated or divorced	0.000 (0.001)	0.000 (0.001)	0.001 (0.002)	0.001 (0.003)	0.001 (0.003)	0.000 (0.001)	-0.001 (0.002)	-0.001 (0.003)	-0.001 (0.003)	-0.000 (0.001)	-0.000 (0.001)
Widowed	0.002* (0.001)	0.002* (0.001)	0.003* (0.002)	0.005* (0.002)	0.005* (0.002)	0.002* (0.001)	-0.004* (0.002)	-0.006* (0.003)	-0.005* (0.002)	-0.002* (0.001)	-0.002* (0.001)
Never married	-0.002*** (0.001)	-0.002*** (0.001)	-0.003*** (0.001)	-0.005*** (0.002)	-0.005*** (0.002)	-0.002*** (0.001)	0.004*** (0.001)	0.006*** (0.002)	0.005*** (0.002)	0.002*** (0.001)	0.002*** (0.001)
Employed	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Unemployed	-0.003* (0.001)	-0.003* (0.001)	-0.005* (0.002)	-0.008* (0.004)	-0.008* (0.004)	-0.003* (0.002)	0.007* (0.003)	0.009* (0.004)	0.008* (0.004)	0.003* (0.001)	0.004* (0.002)
In education	-0.004* (0.002)	-0.004* (0.002)	-0.007* (0.003)	-0.010* (0.004)	-0.010* (0.004)	-0.004* (0.001)	0.009* (0.003)	0.011* (0.004)	0.010* (0.004)	0.003* (0.001)	0.004* (0.002)
Disabled	-0.006*** (0.002)	-0.006*** (0.002)	-0.011*** (0.003)	-0.016*** (0.004)	-0.016*** (0.004)	-0.006*** (0.001)	0.014*** (0.003)	0.018*** (0.004)	0.016*** (0.004)	0.006*** (0.001)	0.007*** (0.002)
Retired	-0.003*** (0.001)	-0.003*** (0.001)	-0.005*** (0.002)	-0.007*** (0.002)	-0.007*** (0.002)	-0.003*** (0.001)	0.006*** (0.002)	0.008*** (0.003)	0.007*** (0.002)	0.002*** (0.001)	0.003*** (0.001)
Other	-0.002 (0.001)	-0.002 (0.001)	-0.003 (0.002)	-0.004 (0.003)	-0.004 (0.003)	-0.002 (0.001)	0.004 (0.003)	0.005 (0.003)	0.004 (0.003)	0.001 (0.001)	0.002 (0.002)

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors (clustered at the country level) in parentheses. Data from European Social Survey, round 4. The table presents marginal effects of a single ordered logit model for each outcome of the dependent variable. Marginal effects are evaluated at the mean of covariates. The regression also include country fixed effects. The support for the welfare state is measured using the following question: "Many social benefits and services are paid by taxes. If the government had to choose between increasing taxes and spending more on social benefits and services, or decreasing taxes and spending less on social benefits and services, which should they do?". Answers range from 0, "Government should increase taxes a lot and spend much more on social benefits and services" to 10, "Government should decrease taxes a lot and spend much less on social benefits and services". The variable "most people can be trusted" is the answer, on a scale from 0 to 10, to the following question: "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?". Other covariates are described in the appendix.

Table 4.20: Relationship between the support for the welfare state and trust in others, ordered probit.

Dependent variable: support for the welfare state											
	$\mathbb{P}(y = 0)$	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$	$\mathbb{P}(y = 4)$	$\mathbb{P}(y = 5)$	$\mathbb{P}(y = 6)$	$\mathbb{P}(y = 7)$	$\mathbb{P}(y = 8)$	$\mathbb{P}(y = 9)$	$\mathbb{P}(y = 10)$
Most people can be trusted	-0.002*** (0.000)	-0.002*** (0.000)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.001*** (0.000)	0.002*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.001*** (0.000)	0.002*** (0.000)
	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	0.000*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Male	0.001 (0.001)	0.001 (0.001)	0.002 (0.001)	0.002 (0.002)	0.002 (0.002)	0.001 (0.001)	-0.002 (0.001)	-0.003 (0.002)	-0.003 (0.002)	-0.001 (0.001)	-0.002 (0.001)
	-0.000* (0.000)	-0.000* (0.000)	-0.000* (0.000)	-0.001* (0.000)	-0.001* (0.000)	-0.000* (0.000)	0.000* (0.000)	0.001* (0.000)	0.001* (0.000)	0.000* (0.000)	0.000* (0.000)
Education	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Income	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	-0.000* (0.000)	-0.000* (0.000)	-0.001* (0.000)	-0.001* (0.000)	-0.001* (0.000)	-0.000* (0.000)	0.001* (0.000)	0.001* (0.000)	0.001* (0.000)	0.000* (0.000)	0.000* (0.000)
Religiosity	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.003*** (0.001)	0.003*** (0.001)	0.004*** (0.001)	0.006*** (0.002)	0.005*** (0.001)	0.002*** (0.001)	-0.004*** (0.001)	-0.006*** (0.002)	-0.006*** (0.002)	-0.002*** (0.001)	-0.004*** (0.001)
Political orientation	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)
Married	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)
Separated or divorced	0.001 (0.001)	0.001 (0.001)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.000 (0.001)	-0.001 (0.002)	-0.001 (0.003)	-0.001 (0.003)	-0.001 (0.001)	-0.001 (0.002)
	0.003* (0.001)	0.002* (0.001)	0.004* (0.002)	0.005* (0.002)	0.004* (0.002)	0.002* (0.001)	-0.003* (0.002)	-0.005* (0.002)	-0.005* (0.002)	-0.002* (0.001)	-0.003* (0.001)
Widowed	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)
	-0.003** (0.001)	-0.002** (0.001)	-0.003** (0.001)	-0.005** (0.001)	-0.004** (0.001)	-0.002** (0.001)	0.003** (0.001)	0.005** (0.002)	0.005** (0.002)	0.002** (0.001)	0.003** (0.001)
Never married	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)
Employed	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)
Unemployed	-0.005** (0.002)	-0.004** (0.001)	-0.006** (0.002)	-0.008** (0.003)	-0.007** (0.003)	-0.003** (0.001)	0.006** (0.002)	0.009** (0.004)	0.009** (0.004)	0.004** (0.001)	0.005** (0.002)
	-0.005* (0.003)	-0.005* (0.002)	-0.007* (0.003)	-0.009* (0.004)	-0.008* (0.003)	-0.003* (0.001)	0.007* (0.003)	0.010* (0.004)	0.010* (0.004)	0.004* (0.002)	0.006* (0.003)
In education	(0.003)	(0.002)	(0.003)	(0.004)	(0.003)	(0.001)	(0.003)	(0.004)	(0.004)	(0.002)	(0.003)
	-0.008** (0.003)	-0.007** (0.002)	-0.011** (0.003)	-0.014** (0.004)	-0.012** (0.004)	-0.005** (0.002)	0.010** (0.003)	0.015** (0.005)	0.016** (0.005)	0.006** (0.002)	0.009** (0.003)
Disabled	(0.003)	(0.002)	(0.003)	(0.004)	(0.004)	(0.002)	(0.003)	(0.005)	(0.005)	(0.002)	(0.003)
	-0.004*** (0.001)	-0.004*** (0.001)	-0.006*** (0.002)	-0.007*** (0.002)	-0.006*** (0.002)	-0.003*** (0.001)	0.005*** (0.001)	0.008*** (0.002)	0.008*** (0.002)	0.003*** (0.001)	0.005*** (0.002)
Retired	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)
	-0.002 (0.002)	-0.002 (0.001)	-0.003 (0.002)	-0.004 (0.003)	-0.003 (0.002)	-0.001 (0.001)	0.003 (0.002)	0.004 (0.003)	0.004 (0.003)	0.002 (0.001)	0.003 (0.002)

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors (clustered at the country level) in parentheses. Data from European Social Survey, round 4. The table presents marginal effects of a single ordered probit model for each outcome of the dependent variable. Marginal effects are evaluated at the mean of covariates. The regression also include country fixed effects. The support for the welfare state is measured using the following question: “Many social benefits and services are paid by taxes. If the government had to choose between increasing taxes and spending more on social benefits and services, or decreasing taxes and spending less on social benefits and services, which should they do?”. Answers range from 0, “Government should decrease taxes a lot and spend much less on social benefits and services”, to 10, “Government should increase taxes a lot and spend much more on social benefits and services”. The variable “most people can be trusted” is the answer, on a scale from 0 to 10, to the following question: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?”. Other covariates are described in the appendix.

Table 4.21: Relationship between the support for the welfare state and civism, ordered logit.

Dependent variable: support for the welfare state										
	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$	$\mathbb{P}(y = 4)$	$\mathbb{P}(y = 5)$	$\mathbb{P}(y = 6)$	$\mathbb{P}(y = 7)$	$\mathbb{P}(y = 8)$	$\mathbb{P}(y = 9)$	$\mathbb{P}(y = 10)$
Civism	0.017*** (0.003)	0.007*** (0.001)	0.009*** (0.002)	0.003*** (0.001)	-0.000*** (0.000)	-0.005*** (0.001)	-0.005*** (0.001)	-0.006*** (0.001)	-0.005*** (0.001)	-0.013*** (0.002)
Age	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Male	0.007*** (0.001)	0.003*** (0.001)	0.004*** (0.001)	0.002*** (0.000)	-0.000*** (0.000)	-0.002*** (0.001)	-0.002*** (0.001)	-0.003*** (0.001)	-0.002*** (0.000)	-0.006*** (0.001)
Education	0.008*** (0.001)	0.003*** (0.000)	0.004*** (0.000)	0.002*** (0.000)	-0.000*** (0.000)	-0.002*** (0.001)	-0.002*** (0.001)	-0.003*** (0.000)	-0.002*** (0.000)	-0.006*** (0.001)
Income	0.006*** (0.001)	0.003*** (0.000)	0.003*** (0.000)	0.001*** (0.000)	-0.000*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.005*** (0.001)
Religiosity	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Political orientation	0.012*** (0.001)	0.005*** (0.000)	0.006*** (0.001)	0.002*** (0.000)	-0.000*** (0.000)	-0.004*** (0.000)	-0.004*** (0.000)	-0.005*** (0.000)	-0.004*** (0.000)	-0.010*** (0.001)
Married	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Separated / Divorced	0.001 (0.003)	0.000 (0.001)	0.001 (0.002)	0.000 (0.001)	-0.000 (0.000)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.001 (0.002)
Widowed	-0.004 (0.003)	-0.002 (0.001)	-0.002 (0.002)	-0.001 (0.001)	0.000 (0.000)	0.001 (0.001)	0.001 (0.001)	0.002 (0.001)	0.001 (0.001)	0.004 (0.003)
Never married	-0.000 (0.002)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.002)
Employed	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Unemployed	-0.009** (0.003)	-0.004** (0.001)	-0.005** (0.002)	-0.002** (0.001)	0.000** (0.000)	0.003** (0.001)	0.003** (0.001)	0.004** (0.001)	0.003** (0.001)	0.008** (0.002)
In education	-0.004 (0.004)	-0.002 (0.001)	-0.002 (0.002)	-0.001 (0.001)	0.000 (0.000)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.003 (0.003)
Retired	-0.009** (0.003)	-0.004** (0.001)	-0.005** (0.002)	-0.002** (0.001)	0.000** (0.000)	0.003** (0.001)	0.003** (0.001)	0.003** (0.001)	0.003** (0.001)	0.007** (0.003)
Other	-0.005 (0.003)	-0.002 (0.001)	-0.003 (0.001)	-0.001 (0.001)	0.000 (0.000)	0.001 (0.001)	0.001 (0.001)	0.002 (0.001)	0.001 (0.001)	0.004 (0.002)

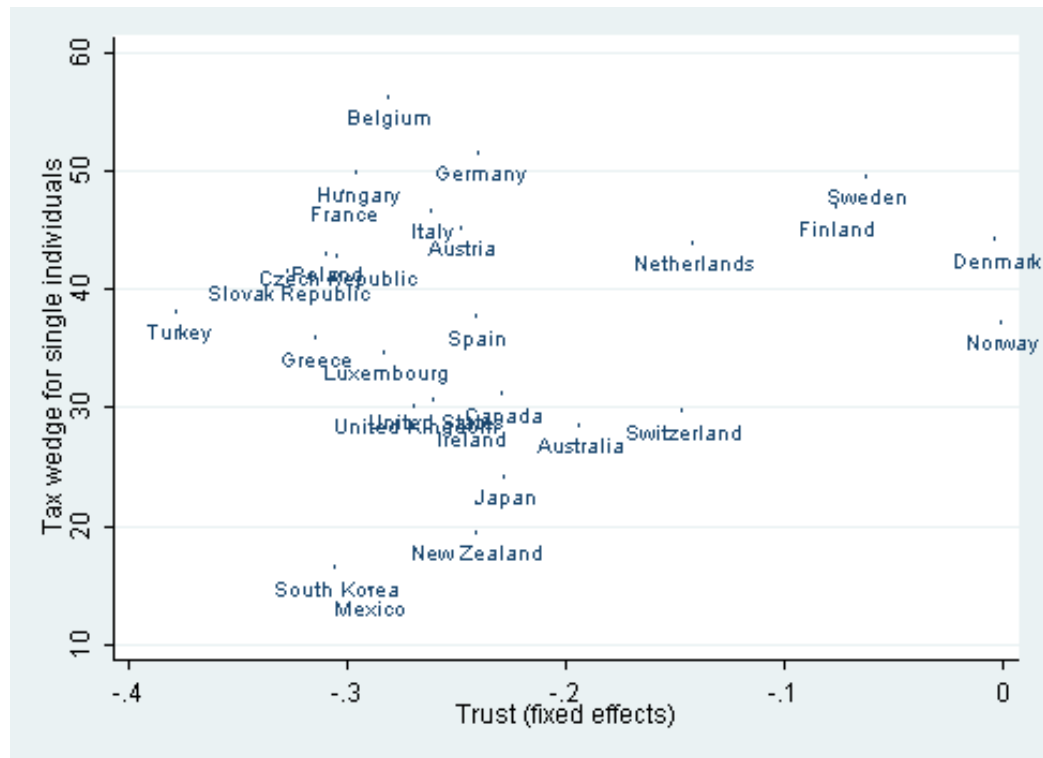
*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors (clustered by country \times wave) in parentheses. Data from World Values Survey. The table presents marginal effects of a single ordered logit model for each outcome of the dependent variable. Marginal effects are evaluated at the mean of covariates. The regression also include year and country fixed effects. The support for the welfare state is measured using the following question: "I'd like you to tell me your views on various issues. How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between. We need larger income differences as incentives versus incomes should be made more equal". "Civism" equals 1 if the respondent answers "never justifiable" to the following question: "Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between, using this card"; and 0 for all other answers. Statement used is: "Claiming government benefits to which you are not entitled". Other covariates are described in the appendix.

Table 4.22: Relationship between the support for the welfare state and civism, ordered probit.

Dependent variable: support for the welfare state										
	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$	$\mathbb{P}(y = 4)$	$\mathbb{P}(y = 5)$	$\mathbb{P}(y = 6)$	$\mathbb{P}(y = 7)$	$\mathbb{P}(y = 8)$	$\mathbb{P}(y = 9)$	$\mathbb{P}(y = 10)$
Civism	0.017*** (0.003)	0.005*** (0.001)	0.006*** (0.001)	0.002*** (0.000)	-0.000*** (0.000)	-0.003*** (0.001)	-0.004*** (0.001)	-0.005*** (0.001)	-0.004*** (0.001)	-0.014*** (0.002)
Age	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Male	0.008*** (0.002)	0.002*** (0.001)	0.003*** (0.001)	0.001*** (0.000)	-0.000*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.007*** (0.001)
Education	0.008*** (0.001)	0.003*** (0.000)	0.003*** (0.000)	0.001*** (0.000)	-0.000*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.007*** (0.001)
Income	0.007*** (0.001)	0.002*** (0.000)	0.003*** (0.000)	0.001*** (0.000)	-0.000*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.006*** (0.001)
Religiosity	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Political orientation	0.011*** (0.001)	0.004*** (0.000)	0.004*** (0.000)	0.002*** (0.000)	-0.000*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	-0.003*** (0.000)	-0.003*** (0.000)	-0.010*** (0.001)
Married	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Separated / Divorced	0.000 (0.003)	0.000 (0.001)	0.000 (0.001)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.003)
Widowed	-0.004 (0.003)	-0.001 (0.001)	-0.002 (0.001)	-0.001 (0.000)	0.000 (0.000)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.004 (0.003)
Never married	-0.000 (0.002)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.001)	0.000 (0.001)	0.000 (0.002)
Employed	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Unemployed	-0.010** (0.003)	-0.003** (0.001)	-0.004** (0.001)	-0.001** (0.000)	0.000** (0.000)	0.002** (0.001)	0.002** (0.001)	0.003** (0.001)	0.002** (0.001)	0.008** (0.003)
In education	-0.005 (0.004)	-0.001 (0.001)	-0.002 (0.002)	-0.001 (0.001)	0.000 (0.000)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.004 (0.003)
Retired	-0.010** (0.004)	-0.003** (0.001)	-0.004** (0.001)	-0.001** (0.000)	0.000** (0.000)	0.002** (0.001)	0.002** (0.001)	0.003** (0.001)	0.002** (0.001)	0.008** (0.003)
Other	-0.005* (0.003)	-0.002* (0.001)	-0.002* (0.001)	-0.001* (0.000)	0.000* (0.000)	0.001* (0.001)	0.001* (0.001)	0.002* (0.001)	0.001* (0.001)	0.005* (0.002)

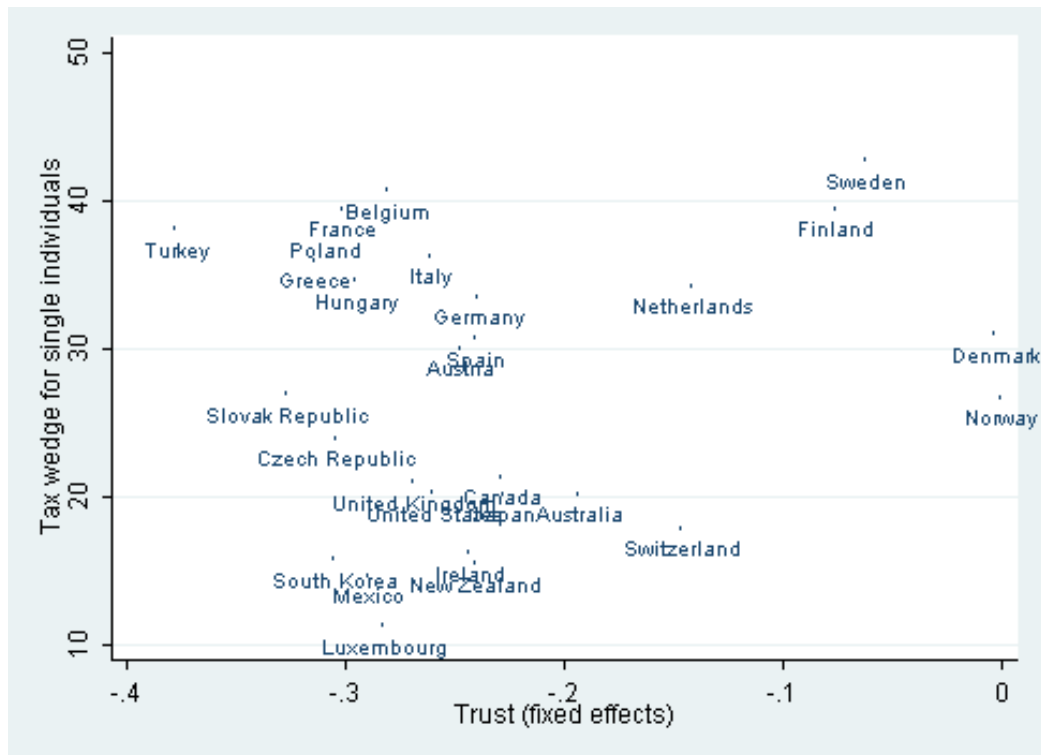
*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors (clustered by country \times wave) in parentheses. Data from World Values Survey. The table presents marginal effects of a single ordered probit model for each outcome of the dependent variable. Marginal effects are evaluated at the mean of covariates. The regression also include year and country fixed effects. The support for the welfare state is measured using the following question: "I'd like you to tell me your views on various issues. How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between. We need larger income differences as incentives versus Incomes should be made more equal". "Civism" equals 1 if the respondent answers "never justifiable" to the following question: "Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between, using this card"; and 0 for all other answers. Statement used is: "Claiming government benefits to which you are not entitled". Other covariates are described in the appendix.

Figure 4.12: Trust and average tax wedge for single individuals in 2000.



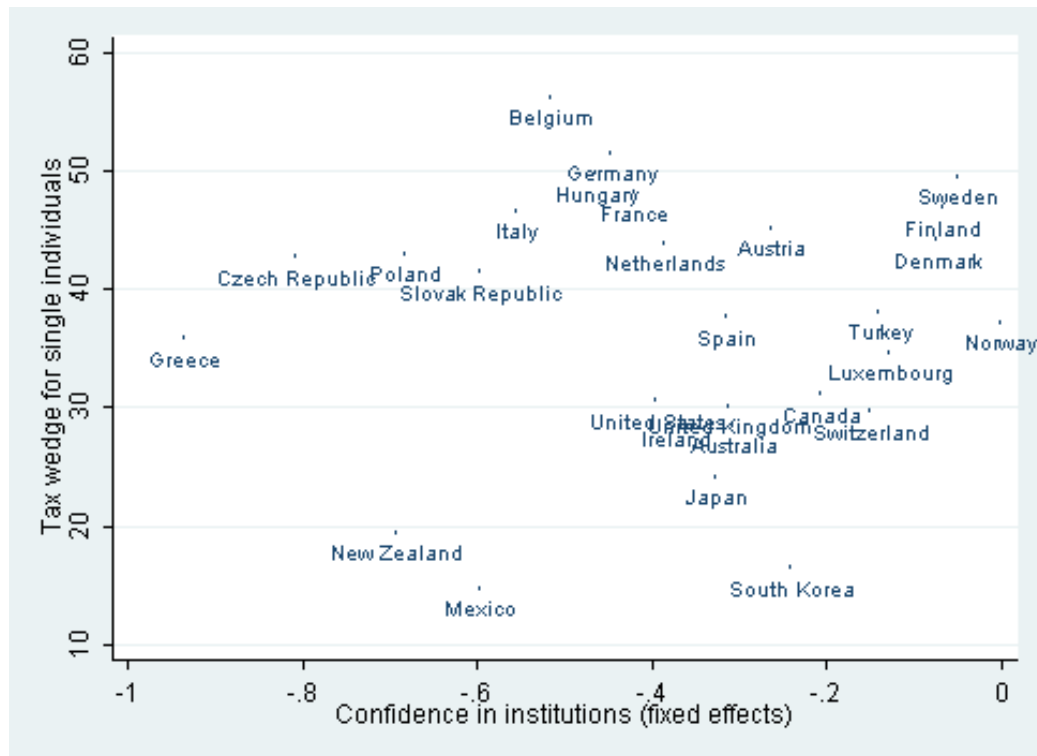
Sources: World Values Survey (authors' calculation) and OECD Taxing Wages Statistics.

Figure 4.13: Trust and average tax wedge for couples in 2000.



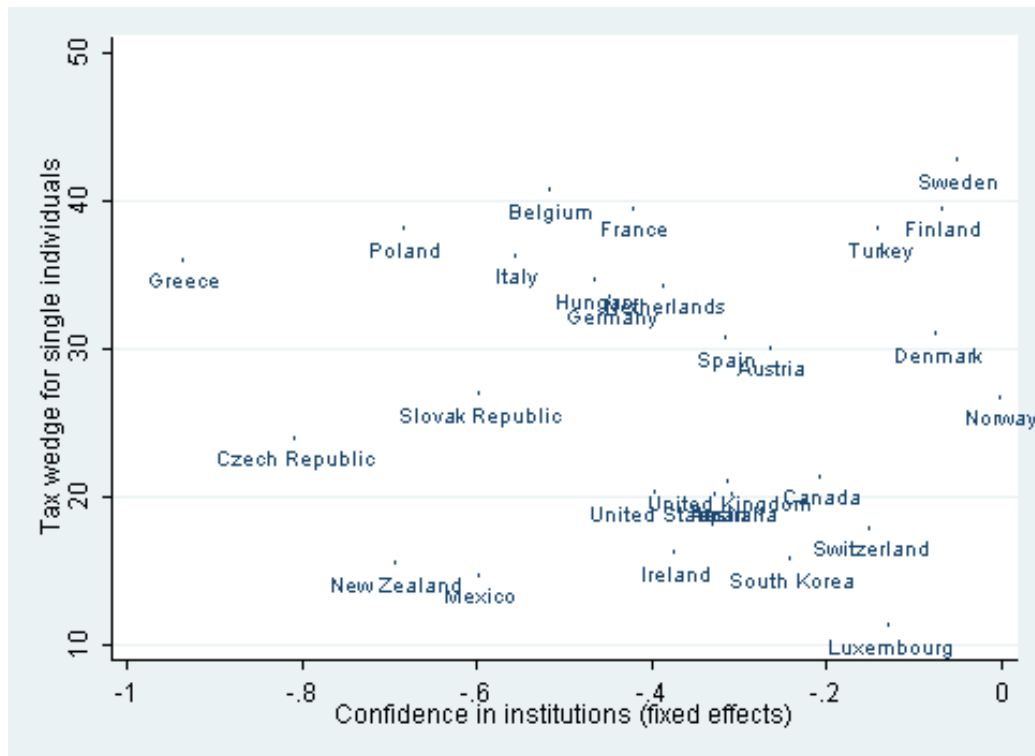
Sources: World Values Survey (authors' calculation) and OECD Taxing Wages Statistics.

Figure 4.14: Confidence in institutions and average tax wedge for single individuals in 2000.



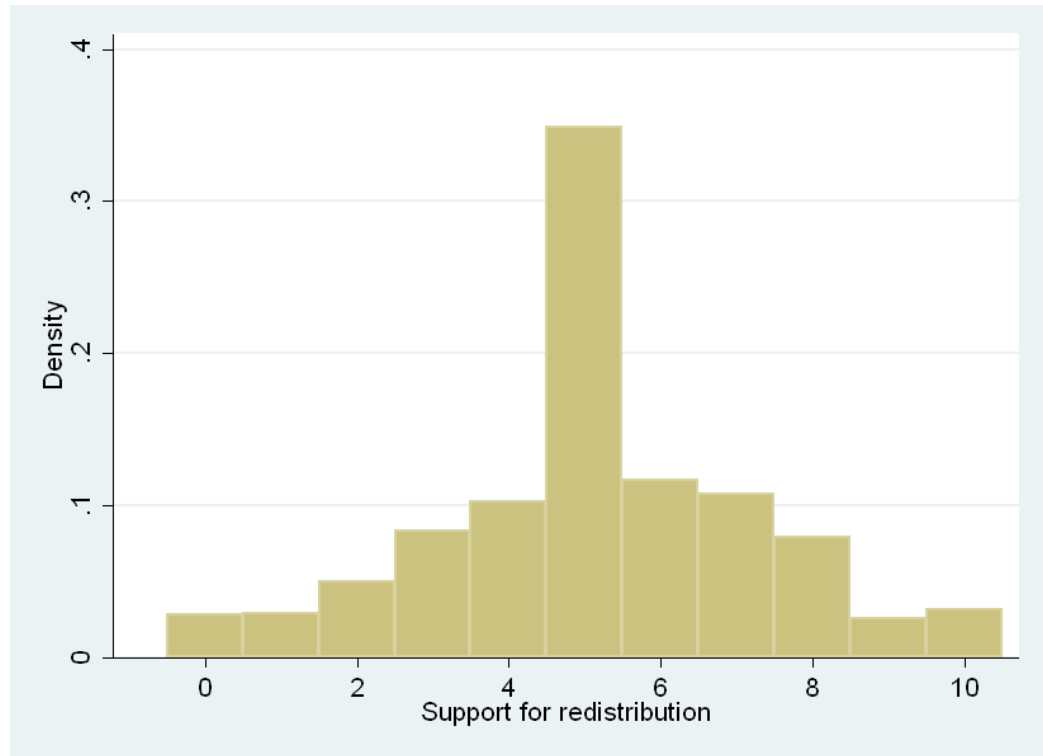
Sources: World Values Survey (authors' calculation) and OECD Taxing Wages Statistics.

Figure 4.15: Confidence in institutions and average tax wedge for couples in 2000.



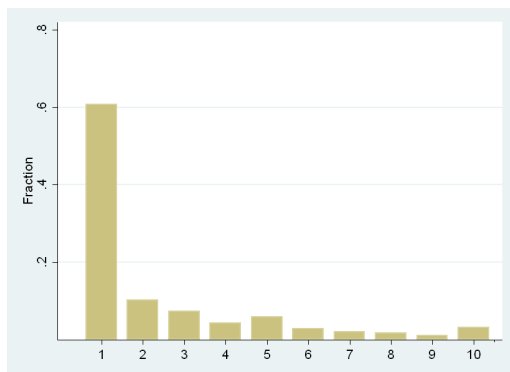
Sources: World Values Survey (authors' calculation) and OECD Taxing Wages Statistics.

Figure 4.16: Distribution of the support for the welfare state.

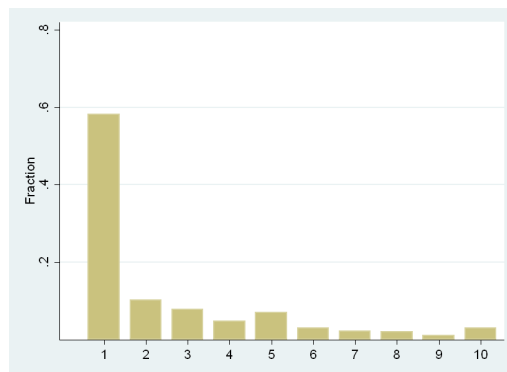


Source: European Social Survey. The figure plots the distribution of answers to the following question: “*Many social benefits and services are paid for by taxes. If the government had to choose between increasing taxes and spending more on social benefits and services, or decreasing taxes and spending less on social benefits and services, which should they do?*”. Answers range from 0, “*Government should decrease taxes a lot and spend much less on social benefits and services*”, to 10, “*Government should increase taxes a lot and spend much more on social benefits and services*”.

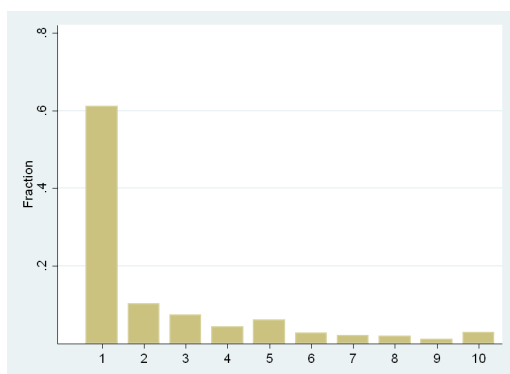
Figure 4.17: Distributions of answers to civiness related questions.



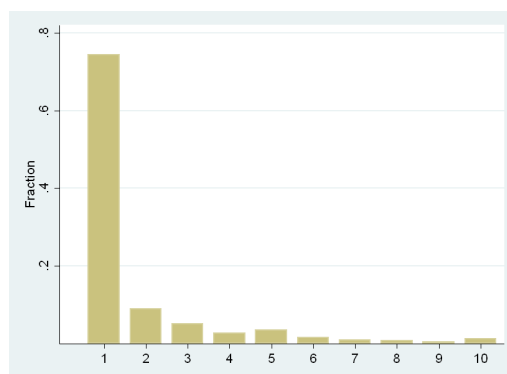
(a) Justifiable claiming government benefits?



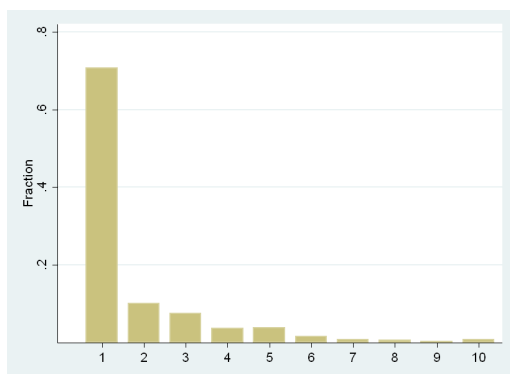
(b) Justifiable avoiding a fare?



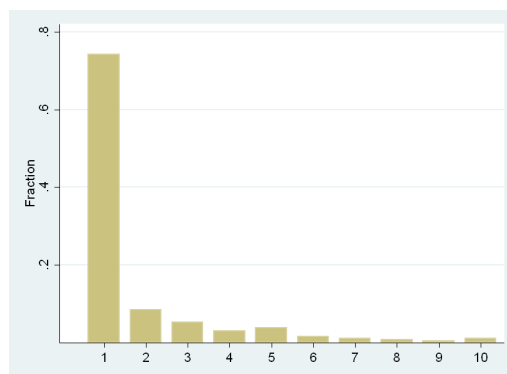
(c) Justifiable cheating on taxes?



(d) Justifiable accepting a bribe?



(e) Justifiable throwing away litter?



(f) Justifiable buying stolen goods?

Source: World Values Survey.

Chapter 5

Living in the garden of Eden: Mineral resources foster individualism ¹

This paper explores the relationship between mineral resources abundance and individual values. Using discoveries of mineral resources in the United States since 1800, we find that mineral resources foster individualism. Measuring individualism and the demand for redistribution by questions of the General Social Survey, we show that individuals living in states with large mineral resources endowment are more individualistic and support less redistribution by the government. We uncover two channels. The *experience* channel arises because of direct observation of discoveries by individuals. The *transmission* channel consists in the persistence of specific values across generations. These results are robust to the introduction of various explanatory variables that may explain individualistic values.

5.1 Introduction

In recent years, beliefs and values have gained much attention as determinants of economic outcomes. The effect of values is actually largely doc-

1. This chapter is based on a joint work with Mathieu Couttenier.

umented by a growing literature (see Fernández (2011) for a recent review). However, the question of their formation remains broadly unexplored in the empirical literature. At the individual level, values may be transmitted by peers or formed through experience.

In this paper, we find that mineral resources foster individualism, using discoveries of mineral resources in United States over the 1800 – 2000 period. We refer to “individualism” as the set of values opposed to public intervention in income allocation and favorable to individual self-responsibility. We measure individualism by three questions from the General Social Survey. We show that individuals living in states with large mineral resources endowment support less redistribution by the government, less public assistance to the poor, and are more favorable to individual self-responsibility. Then, we highlight two channels through which mineral resources foster individualism: either by transmission of values formed in the past, or by experience of mineral discoveries at a specific point in life-time of individuals.

The Mineral Resources Data System lists all mineral discoveries since 1800 in the United States. It allows us to observe both the effects of the spatial and temporal differences in the distribution of mineral discoveries across states and time on values held by individuals. We show that individuals living in states with large mineral resources endowment are more individualistic and support less redistribution. This result persists when controlling for individual characteristics, but also for characteristics of the state such as its geographic location, political orientation, wealth and inequalities.² We also show that this opposition to public intervention in the economy is not compensated by heavier local volunteer activity in states with lots of mineral resources.

Figure 5.1 presents the frontispiece of *A history of American mining* by Rickard in 1932. This picture illustrates the extent to which mining is associated with the concept of independence of individuals in American tradition. This book has been written “*to give [...] something of that background the*

2. Using the number of places where mining has taken place in each state during the past century, we also find that the higher the number of mines in a state, the lower the support for governmental redistribution by its residents.

older men built up as they went along". The introduction argues that "*in developing the mineral wealth of a continent [...] things do not "just happen"; they are brought about by men who have the wit to see and the courage to do. Our predecessors were men with these qualities. They [...] have left us a great heritage*".³ This heritage is made of values such as individual self-responsibility that are deeply associated with mining activity. This is mostly the case because of the technical methods used in the early times of mining in the United States. As documented by Freudenburg and Frickel (1994), "*mining operations and technologies were small-scale, and [...] capital requirements were minimal*". These operations could often be implemented by a single man.⁴ Mining was labor- rather than capital-intensive.⁵

Conceptually, this original association between mining activity and individualism can be explained by the following mechanism. Natural resources represent a windfall which is likely to induce both an increase of current and expected income. Their existence create more wealth opportunities. As a consequence, a society with natural resources is richer than a society without any natural resources endowment. Local residents consider mineral resources (and natural resources in general) as a treasury belonging to them and exploitable by their efforts. This windfall induced by natural resources can be related to the well-known effect of income on the demand for redistribution. Increasing current or expected income is known to be associated with less willingness to redistribute. To sum up, the larger the mineral resources endowment, the wider wealth opportunities, and the lower the support for redistribution by people surrounded by the resources. This mechanism de-

3. Rickard (1932), page ix. See the appendix for some additional quotes from this book.

4. According to Braunstein (1985), mining has quickly turned into an activity run by large corporations at the turn of the nineteenth century. Yet, the myth of the single gold miner still persisted.

5. This feature also translate into unionization patterns. According to numbers provided by Friedman (1999), the mining industry was the second most unionized industry in the United States in 1880 (the unionization rate in mining industry was equal to 11.35, just below unionization rate in printing industry that was equal to 11.70). In our opinion, it is difficult to interpret this fact since unionization may reflect either general political orientations or a local protection behavior. See Riley (1997), Schnabel (2003), and Schnabel and Wagner (2007) for developments of this issue. Today, unionization rate in mining industry is roughly equal to the average unionization rate in the American economy according to the Bureau of Labor Statistics.

Figure 5.1: Frontispiece of *A history of American mining* (Rickard 1932).



Stratton discovering the Independence.

scribes the genesis of values that may be transmitted between individuals and generations.

As Bisin and Verdier (2001), the literature points out two main channels through which values are formed at the individual level. First, values can be inherited through family transmission of traits. Second, values can be shaped through the socialization process: individuals interact with others and mix their traits. The first process refers to transmission, whereas the second concerns the context in which individuals evolve. Applying this framework to the relationship between individualistic values and mineral resources, we also consider two channels. The first channel is linked to the question of transmission and persistence of beliefs. It occurs within society, across and within generations.⁶ In other words, values are inherited from the family or from “others” and transmitted over time in a given group. In what follows, we refer to this channel as the “*transmission*” channel.⁷ The second channel is linked to the direct effect mineral resources have on individualistic values. Values depend on events that happened during the life of an individual. Hence, “shocks” on mineral resources abundance are likely to directly shape the values held by individuals if they have been affected by these shocks. In what follows, we refer to this channel as the “*experience*” channel.

In this paper, we disentangle the existence and the relative importance of these two channels for the main relationship described above. We claim that both channels matter in the understanding of the effect of mineral resources on individualism. First, we focus on individuals living in states with lots of mineral resources and compare individuals that experienced mineral resources discoveries during their impressionable years to those who did not. Following Giuliano and Spilimbergo (2009), the “impressionable years” hypothesis refers to the hypothesis that “*core attitudes, beliefs, and values crystallize during a period of great mental plasticity in early adulthood and remain*

6. This channel is close to the “direct vertical socialization” proposed by Bisin and Verdier (2008) but where the cultural transmission is done within the family.

7. Transmission of cultural values may be informal or formal. The latter case can be illustrated by the already mentioned book *A history of American mining* written by Rickard in 1932.

largely unaltered throughout the remaining adult years".⁸ This approach uncovers the *experience* channel. Second, we compare individuals living in states with few or no mineral resources to individuals living in states with lots of mineral resources, but who did not experience mineral resources discoveries during their impressionable years. By removing the direct effect of mineral resources on individualistic values, this approach uncovers the *transmission* channel.

This paper provides micro-economic evidence that mineral resources influence the values of people living in areas that are abundant in such resources. It shows one channel through which values may form and is therefore related to the literature interested in the formation of values and beliefs. The empirical side of this literature is still in infancy. This question has been directly addressed by Nunn and Wantchekon (2011) who show that the volume of past slave trade shapes today's mistrust in Africa; and by Giuliano and Spilimbergo (2009) who show that macroeconomic fluctuations during early adulthood partly determine the support for redistribution and confidence in institutions. Other papers indirectly address this question, linking today's beliefs to distant institutions. For example, Guiso et al. (2008a) link today's social capital in Italy to medieval institutional arrangements. These authors show that values persist over time, but do not provide direct evidence on the contemporaneous effect of institutions on values. On the contrary, we observe the direct effect of exogenous changes in the environment on individual values when uncovering the *experience* channel. See also Grosfeld et al. (2011) and Durante (2009) for additional example of the persistence of values across time.

Our results mean that economic and natural environments have an effect on the preference for redistribution. Diamond (2006) offers a first insight into this question with the case study of Montana. He shows the interplay between the abundance of natural resources and individual orientations. According to this author, natural resources abundance is part of the state's identity and

8. In our empirical strategy, we adopt the same approach as Giuliano and Spilimbergo (2009) and assume that impressionable years are located between 18 and 25.

partly shapes individual beliefs about economic organization.⁹ To our best knowledge, Di Tella et al. (2010) are the first to provide empirical evidence about this issue. They study the correlation between individualism and a measure of “luck” in the United States. They approximate the idea of luck, i.e. the belief that income is more linked to chance than to effort, by the “*share of the oil industry in the state’s economy multiplied by the price of oil*”. They conclude “*that societies that depend heavily on oil [...] will experience heavier demand for government intervention*”.

Our paper also illustrates the link between wealth and the willingness to redistribute. Following Romer (1975), Meltzer and Richard (1981), and Piketty (1995), this relationship has been documented by Alesina and La Ferrara (2005), Alesina and Angeletos (2005), and Alesina and Giuliano (2011) among others. Considering mineral resources as realized or expected increasing income, mineral endowment can influence the support for redistribution both by the transmission of values over time or by the update of individualistic values as pointed above. We show that mineral endowment has a strong negative persistent effect on the support for redistribution and that this effect is still observable when alternative explanations are taken into account. In particular, we control for current individual income and current state income, which suggest that it is not a question of realized income, but of inherited values.

Finally, this paper sheds light on a new channel for the “resource curse”. Indeed, a vast literature debates on the significant negative role played by natural resources dependence or abundance on economic growth (see Frankel (2010) for a survey of the resource curse literature). A widely accepted consensus considers natural resources as a potential curse hindering development.¹⁰ In developing countries, Isham et al. (2005) claim that “*[...] resource abundance simultaneously “strengthens states” and “weakens soci-*

9. See the appendix for a short presentation of the text by Diamond (2006) on Montana.

10. Institutions appear to be a decisive factor for the resource curse (see Mehlum et al. (2006) or Andersen and Aslaksen (2008)). Empirical studies of this issue face the problem that countries differ in many dimensions. To avoid this problem, many papers focus only on one country: the United States for Papyrakis and Gerlagh (2007), Peru for Aragon and Rud (2009) or Brazil for Caselli and Michaels (2009).

eties”, and thus yields - or at least perpetuates - low levels of development”. Many papers point out the issue of the reaction of economic agents to financial windfalls induced by natural resources abundance. They mainly focus on incentives played by financial windfalls in developing countries on the elite’s behavior or on the government’s behavior (see Robinson et al. (2006) or Mehlum et al. (2006) for example). Surprisingly, Papyrakis and Gerlagh (2007)) show that some states in United States, one of the most developed country in the world, suffer from the resource curse. Our paper contributes to understand how resources abundance weakens civil societies, i.e. how they modify the beliefs and the behavior of the whole society (not only elite) living in resources abundant areas: our results show that mineral resources foster individualism in the entire population. Our results can be interpreted as a channel for the resource curse since Gorodnichenko and Roland (2010) argue that individualism favors innovations but deteriorates the quality of institutions. Hence, if the latter effect dominates, individualism can be a channel through which mineral resources hinder development.

This paper is organized as follows. Section 5.2 presents the data and the methodology. Section 5.3 presents empirical results about the relationship between mineral resources and individualism. In section 5.4, we uncover the *transmission* and the *experience* channels. Then we investigate whether higher individualism is compensated by heavier volunteering activities or higher charitable giving in states with lots of mineral resources. Finally, section 5.6 briefly concludes.

5.2 Data and methodology

This section describes the data and the methodology used in this paper.

5.2.1 Mineral resources

The Mineral Resources Data System¹¹ (MRDS) describes mineral resources throughout the world. The data set for the United States contains

11. <http://tin.er.usgs.gov/mrds>

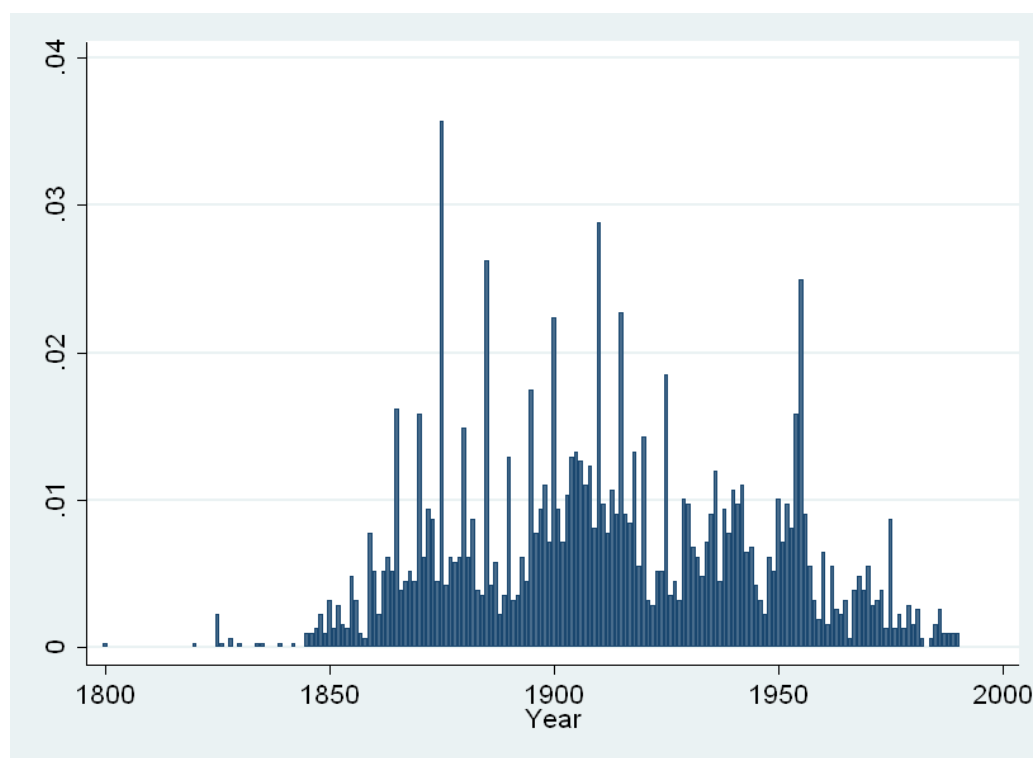
more than 25,000 observations. About 50% of them have lead to the installation of a mine. For each observation, the data set contains information about the localization, the year of discovery, the year of first production (if any production has been operated), and the type of commodities, but also various geologic characteristics. Missing information of major importance are those about quantities found and extracted. To our knowledge, this paper is the first to use this database in economic research.

Figure 5.2 presents the distribution of mineral resources discoveries in the United States over the 1800-2000 period. Most of the discoveries have been made between 1875 and the late 50's. However, the distribution is quite heterogeneous across time. Figure 5.3 displays the spatial distribution of mines in the United States according to the MRDS database. This spatial distribution is also very heterogeneous. Clearly, West states have larger endowments in mineral resources than others. Table 5.10, presented in appendix, shows the number of mines in each states. We distinguish between all observations and places where a production was (or is still) operated. Both distributions are very similar. Since we want to make the distinction between states with and without mineral resources, we have to establish a criterion to split our sample in two parts. The simplest criterion is the median of the sample according to the number of present or past mines. This is where we place the threshold between states with and without mineral resources.¹² In tables of the paper, the variable *mineral state* equals 1 if the respondent lives in a state with mineral resources, 0 otherwise.

Using MRDS observations to track the extent of mineral resources available in each state offers the advantage of being almost completely exogenous. Papyrakis and Gerlagh (2007) and Di Tella et al. (2010), among others, measure natural resources using the share of local GDP of a specific sector and the price of commodities. This measure is clearly endogenous to economic activity and development, and consequently to social attitudes provided that the latter have an effect on the former (see Brunnschweiler (2008) for exam-

12. An alternative approach would be to create a measure of “mineral density” by dividing the number of mines by the surface of the state. Such an approach leads to a virtually identical classification between states with and without mineral resource.

Figure 5.2: Distribution of mineral resources discoveries in the United States (1800-2000).

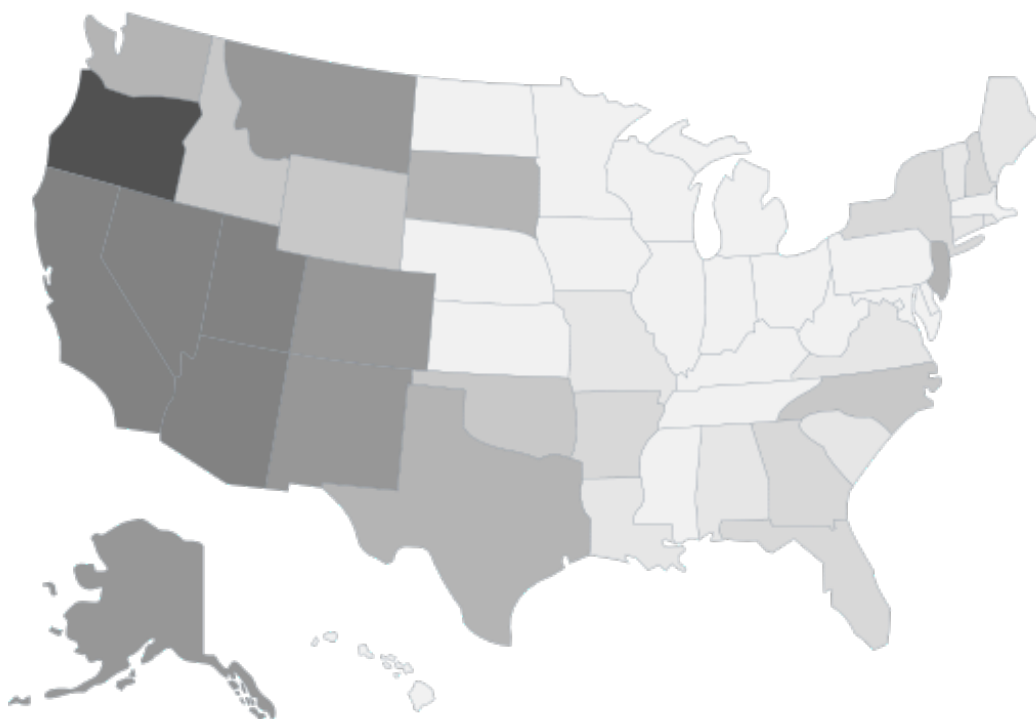


Source: Mineral Resources Data System.

ple). On the contrary, the tenor of the ground itself cannot be influenced by economic activity, nor by values. To a certain extent, one can argue that the discovery of mineral resources is however endogenous to economic development, what is likely to be true. However, it is also possible that once economic development is launched, mineral resources are searched everywhere. Hence, on the one hand, the precise date of discovery of mineral resources can be seen as endogenous to economic activity. On the other hand, if we consider that all mineral resources have been searched for (as suggested by figure 5.2 which shows that discoveries are scarce since 1960), the categorization of states with and without mineral resources cannot be endogenous to values at the time of interview (the sample of the GSS we use begins in 1974).

Table 5.11, presented in appendix, describes the main types of mineral

Figure 5.3: Distribution of mines in the United States (1800-2000).



Source: Mineral Resources Data System. Deeper grey indicates higher number of mines. Lighter grey indicates no mines. This map is constructed from data presented in table 5.10 presented in appendix.

commodities found in the MRDS database. Gold, silver and other valuable ores represent a substantial part of the mining activity in the United States.¹³

5.2.2 Data on individualism

We measure individualism at the individual level in the United States by using three questions of the General Social Survey (GSS).

The first question used also by Di Tella et al. (2010) is: “*Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government’s responsibility, and that each person should take care*

13. We conducted tests to check whether our results vary when taking into account the relative importance of specific ores in the ground. All empirical results presented in the paper do not depend on the precise nature of mineral resources.

of himself. *Where would you place yourself on this scale?*”. The possible answers are “1 (*I strongly agree that the government should increase living standards*), 2, 3 (*I agree with both answers*), 4, 5 (*I strongly agree that people should take care of themselves*)”. We call this variable “*responsibility*”.

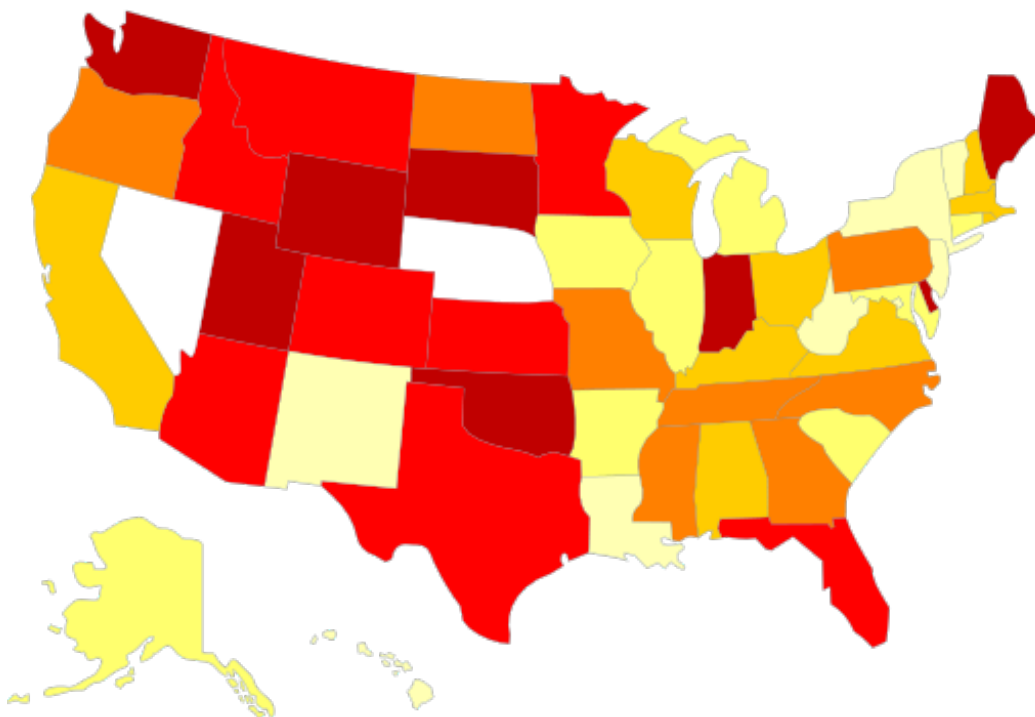
The second question is: “*Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. What score between 1 and 7 comes closest to the way you feel?*”. The possible answers are “1 (*Government should do something to reduce income differences*), 2, 3, 4, 5, 6, 7 (*Government should not concern itself with income differences*)”. It what follows, we refer to this variable as “*inequalities*”.

The last question is: “*We are faced with many problems in this country, none of which can be solved easily or inexpensively. I’m going to name some of these problems, and for each one I’d like you to tell me whether you think we’re spending too much money on it, too little money, or about the right amount. Are we spending too much, too little, or about the right amount on assistance to the poor?*”. The possible answers are “1 (*Too little*), 2 (*About right*), 3 (*Too much*)”. We call this variable “*assistance*”.

These questions offer a converging picture toward individualism and the demand for redistribution. According to Di Tella et al. (2010), the set of values associated with these variables can also be seen as associated with political ideas that are on the right of the political system.

All regressions presented in this paper include individual characteristics as control variables. Namely, we control for gender, age, age², marital status, religion, education, employment status, race and income.¹⁴ Once the availability of control variables is taken into account, we are left with more than 17,500 observations for *responsibility*, 20,000 for *inequalities*. For the variable *assistance*, we have a little more than 13,500 observations. Figures 5.4, 5.5, and 5.6 present the mean of *responsibility*, *inequalities*, and *assistance*

14. See the appendix for a complete presentation of individual control variables and associated summary statistics.

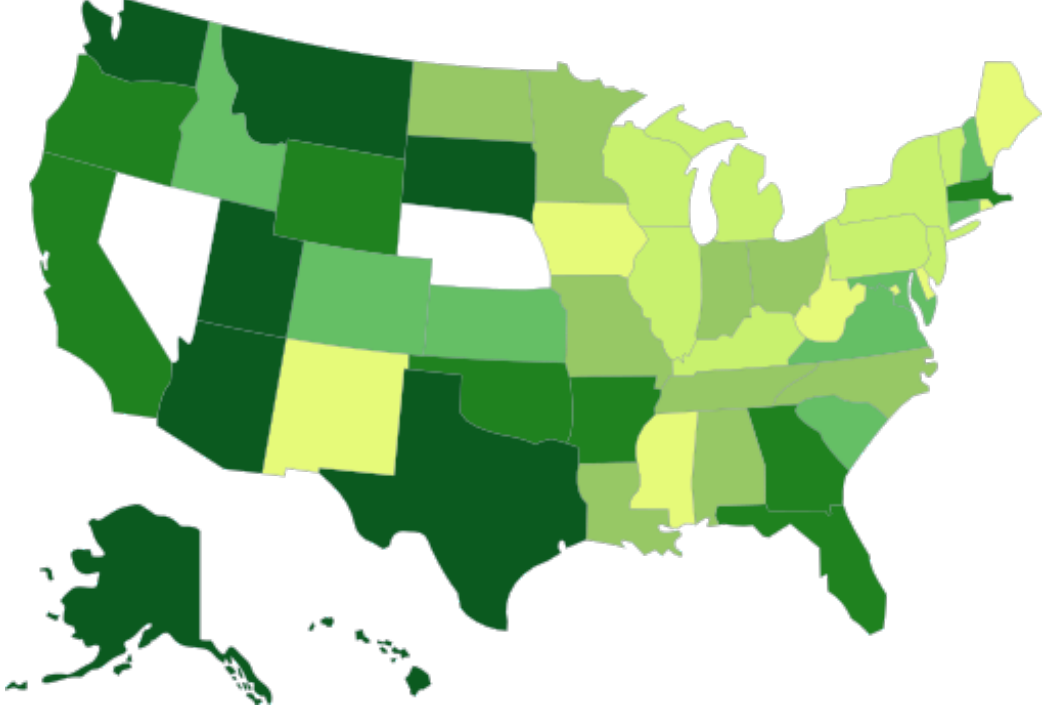
Figure 5.4: *Responsibility* by state (1975-2004).

Source: General Social Survey. Deeper red indicates higher average answer. Mean by state of the answer, on a scale from 1 to 5, to the following question: “Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government’s responsibility, and that each person should take care of himself. Where would you place yourself on this scale?”. Data are missing for Nevada and Nebraska.

by state over the period 1975-2004. At the first sight, variables are higher in the West part of the United States, which means that a larger share of the population living in those states holds individualistic values.

5.2.3 Methodology

The population observed in this paper is made of Americans interviewed in the General Social Survey. The first relationship we estimate in section 5.3 is the difference in individualism between individuals living in states with and without mineral resources. By doing this, we take into account differences in the composition of the population, i.e. we take individual characteristics

Figure 5.5: *Inequalities* by state (1975-2004).

Source: General Social Survey. Deeper green indicates higher average answer. Mean by state of the answer, on a scale from 1 to 7, to the following question: “Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. What score [...] comes closest to the way you feel?”. Data are missing for Nevada and Nebraska.

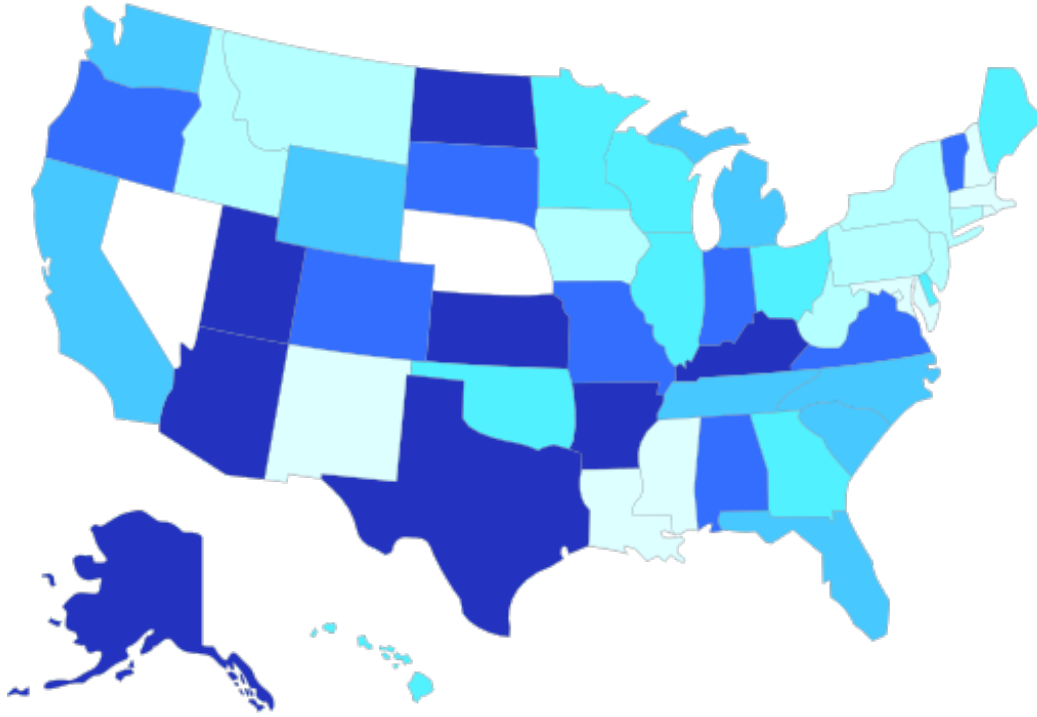
into account. Formally, we look at the difference

$$\mathbb{E}(Y|\text{Mineral state} = 1, X) - \mathbb{E}(Y|\text{Mineral state} = 0, X),$$

where Y is a measure of individualism, and X denotes individual characteristics. This difference is captured by the estimation of the following equation:

$$y_{its} = \delta + \alpha M_s + \beta X_{it} + \gamma Z_{ts} + \varepsilon_{its}, \quad (5.1)$$

where the dependent variable y_{its} is the answer of individual i , interviewed at time t and living in state s , to the questions associated with *responsibility*, *inequalities* or *assistance*. The variable M_s is labeled “*mineral state*” in ta-

Figure 5.6: *Assistance* by state (1975-2004).

Source: General Social Survey. Deeper blue indicates higher average answer. Mean by state of the answer, on a scale from 1 to 3, to the following question: “We are faced with many problems in this country, none of which can be solved easily or inexpensively. I’m going to name some of these problems, and for each one I’d like you to tell me whether you think we’re spending too much money on it, too little money, or about the right amount. Are we spending too much, too little, or about the right amount on assistance to the poor?”. Data are missing for Nevada and Nebraska.

bles and indicates the “mineral status” of state s , equals 1 if the respondent lives in a state with mineral resources, 0 otherwise. The vector X_{it} contains individual characteristics. The vector Z_{ts} contains time fixed effects, as well as state-level variables or geographic characteristics in some specifications. Finally, ε_{its} is the error term.

To uncover the *experience* and the *transmission* channel in section 5.4, we create sub-samples of the observed population. We first focus on individuals living in states with large mineral resources endowment and compare those who experienced mineral discoveries during their “impressionable years” to those who did not experienced mineral discoveries during the same period. This approach allow to identify the *experience* channel. Accordingly, the

difference we are looking at is

$$\begin{aligned} & \mathbb{E}(Y|\text{Discovery} = 1 \cap \text{Mineral state} = 1, X) \\ - & \mathbb{E}(Y|\text{Discovery} = 0 \cap \text{Mineral state} = 1, X), \end{aligned}$$

where $\text{Discovery} = 1$ is the set of individuals that experienced mineral discoveries during early adulthood. We use the “impressionable years” hypothesis already presented by Giuliano and Spilimbergo (2009). This hypothesis states that “*core attitudes, beliefs, and values crystallize during a period of great mental plasticity in early adulthood and remain largely unaltered throughout the remaining adult years*”. We follow Giuliano and Spilimbergo (2009) by assuming that “impressionable years” take place between 18 and 25 years. Hence, we are interested in whether an individual observed mineral discoveries when he was between 18 and 25 years old. For example, if an individual aged 50 is interviewed in 1980, its “impressionable years” are located between 1948 and 1955. Hence, the estimated equation is following:

$$y_{itst'} = \delta + \alpha D_{ist'} + \beta X_{itt'} + \gamma Z_{tst'} + \varepsilon_{itst'}, \quad (5.2)$$

where subscript t' denotes the birth date of the respondent, and $D_{ist'}$ is a dummy equal to 1 if individual i , living in state s , and born at time t' has experienced mineral discoveries between 18 and 25. This variable is labeled “*mineral discoveries observed*” in tables. Consequently, we also include some individual characteristics to take into account individual and state situations during those years, what explains subscript t' for vectors X and Z . The General Social Survey does not allow us to know in which state respondent was living when he was young. However, we know if the respondent is still living in the same state as when she was 16 years old. Thus, we have to restrict ourselves to individuals that did not move between the two dates. This left us with around 5,000 individuals who were and are still living in mineral states. Thanks to the MRDS database, we know if they experienced any mineral resources discoveries during their early adulthood. This allows to uncover the *experience* channel.

We uncover the *transmission* channel by comparing individuals living

in states with large mineral resources endowment who do not experienced mineral discoveries during their “impressionable years” and those living in states without mineral resources. Using the same notations as above, the difference we are looking at is

$$\mathbb{E}(Y|\text{Mineral state} = 1 \cap \text{Discovery} = 0, X) - \mathbb{E}(Y|\text{Mineral state} = 0, X).$$

This difference is captured by the estimation of equation (5.1), but on a different sample.

Since our classification of individuals between those living in states with or without mineral resources is logically made at the state level, all our estimations are made using clustered standard errors at the state \times year level. Rigorously, since our dependent variables are qualitative variables, ordered logit or ordered probit models should be used. However, all reported results are estimated using linear ordinary least squares such that we can interpret and compare the size of the coefficients.¹⁵ All results are comparable using ordered logit or probit models.¹⁶

An implicit assumption that we make when estimating the above relationships is that the effect of mineral resources abundance or discovery is the same across state. A key point that may invalidate this assumption is the heterogeneity of mining laws across states. Indeed, the initial formation as well as the transmission of values could be different depending on the legislative environment. However, mining law appears to be remarkably homogeneous across states. Although marginally amended since the late 19th century, the General Mining Act of 1872 is still the main law used to regulate mining prospection in the United States. This law codifies the way individuals may claim property rights on deposits and subsequent rights and duties. It applies the same way everywhere in the United States. This law encompasses the first laws of 1866 and 1870, as well as the informal regulation system for

15. See Peel et al. (1998) and van Praag and Ferrer-i-Carbonell (2006) for discussions on the equivalence between linear models estimated using ordinary least squares and ordered response models.

16. Replications of the main results using ordered logit or probit models are available in tables 5.27 to 5.36 presented in appendix.

the acquisition and the protection of mines set up by the first prospectors. In addition, the informal system itself was virtually identical across places. See Braunstein (1985) and Mayer (1986) for more explanations.

5.3 Empirical results

In this section we compare individuals living in states with large mineral resources endowment and those living in states without large mineral resources endowment. We also provide a large number of robustness checks.

5.3.1 Main result and discussion

We first start by simple tests of equality of the means of our individualism measures across states with and without mineral resources. Table 5.1 presents the standard t-tests for variables *responsibility*, *inequalities* and *assistance*. In all cases, the average answer is higher in states with mineral resources than in states without mineral endowments.

Main result

We now regress our measures of individualism on the state's mineral status variable, controlling by individual characteristics to check if the earlier results are not driven by composition effects. Our baseline specification includes usual control variables for gender, age, age squared, marital status, religion, education, employment status, race and income, as well as fixed effects for the year of interview. Time fixed effects control for potential common temporal determinants of beliefs. Summary statistics of individual covariates are presented in table 5.12 in appendix. The repartition of observations between mineral and non-mineral states is summarized in table 5.13, presented in appendix. Each group of states is made of one half of the sample. The estimated coefficients of equation (5.1) for dependent variables *responsibility*, *inequalities* and *assistance* are presented in table 5.2. The estimated coefficients of all individual variables are consistent with the literature (see Alesina and La Ferrara (2005) among others). Males are more

Table 5.1: Mean-comparison tests.

	Observations	Mean	Standard error	P-value of t-test
<i>Responsibility</i>				
Mineral states	8776	2.92	.012	
Non-mineral states	9072	2.88	.012	
Difference		.041	.017	.0094
<i>Inequalities</i>				
Mineral states	9716	3.81	.020	
Non-mineral states	10340	3.65	.019	
Difference		.163	.028	.0000
<i>Assistance</i>				
Mineral states	6581	1.47	.008	
Non-mineral states	6680	1.44	.008	
Difference		.036	.012	.0010

Reported p-values are associated to the following test: $\mathbb{E}(Y|\text{Mineral states}) > \mathbb{E}(Y|\text{Non mineral states})$ where Y is *responsibility*, *inequalities*, or *assistance*. See the text for the distinction between *mineral states* and *non-mineral states*. *Responsibility* is the answer, on a scale from 1 to 5, to the following question: “Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government’s responsibility, and that each person should take care of himself. Where would you place yourself on this scale?”. *Inequalities* is the answer, on scale from 1 to 7, to the following question: “Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. What score [...] comes closest to the way you feel?”. *Assistance* is the answer, on a scale from 1 to 3, to the following question: “We are faced with many problems in this country, none of which can be solved easily or inexpensively. I’m going to name some of these problems, and for each one I’d like you to tell me whether you think we’re spending too much money on it, too little money, or about the right amount. Are we spending too much, too little, or about the right amount on assistance to the poor?”.

individualistic than females. Being married or employed increases the answers to the three questions. The educational level decreases the demand for redistribution. White are more individualistic than others. Being protestant or catholic rather than atheistic also increases individualism and decreases the support for redistribution. Income captures the current income and has a positive effect on the three left-hand variables.

As stressed in the introduction, we argue that the effect of mineral resources on the preferences for redistribution is likely to be driven by increasing current or expected income. Here, we control for individual income. The introduction of this variable leaves the estimated coefficient of the variable *mineral state* unchanged with respect to table 5.1. This result suggests that the effect of mineral resources does not transit through current individual

Table 5.2: Residence in a mineral state and individualism.

	(1) <i>Responsibility</i>	(2) <i>Inequalities</i>	(3) <i>Assistance</i>
Mineral state	0.046** (0.019)	0.146*** (0.031)	0.043*** (0.013)
Male	0.143*** (0.017)	0.287*** (0.028)	0.043*** (0.012)
Age	-0.128*** (0.032)	-0.044 (0.048)	-0.065*** (0.021)
Age ²	0.018*** (0.003)	0.009* (0.005)	0.010*** (0.002)
Married	0.164*** (0.019)	0.273*** (0.031)	0.071*** (0.012)
Protestant	0.213*** (0.023)	0.306*** (0.041)	0.058*** (0.017)
Catholic	0.082*** (0.028)	0.165*** (0.044)	-0.005 (0.019)
Education	0.034*** (0.004)	0.094*** (0.005)	0.012*** (0.002)
Employed	0.098*** (0.021)	0.049 (0.032)	0.051*** (0.014)
White	0.521*** (0.028)	0.695*** (0.039)	0.240*** (0.014)
Income	0.050*** (0.006)	0.078*** (0.008)	0.016*** (0.004)
Observations	17,848	20,056	13,261
Adjusted R-squared	0.086	0.084	0.057

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. OLS regressions. All regressions include a constant term and year fixed effects. *Mineral state* is equal to 1 if the respondent lives in a state with lots of mineral resources, 0 if not. See the appendix for a presentation of other covariates. *Responsibility* is the answer, on a scale from 1 to 5, to the following question: “Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government’s responsibility, and that each person should take care of himself. Where would you place yourself on this scale?”. *Inequalities* is the answer, on scale from 1 to 7, to the following question: “Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. What score [...] comes closest to the way you feel?”. *Assistance* is the answer, on a scale from 1 to 3, to the following question: “We are faced with many problems in this country, none of which can be solved easily or inexpensively. I’m going to name some of these problems, and for each one I’d like you to tell me whether you think we’re spending too much money on it, too little money, or about the right amount. Are we spending too much, too little, or about the right amount on assistance to the poor?”.

income and does not invalidate the expected income explanation.¹⁷

In all columns of table 5.2, the estimated coefficient of the dummy variable for individual living in states with mineral resources is positive and significant. The estimated coefficient is about 0.05 when *responsibility* is

17. GSS data does not allow to test directly the hypothesis that living in a mineral state as a positive effect on expected income

the dependent variable. As a comparison, the effect of being catholic equals 0.08, the reference being “none/other”; whereas the estimated effect of being married equals 0.16. Hence, the effect of living in a mineral state on *responsibility* is of the same order of magnitude as the one of religion or marital status. Moreover, this effect represents up to one third of the effect of being married, one of the variables with the largest effect on *responsibility*. Using *inequalities* as dependent variable, the estimated effect of the mineral status of the state represents up to half of the effect of being married or protestant. In the case of *assistance*, the estimated effect is even stronger.

These estimations allow us to conclude that differences in individualism between states with or without mineral resources are not driven by a composition effect of the populations surveyed, i.e. individuals living in mineral states do not systematically share observable characteristics that favor individualism. The effect of residence in a mineral state still holds when controlling for a large set of individual characteristics.

In table 5.22, presented in appendix, we replace the mineral status variable by a broad measure of the abundance of mineral resources, i.e. by the number of mines in the state as described by table 5.10 in appendix. We found that the number of mines has a positive effect on our three measures of individualism at the individual level. In the the bottom part of the table, we restrict the sample to individuals living in states with lots of mineral resources. In this case, the number of mines has a positive but hardly significant effect on our dependent variables. This suggests that the role played by the amount of mineral resources is less important relatively to having or not mineral resources.

Discussion

At a first sight, these results are opposite to those of Di Tella et al. (2010). These authors show that there is a negative relationship between individualism and oil in the United States. How can we conciliate this two sets of results?

First of all, Di Tella et al. (2010) argue that the importance of oil industry

is a proxy for *luck* at the state level. This, in turn, influences the demand for redistribution of individuals. Indeed, the greater the feeling that luck instead of hard work determines income, the larger the demand for redistribution. Symmetrically, if an individual thinks that income is primarily determined by individual effort, he will exhibit less willingness to redistribute. In fact, the feeling that success is determined by luck is less widespread in our states with mineral resources as shown by table 5.14 presented in appendix. The dependent variable is the answer to the following question: “*Some people say that people get ahead by their own hard work; others say that lucky breaks or help from other people are more important. Which do you think is most important?*”. The possible answers are “1 (*Hard work most important*), 2 (*Hard work, luck equally important*), 3 (*Luck most important*)”. We created a dummy variable equal to 0 if the respondent thinks that luck is most important, and 1 otherwise. The estimated coefficient of the dummy variable for mineral state is positif and significant. Which means that individual living in mineral states are less likely to think that luck is most important. This differs from the assumption of Di Tella et al. (2010) on the positive effect of oil on luck.

Second, there is also another way to conciliate these two results on the link between resources and individualism. This divergence can be driven by the differences in the characteristics of oil and mineral resources. We focus on mineral resources, as described by table 5.11 in appendix, whereas Di Tella et al. (2010) focus on oil industry. This difference remains to be explored. This can be done by looking at the work by Boschini et al. (2007). These authors argue that the effect of natural resources on economic performance depends on the types of resources owned. In this framework, they point out the role of resource’s *appropriability*. According to them, “*the concept of appropriability captures the likelihood that natural resources lead to rent-seeking, corruption or conflicts which, in turn, harm economic development*”. Boschini et al. (2007) distinguish between *institutional* and *technical* appropriability. The first type of appropriability is related to the institutional capacity to manage natural resources exploitation. Given that we focus only on the United States, institutional appropriability is fairly homogeneous in

our study and thus cannot explain the puzzle presented above. On the other hand, “*due to their physical and economical characteristics, certain resources are more likely to cause appropriative behavior*”. This is what Boschini et al. (2007) define as technical appropriability. This allows to make a crucial distinction between mineral resources and oil. Indeed, mineral resources in general, and gold and silver in particular (what represent more than 50% of our observations that have led to production) are more appropriable than oil. Mineral resources are intrinsically more valuable, transportable and storable. Moreover mineral resources exploitation is more labor intensive than oil production.¹⁸ On top of this, the exploitation of mineral resources is painful and requires hard work. Such resources are thus more likely to raise individualistic incentives and behaviors. In our opinion, this approach offers a valuable way to account for the opposite effects of natural resources on individualism found in Di Tella et al. (2010) and our paper.

5.3.2 Robustness checks

In this sub-section, we perform a number of falsification tests that examine the robustness of our main result. In particular, we pursue a number of strategies we to determine whether the correlations we uncover are driven by omitted variables or by selection.

Individual omitted variables

First of all, despite the large number of control variables used in the above regressions, our results could be due to omitted individual variables. In table 5.3, we explore whether the origin or the occupation of individuals can explain the relationship between mineral resources and individualism.

Cultural origin: As pointed out by Grosjean (2011) among others, immigrants from different origins have different values. In columns 1, 4, and 7 of

18. As pointed in the introduction, there is anecdotal evidence that mining was very labor-intensive in the early times of the development of mining industry. Still today, mining is more labor intensive than oil extraction as shown by figure 5.10 presented in appendix. This figure plots the ratio of labor to value added for both industries between 1998 and 2009.

Table 5.3: Residence in a mineral state and individualism: controlling for ancestors' country and industry fixed effects.

	(1)	(2) <i>Responsibility</i>	(3)
Mineral state	0.045** (0.019)	0.060*** (0.020)	0.059*** (0.021)
Origin country fixed effects	Yes		Yes
Industry fixed effects		Yes	Yes
Observations	16,926	14,081	13,408
Adjusted R-squared	0.086	0.090	0.088
	(4)	(5) <i>Inequalities</i>	(6)
Mineral state	0.142*** (0.032)	0.119*** (0.033)	0.113*** (0.034)
Origin country fixed effects	Yes		Yes
Industry fixed effects		Yes	Yes
Observations	18,984	15,806	15,029
Adjusted R-squared	0.087	0.083	0.086
	(7)	(8) <i>Assistance</i>	(9)
Mineral state	0.046*** (0.013)	0.033** (0.015)	0.039** (0.015)
Origin country fixed effects	Yes		Yes
Industry fixed effects		Yes	Yes
Observations	12,573	10,441	9,931
Adjusted R-squared	0.057	0.063	0.062

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. OLS regressions. All regressions include a constant term, fixed effects for the year of interview, and following individual covariates: gender, age, age², marital status, religion, education, employment status, race, and income. *Mineral state* is equal to 1 if the respondent lives in a state with lots of mineral resources, 0 if not. See the appendix for a presentation of other covariates. *Origin country fixed effects* are created using the answer to the following question: "From what countries or part of the world did your ancestors come?". *Industry fixed effects* are created using a 10 items classification. *Responsibility* is the answer, on a scale from 1 to 5, to the following question: "Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government's responsibility, and that each person should take care of himself. Where would you place yourself on this scale?". *Inequalities* is the answer, on scale from 1 to 7, to the following question: "Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. What score [...] comes closest to the way you feel?". *Assistance* is the answer, on a scale from 1 to 3, to the following question: "We are faced with many problems in this country, none of which can be solved easily or inexpensively. I'm going to name some of these problems, and for each one I'd like you to tell me whether you think we're spending too much money on it, too little money, or about the right amount. Are we spending too much, too little, or about the right amount on assistance to the poor?".

table 5.3, we introduce forty fixed effects that correspond to the individual's ancestors country.¹⁹ The estimated coefficient of the variable *mineral state* is unaltered by the introduction of this set of variables.

Industry: It is also likely that the composition of occupations within states determines part of individual preferences toward redistribution. Hence, in columns 2, 5, and 8 we introduce industry fixed effects. The introduction of these variables leaves the estimated coefficient of our variable of interest virtually unchanged.²⁰

In columns 3, 6, and 9, we include both ancestors country and industry fixed effect. Estimated coefficients are unchanged. This result means that the effect of mineral resources on individualistic values persists when controlling for origin or industry.

State-level omitted variables

The positive effect of mineral endowment on individualism could also be determined by state-level omitted variables. In table 5.4, we add following control variables to our specifications: region fixed effects, longitude of the state capital, population density, political orientation, state per capita income, the coefficient of Gini, and mineral mining dependency.²¹

Geographical bias: As shown by figure 5.3, the spatial distribution of mining activity in the United States is broadly polarized between West and East. Hence, our correlation could be driven by a simple omitted variable due to common characteristics shared by geographically close states. This is why we use the regional divisions of the United States Census Bureau as control variables. This division imply the use of four region fixed effects for Northeast, Midwest, South and West. We control also for the West-East dispersion of states using the longitude of the state capital. Columns 1, 8, and 15 of table 5.4 present the results. The estimated coefficient of the mineral

19. The question asked in the GSS is: “*From what countries or part of the world did your ancestors come?*”.

20. The sampling of the General Social Survey is such that the number individuals working precisely in the mining industry represents less than 0.5% of the sample. This makes impossible to draw any particular results for this specific category of respondents.

21. All these variables are defined at the time of interview.

status remains significant in the case of *inequalities* and *assistance*. The estimated coefficient when *responsibility* is the dependent variables is no more significant, but not far from the 10% significance level. These results confirm that the correlation between mineral resources and individualistic values is strong in the West part of the country. However, the longitudinal position of states does not seem to explain all the relationship between mineral resources and individualism.

Population density: Diamond (2006) stresses that “*Montanans tend to be conservative, and suspicious of governmental regulation. That attitude arose historically because early settlers were living at low population density [...]*”. The geographical conditions of Montana, in which many mineral discoveries took place, induces a very low population density which could explain the attitudes of citizens and more particularly why individuals in this state are more individualistic. As shown by table 5.4 in column 2, 9, and 16 the estimated coefficient of our variable of interest is unaffected by the introduction of population density. The coefficient of population density is negative as expected.

Political orientation: As mentioned above, the values we consider as reflecting greater individualism can also be simply associated to right-wing orientations. In order to show that we are not capturing only right-wing ideas, we control for political orientation at the state level using the Ranney index in columns 3, 10, and 17. We use a version of the Ranney index that captures the extent to which either the Democratic or Republican Party dominates the upper and lower houses of the state legislatures.²² This variable increases when the Democratic Party dominates the state at the time of interview. As shown by table 5.4, the estimated coefficient of our variable of interest is unaffected by the introduction of this variable for the three dependent variables. The estimated coefficient of the Ranney index is logically negative. This means that people living in states dominated by the Democratic Party have less individualistic values and support more redistribution.

Aggregate wealth: In columns 4, 11, and 18, we include income per capita in the state at the time of interview to control for differences in aggregate

22. See Berkowitz and Clay (2010) for more explanation on Ranney index building.

wealth and development. Adding income per capita in the regressions does not harm the significance, nor the magnitude of the mineral status variable. As for current individual income (see above), this result means that mineral resources have an effect on preferences for redistribution which does not act solely through current aggregate income.

Inequalities: Next, we take into account the potential effect of inequalities in columns 5, 12, and 19. We introduce the Gini coefficient in the state at the time of interview as a control variable. We find no significant relationship between this variable and individualism. Once again, this does not harm the estimated coefficient of our variable of interest.

Share of mining activity: In columns 6, 13, and 20, we introduce local mineral mining dependency of the state of residence at the time of interview as a control variable.²³ Once again the estimated coefficient of our variable of interest is unchanged.

We introduce all the above mentioned variables simultaneously in columns 7, 14, and 21 of table 5.4. The estimated coefficients of the variable of interest are consistent with previous comments. All in all, the relationship between the variable *mineral state* and our three measures of individualism appears robust to the introduction of a large set of state-level covariates. Hence, we are confident that the effect of the mineral status is not totally driven by omitted variables such as region fixed effects, longitude, population density, political orientations, income per capita, inequalities or the mineral dependency. However, the introduction of such variables changes the size of the coefficient of *mineral state*. The relative importance of such changes can be used to assess the potential omitted variable bias as suggested by Altonji et al. (2005). This approach, implemented in appendix, confirms that it is unlikely that supplementary omitted variables drive the results presented here.

23. Mineral mining dependency is measured by the share of mining activity in the state GDP.

Table 5.4: Residence in a mineral state and individualism: controlling for state-level variables.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	<i>Responsibility</i>						
Mineral state	0.030 (0.026)	0.039** (0.020)	0.044** (0.019)	0.060*** (0.018)	0.052** (0.023)	0.045** (0.019)	0.039 (0.031)
Longitude	0.023 (0.144)						-0.109 (0.180)
Population density		-0.016* (0.008)					0.001 (0.011)
Ranney index			-0.174*** (0.056)				-0.142** (0.069)
Per capita income				-0.019*** (0.003)			-0.014** (0.006)
Gini coefficient					-0.150 (0.553)		-0.273 (0.701)
Mineral dependency						-0.003 (0.010)	-0.017 (0.011)
Region fixed effects	Yes						Yes
Observations	17,848	17,848	17,755	17,848	14,760	17,848	14,693
Adjusted R-squared	0.088	0.086	0.087	0.088	0.092	0.086	0.095
	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	<i>Inequalities</i>						
Mineral state	0.089** (0.041)	0.142*** (0.032)	0.139*** (0.031)	0.163*** (0.031)	0.155*** (0.039)	0.146*** (0.031)	0.122** (0.048)
Longitude	0.300 (0.258)						-0.019 (0.320)
Population density		-0.011 (0.013)					0.007 (0.016)
Ranney index			-0.410*** (0.074)				-0.365*** (0.104)
Per capita income				-0.022*** (0.006)			0.001 (0.009)
Gini coefficient					0.452 (0.941)		-0.083 (1.040)
Mineral dependency						-0.002 (0.012)	-0.014 (0.014)
Region fixed effects	Yes						Yes
Observations	20,056	20,056	19,959	20,056	16,926	20,056	16,856
Adjusted R-squared	0.086	0.084	0.086	0.085	0.086	0.084	0.089
	(15)	(16)	(17)	(18)	(19)	(20)	(21)
	<i>Assistance</i>						
Mineral state	0.065*** (0.018)	0.032** (0.013)	0.042*** (0.013)	0.050*** (0.013)	0.046*** (0.018)	0.043*** (0.013)	0.071*** (0.023)
Longitude	0.193* (0.101)						0.124 (0.143)
Population density		-0.025*** (0.005)					-0.002 (0.008)
Ranney index			0.029 (0.038)				0.045 (0.051)
Per capita income				-0.010*** (0.002)			-0.006 (0.004)
Gini coefficient					0.105 (0.425)		0.349 (0.499)
Mineral dependency						0.004 (0.008)	0.002 (0.010)
Region fixed effects	Yes						Yes
Observations	13,261	13,261	13,177	13,261	9,679	13,261	9,633
Adjusted R-squared	0.060	0.059	0.057	0.058	0.061	0.057	0.065

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. OLS regressions. All regressions include a constant term, fixed effects for the year of interview, and following individual covariates: gender, age, age², marital status, religion, education, employment status, race, and income. *Mineral state* is equal to 1 if the respondent lives in a state with lots of mineral resources, 0 if not. See the appendix for a presentation of individual covariates. See footnotes of other tables for the definitions of *responsibility*, *inequalities*, and *assistance*. See the appendix for a presentation of state-level covariates.

Selection

A concern about the relationship documented here is that it could be driven by a selection effect, i.e. more individualistic individuals could have been attracted by the prevailing “spirit” in mineral state or by the opportunities offered by these states. Similarly, a specific “spirit” may push individuals who do not share this trait to move out. We can identify three issues related to the selection effect.

The first two issues concern today’s self-selection. It is possible that non-individualistic people may moved out of mineral state. By construction, this kind of migration would mechanically foster the proportion of individualistic people in mineral states. Symmetrically, more individualistic individuals could have been attracted to mineral states. This interpretation is tackled in table 5.5. We create a dummy variable equals to one if respondent as changed state since he was 16 years old. This also allows to check if movers are more individualistic than non-movers. Furthermore, interacting this variable with the mineral status variable, we are able to check if movers toward mineral states support less redistribution than others. When the dependent variable is *responsibility* or *assistance* we do not find any support for the hypothesis that movers are more individualistic than non-movers, nor for the idea that mineral states could attract mainly individualistic individuals. In the case of the variable *inequalities* the estimated coefficient on the mover variable is significant and positive. This suggests that movers tend to be more adverse to the reduction of income inequalities than non-movers. However the estimated coefficient of the interaction term is negative, ruling out the former interpretation. The other selection mechanism, i.e. the selection of less individualistic out of mineral states is completely symmetric. Associated regressions are presented in table 5.15 in appendix. As expected, results are converging. Hence, we can conclude that the relationship between the mineral status of the state and the demand for redistribution and individualism is not driven by contemporaneous selection effects.

The last issue is linked to initial selection of inhabitants of mineral states. Geographic and economic conditions can lead to a selection of inhabitants

Table 5.5: Residence in a mineral state and individualism: movers incidence.

	(1) <i>Responsibility</i>	(2) <i>Inequalities</i>	(3) <i>Assistance</i>
Mineral State (<i>A</i>)	0.054** (0.023)	0.196*** (0.039)	0.044*** (0.015)
Mover (<i>B</i>)	0.012 (0.028)	0.112** (0.048)	-0.002 (0.019)
$A \times B$	-0.030 (0.037)	-0.160** (0.064)	0.000 (0.025)
Observations	17,742	19,940	13,201
Adjusted R-squared	0.086	0.084	0.057

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. OLS regressions. All regressions include a constant term, fixed effects for the year of interview, and following individual covariates: gender, age, age², marital status, religion, education, employment status, race, and income. *Mineral state* is equal to 1 if the respondent lives in a state with lots of mineral resources, 0 if not. See the appendix for a presentation of other covariates. *Mover* is equal to 1 if the respondent does not live in the same state as when it was 16 years old. *Responsibility* is the answer, on a scale from 1 to 5, to the following question: “Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government’s responsibility, and that each person should take care of himself. Where would you place yourself on this scale?”. *Inequalities* is the answer, on scale from 1 to 7, to the following question: “Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. What score [...] comes closest to the way you feel?”. *Assistance* is the answer, on a scale from 1 to 3, to the following question: “We are faced with many problems in this country, none of which can be solved easily or inexpensively. I’m going to name some of these problems, and for each one I’d like you to tell me whether you think we’re spending too much money on it, too little money, or about the right amount. Are we spending too much, too little, or about the right amount on assistance to the poor?”.

across immigration destinations. Mineral discoveries in the mid-19th century may have attracted individuals characterized by specific traits. Such individuals are likely to be characterized by a very small risk aversion, very developed entrepreneurship values, and *ex-ante* aversion for redistribution or public intervention in the economic activity. Settlement of such pioneers – endowed with particular traits – would then launch the transmission of individualistic values to next generations. The values observed in the late 20th century would thus originate from a transmission of values from people who were individualistic before their arrival in mineral states. In order to tackle this issue, we reverse the epidemiological approach used in cultural economics. Following this approach, Americans inherited attitudes toward various subject that reflect the culture of their ancestors’ origin country. If

initial selection took place, then American immigrants from more individualistic countries should have settled in mineral states. A direct test of this hypothesis requires precise information about the origin of early settlers in the United States. Such information would thus allow us to check whether there is systematic variations in origin countries among individuals who settled in mineral or non-mineral states. Early information about origin countries are scarce. As noted by Grosjean (2011), early US Census data list only few different origin countries. We thus directly use information provided by the General Social Survey about ancestors' countries. Table 5.6 presents origin countries listed in the survey and the share of respondents living in mineral or non-mineral states for each origin country. Some origins are well-balanced. For example, the population of Americans with French or Italian ancestors is almost equally balanced across the two groups of states. However, strong differences appear across other origins. For example, 83 percents of Americans with Finnish ancestors live in non-mineral states. On the opposite, 86 percents of respondents with Spanish ancestors live in mineral states. All in all, there are thus differences in allocation across origins. This argues in favor of the initial selection hypothesis.

However, a complete validation of this hypothesis necessitates that individuals with more individualistic culture settled in mineral states. In other terms, the lower the cultural support for redistribution in a given origin country, the higher should be the share of Americans from this country who initially migrated to mineral states. To check this, we measure aversion for redistribution in a set of origin countries using the World Values Survey. We construct the average answer by country to the following question: *“Now I’d like you to tell me your views on various issues. How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between. People should take more responsibility to provide for themselves versus The government should take more responsibility to ensure that everyone is provided for.”* This question is close enough to the question that we

Table 5.6: Share of individuals living in *mineral* or *non-mineral* states by origin country.

Origin country	Share living in		Origin country	Share living in	
	<i>mineral states</i>	<i>non-mineral states</i>		<i>mineral states</i>	<i>non-mineral states</i>
Africa	.41	.59	Lithuania	.27	.73
Arabic	.60	.40	Mexico	.90	.10
Austria	.29	.71	Netherlands	.34	.66
Belgium	.31	.69	Norway	.35	.65
Canada	.36	.64	Other Asian	.86	.14
China	.81	.19	Other European	.50	.50
Czech Republic	.29	.71	Other Spanish	.79	.21
Denmark	.47	.53	Philippines	.65	.35
Finland	.18	.83	Poland	.34	.66
France	.45	.55	Portugal	.60	.40
Germany	.33	.67	Romania	.40	.60
Greece	.45	.55	Russia	.55	.45
Hungary	.26	.74	Spain	.86	.14
India	.28	.72	Sweden	.37	.63
Ireland	.43	.57	Switzerland	.35	.65
Italy	.53	.47	United Kingdom	.46	.54
Japan	.71	.29	Yugoslavia	.17	.83

The table presents the share of individuals living in *mineral* or *non-mineral* states by origin country. *Origin country* is the answer to the following question: “*From what countries or part of the world did your ancestors come?*”. See the text for the definition *mineral* and *non-mineral* states. Only individuals who did not change state between their early adulthood and the time of interview are used to construct the shares.

called *responsibility*.²⁴ We reverse the scale of answers such that answers reflect increasing support for individual self-responsibility. Figure 5.7 presents the positive relationship between the support for individual responsibility in home countries and the support individual responsibility among Americans of first and second generations from different origins. Information available in the General Social Survey and in the World Values Survey only enable to obtain both variables for 28 origin countries.

Then, we check whether Americans originating from countries that support more individual self-responsibility are more likely to be found in mineral states. To achieve this, we plot the share of individuals from different origins that live in these states against the average support for individual self-responsibility in their origin country. We expect initial selection to show up under the form of a increasing relationship between both variables. As shown by figure 5.8, the relationship is not increasing.²⁵ In other words, the share of Americans of a given origin living in mineral states is not increasing as support for individual self-responsibility in their origin country increases. This indirect approach invalidates the hypothesis that our results are driven by initial selection of Americans pioneers.

All in all, we do not find convincing evidence that our results are driven by current or initial selection. However, note that the evidence we present against initial selection is indirect.

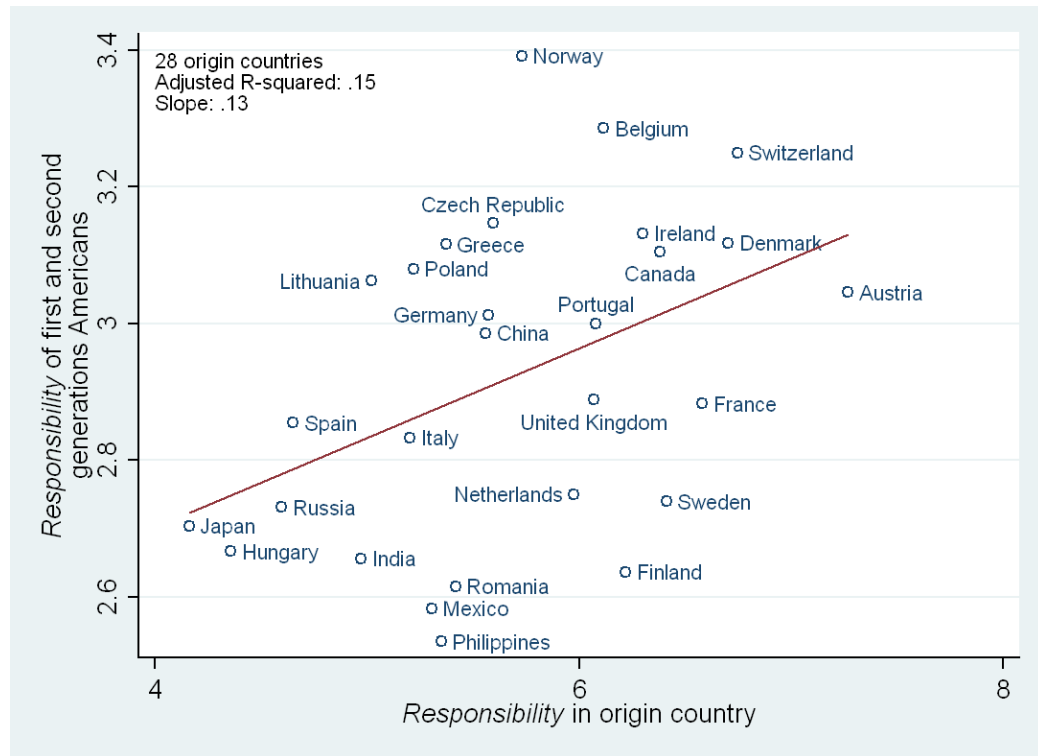
Individualism or distrust in institutions?

In table 5.23, presented in appendix, we rule out the possibility that we are documenting a broad distrust to the government and not a specific effect of mineral status on individualism. We measure the general trust in the government and in television using questions of the General Social Survey.

24. Recall that *responsibility* is the answer, on a 5 items scale, to the following question: “Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government’s responsibility, and that each person should take care of himself. Where would you place yourself on this scale?”.

25. If anything, the relationship may be considered as decreasing. Such an interpretation would go against the initial selection hypothesis.

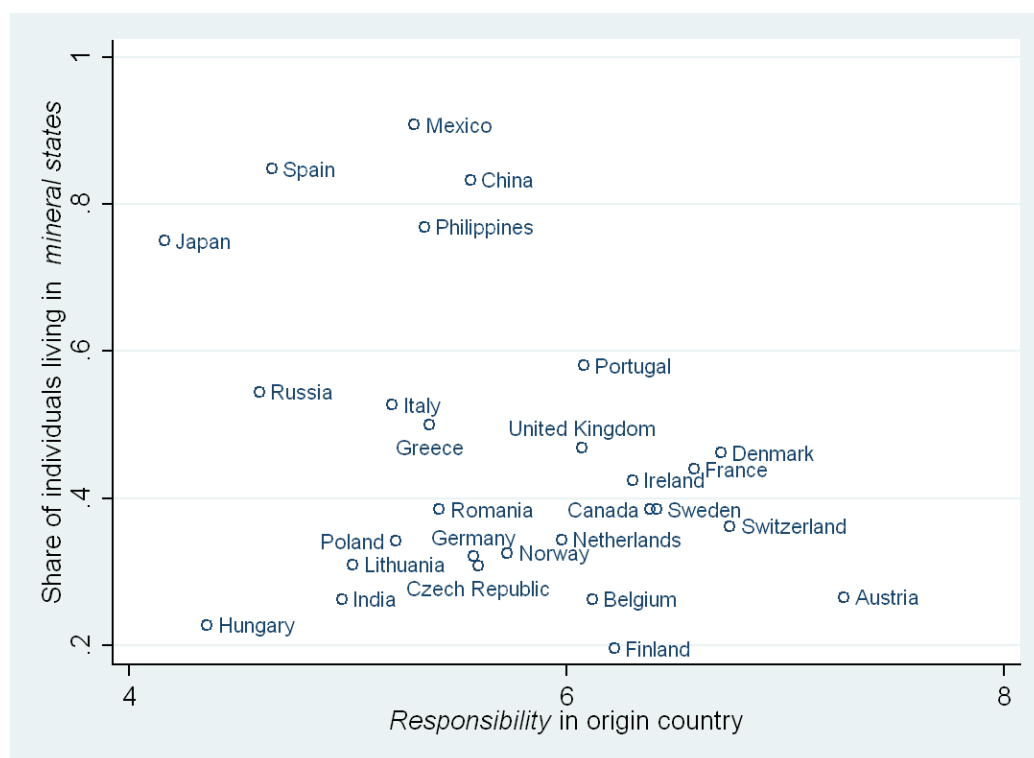
Figure 5.7: Relationship between *responsibility* in origin countries and *responsibility* among first and second generations Americans.



Sources: General Social Survey and World Values Survey. *Origin country* is determined using the answer to the following question: “From what countries or part of the world did your ancestors come?”. *Responsibility* among Americans is constructed using first and second generations Americans. *Responsibility* in origin country is constructed using the average answer by country to the following question from the World Values Survey: “Now I’d like you to tell me your views on various issues. How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between. People should take more responsibility to provide for themselves versus The government should take more responsibility to ensure that everyone is provided for.” The scale of answers is reversed such that answers reflect increasing support for individual self-responsibility.

The common question reads as “I am going to name some institutions in this country. As far as the people running these institutions are concerned, would you say you have a great deal of confidence, only some confidence, or hardly any confidence at all in them?”. We use answers for the following institutions: “Executive branch of the federal government”, “Congress” and “Television”. We find no significant relationship between our mineral status variable and confidence in the government or in television. This suggests

Figure 5.8: Relationship between *responsibility* in origin countries and the share of individuals living in *mineral* rather than *non-mineral* states.



Sources: General Social Survey and World Values Survey. See notes of table 5.6. *Responsibility* in origin country is constructed using the average answer by country to the following question from the World Values Survey: “Now I’d like you to tell me your views on various issues. How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between. People should take more responsibility to provide for themselves versus The government should take more responsibility to ensure that everyone is provided for.” The scale of answers is reversed such that answers reflect increasing support for individual self-responsibility.

that we are indeed documenting a relationship from mineral resources to individualism and not a broad distrust in public institutions.

Spurious correlation

Two other falsification exercises can be proposed to check that the relationship we are presenting is not purely spurious. Both rely on random allocations of the mineral status.

First, we randomly assign each individual to a new state, leaving the

mineral status of the state unchanged. We estimate 1,000 times equation (5.1) with individual covariates (as in table 5.2) and present the distribution of estimated coefficients of *mineral state* in figures 5.11 to 5.13, presented in appendix, for each of the three dependent variables. Only 0.3% of randomly simulated coefficients are above the estimated coefficient of *mineral state* in table 5.2 if the dependent variable is *responsibility*. Corresponding numbers amount 0% for *inequalities* and 0% for *assistance*.

Second, we randomly assign the mineral status of each state, leaving unchanged the individual composition of each state. We estimate 1,000 times equation (5.1) with individual covariates (as in table 5.2) and present the distribution of estimated coefficients of *mineral state* in figures 5.14 to 5.16, presented in appendix, for each of the three dependent variables. Only 6.7% of randomly simulated coefficients are above the estimated coefficient of *mineral state* in table 5.2 if the dependent variable is *responsibility*. Corresponding numbers amount 0.3% for *inequalities* and 2.5% for *assistance*. Note that the results of this exercise are less favorable than those of the first one. This is natural, since the procedure we implement is more likely to reproduce the original sample.

These falsification exercises make us confident that the relationship we document is not purely spurious.

5.4 Identification of channels

Results presented in section 5.3 show the importance of mineral resources for individualistic orientations. In the introduction, we stressed two potential channels through which values are formed: the *transmission* channel and the *experience* channel. In this section we identify both channels and show that both matter.

5.4.1 The *experience* channel

The *experience* channel is linked to the direct effect mineral resources abundance on individualistic values. Values depend on events that happened

during the life of an individual. Hence, “shocks” on mineral resources abundance are likely to shape directly the values help by individuals if they have been affected by these shocks.

The best way to identify this channel would be to exploit a natural experiment as in Di Tella et al. (2007). Unfortunately, it is impossible to implement this methodology according to the nature of our data. As underlined in section 5.2, mineral discoveries occurs in the US until the late 60’s and data on individualism are available since the mid-70’s. Moreover, the General Social Survey does not provide information on the city of birth but only if the respondent was living in the same state when it was 16 years old. This information allows to control (partially) for the question of migration but is a limit to the implementation of a natural experiment.

To overcome this issue we propose another methodology in order to identify the *experience* channel. Focusing on states with mineral resources, we now distinguish between individuals who observed mineral resources discoveries in the state when they where young and those who did not. This strategy imposes us to focus only on individuals who did not change state between early adulthood and the time of interview. Indeed, let us recall that we are not able to know where individuals were living when they were young. Instead, we know if they stayed in the same state. These conditions lead us to restrict the number of observations used. As show by table 5.13, presented in appendix, we only use 29% of the full sample in regressions presented in this sub-section.

We create a dummy variable equals to one if the respondent is likely to have observed mineral resources discoveries between 18 and 25.²⁶ This period corresponds to the “impressionable years” hypothesis presented above. In this subsection, we estimate equation (5.2), i.e. we compare individuals living in states with large mineral resources endowment who experienced mineral discoveries during their “impressionable years” to those living in the same group of states but who did not experience mineral discoveries during their “impressionable years”. More than one third of the individuals have

26. Let us recall that this dummy variable equals 1 if there was any mineral discoveries in the state were an individual was living when aged between 18 and 25.

experienced mineral discoveries during their impressionable years.

Figure 5.9 presents the share of each cohort who observed mineral discoveries. Estimated coefficients of equation (5.2) for dependent variables *responsibility*, *inequalities* and *assistance* are presented in table 5.7. The estimated coefficient of the variable *mineral discoveries observed* is always positive and significantly different from zero. This means that having observed mineral discoveries fosters individualism and harms the individual demand of redistribution. The estimated coefficient is about 0.08 when *responsibility* is the dependent variable. As a comparison, the effect of being protestant equals 0.26, the reference being “none/other”; whereas the estimated effect of being married equals 0.18. Hence, the effect of observed mineral discoveries on *responsibility* is of the same order of magnitude as the one of religion or marital status. Moreover, this effect represents up to half of the effect of being married, one of the variables with the largest effect on *responsibility*. In the case of *inequalities* and *assistance*, the effect is even stronger. The estimated coefficients of the variable *mineral discoveries observed* are larger compared to the coefficients in table 5.2. The magnitude of estimated coefficients of the variable *mineral discoveries observed* suggests that the effect of having observed mineral resources discoveries is slightly larger than the simple effect of the mineral status previously estimated.

In what follows, we present now objections that can be raised against the identification of the *experience* channel and show that it is robust to the introduction of a large number of covariates.

First, we introduce origin and industry fixed effects as previously done in table 5.3. Estimated coefficients presented in table 5.16 in appendix show that the effect of *mineral discoveries observed* holds for all dependent variable when taking origin and industry into account separately. In addition, this coefficient is still positive and significant for *inequalities* and *assistance* if we include both sets of fixed effects simultaneously.

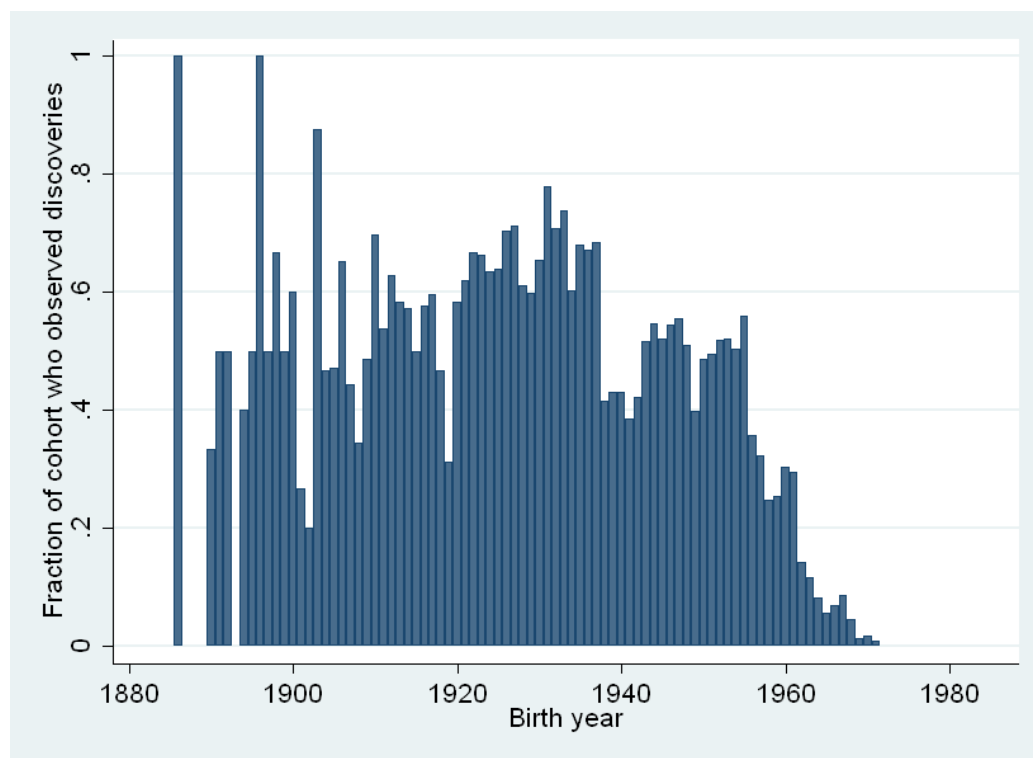
Second, we face the same concerns about state-level omitted variables as those raised above. Accordingly, we introduce the population density, political orientation, per capita income, the Gini coefficient, and the measure

Table 5.7: *Experience* channel: Mineral resources discoveries during impressionable years and individualism.

	(1) <i>Responsibility</i>	(2) <i>Inequalities</i>	(3) <i>Assistance</i>
Mineral discoveries observed	0.084** (0.036)	0.178*** (0.058)	0.051** (0.024)
Male	0.169*** (0.034)	0.282*** (0.051)	0.026 (0.023)
Age	-0.137** (0.061)	-0.048 (0.097)	-0.059 (0.040)
Age ²	0.017*** (0.006)	0.005 (0.010)	0.009*** (0.004)
Married	0.180*** (0.030)	0.249*** (0.059)	0.090*** (0.024)
Protestant	0.263*** (0.035)	0.315*** (0.078)	0.058** (0.027)
Catholic	0.073 (0.045)	0.088 (0.080)	0.009 (0.031)
Education	0.042*** (0.007)	0.086*** (0.010)	0.013*** (0.005)
Employed	0.103** (0.041)	0.092 (0.066)	0.055* (0.029)
White	0.482*** (0.048)	0.717*** (0.066)	0.223*** (0.025)
Income	0.048*** (0.012)	0.069*** (0.015)	0.029*** (0.007)
Year fixed effects	Yes	Yes	Yes
Observations	5,218	5,803	3,952
Adjusted R-squared	0.091	0.079	0.064

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. OLS regressions. All regressions include a constant term. The sample is restricted to individuals living in mineral states at the time of interview and when they were young. *Mineral discoveries observed* equals 1 if there has been mineral discoveries in the state during the respondent's impressionable years. See the appendix for a presentation of other covariates. *Responsibility* is the answer, on a scale from 1 to 5, to the following question: "Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government's responsibility, and that each person should take care of himself. Where would you place yourself on this scale?". *Inequalities* is the answer, on scale from 1 to 7, to the following question: "Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. What score [...] comes closest to the way you feel?". *Assistance* is the answer, on a scale from 1 to 3, to the following question: "We are faced with many problems in this country, none of which can be solved easily or inexpensively. I'm going to name some of these problems, and for each one I'd like you to tell me whether you think we're spending too much money on it, too little money, or about the right amount. Are we spending too much, too little, or about the right amount on assistance to the poor?".

Figure 5.9: Share of cohort who observed mineral discoveries during impressionable years.



Sources: Mineral Resources Data System and General Social Survey. The share of cohort who observed mineral discoveries during impressionable years may be equal to 1 or 0 for some cohorts because we have only few respondents born respectively in some specific years. This is particularly likely for cohorts born before 1900.

of mining dependency in table 5.17 presented in appendix.²⁷ Estimated coefficients show that our results still hold except for *responsibility* with the inclusion of state population density or per capita income.

An obvious requirement when estimating equation (5.2) is to take into account other factors that may have shaped values during impressionable years. In appendix, table 5.18 presents estimated coefficients of *mineral discoveries observed* when introducing such variables as covariates. We first introduce birth cohort fixed effects in columns 1, 5, and 9. The estimated coefficient

27. Unlike in table 5.4, we do not control for geographical bias in table 5.17. Here, we focus explicitly on mineral states. Such covariates would thus be irrelevant.

of our variable of interest is unchanged whatever the dependent variable. Second, we include the variable *past family income* in columns 2, 6, and 10 to control for respondent's situation when it was 16 years old.²⁸ Estimated coefficients of the variable of interest are still positive and statistically significant except for *assistance*. In columns 3, 7, and 11, we control for the *past per capita income* defined at the state level when the respondent was 20 years old. Results still hold. Last, we control for parents education using a set of dummy variables in columns 4, 8, and 12. Once again, the estimated coefficient of *mineral discoveries observed* stay positive and significant, except for *assistance*.²⁹

By underlying the role of mineral discoveries during early adulthood, these results show that mineral discoveries strengthens individualistic values in the population. This supports the idea that experiences of mineral discoveries play a role in the formation of individualistic values.

5.4.2 The *transmission* channel

This channel is linked to the question of transmission and persistence of beliefs. It occurs within the society, across and within generations. In order to uncover the *transmission* channel, we compare individuals living in states with large mineral resources endowment who does not experienced mineral discoveries during their “impressionable years” to those living in states without mineral resources. In other words, we estimate again equation (5.1), but excluding individuals who experienced mineral discoveries during their “impressionable years”. This cleans out the effect of the *experience* channel.

Estimated coefficients of equation (5.1) for dependent variables *responsibility*, *inequalities* and *assistance* are presented in table 5.8. The estimated coefficient of the variable *mineral state* are lower than in table 5.2. In column

28. *Past family income* is the answer, on a 5 items scale, to the following question: “Thinking about the time when you were 16 years old, compared with American families in general then, would you say your family income was far below average, below average, average, above average, or far above average?”.

29. Estimating equation (5.2) only on individuals for which *past family income* or *parents education* are available suggests that this is not the introduction of this variable that makes the variable of interest not significant, but the smaller size of the sample.

1, when *responsibility* is the dependent variable, the estimated coefficient of the variable of interest is not statistically significant. The estimated coefficient is about 0.11 when *inequalities* is the dependent variable. In the case of *assistance*, the estimated coefficient of the mineral status is positive and statistically significant, but smaller than in table 5.2.

In what follows, we present now objections that can be raised against the identification of the *transmission* channel and show that it is robust to the introduction of a large number of covariates.

As above, we introduce origin country and industry fixed effects as explanatory variables in table 5.19, presented in appendix. As the estimated coefficient of the variable of interest is estimated to be significant for *responsibility* and *inequalities* when introducing both sets of fixed effects, it is just below the 10% significance level when *assistance* is the dependent variable.

In table 5.20, presented in appendix, we replicate exercises of table 5.4 by introducing state-level variables. We control separately for geographical characteristics, population density, political orientation, per capita income, inequalities, and mineral dependency. Evidence that values persist are weak for *responsibility* when introducing these variables. On the opposite, the estimated coefficient of *mineral state* remains highly significant and remarkably stable across specifications when the dependent variable is *inequalities* or *assistance*.

These results point out that there is a transmission of individualistic values in mineral states: individual living in states with lots of mineral resources are more individualistic than others even if they did not experienced mineral discoveries during their impressionable years.

5.4.3 Persistence across time

As the two above sub-sections show that both experience and transmission matter in the evolution of individualistic values associated with mineral resources, an natural question that arises concerns the strength of persistence. To tackle this question, we focus only on individuals living in states with mineral resources and construct for each of them a “distance to discov-

Table 5.8: *Transmission* channel: Residence in a mineral state and individualism, excluding individuals who experienced discoveries during their impressionable years.

	(1) <i>Responsibility</i>	(2) <i>Inequalities</i>	(3) <i>Assistance</i>
Mineral state	0.033 (0.020)	0.109*** (0.033)	0.033** (0.014)
Male	0.144*** (0.018)	0.293*** (0.030)	0.042*** (0.012)
Age	-0.144*** (0.034)	-0.079 (0.048)	-0.073*** (0.022)
Age ²	0.020*** (0.003)	0.013*** (0.005)	0.011*** (0.002)
Married	0.155*** (0.020)	0.264*** (0.033)	0.060*** (0.013)
Protestant	0.200*** (0.025)	0.284*** (0.044)	0.049*** (0.017)
Catholic	0.089*** (0.029)	0.163*** (0.047)	-0.013 (0.020)
Education	0.032*** (0.004)	0.098*** (0.006)	0.012*** (0.003)
Employed	0.101*** (0.022)	0.039 (0.034)	0.052*** (0.014)
White	0.519*** (0.029)	0.677*** (0.042)	0.235*** (0.014)
Income	0.048*** (0.006)	0.079*** (0.008)	0.015*** (0.004)
Year fixed effects	Yes	Yes	Yes
Observations	15,927	17,816	11,863
Adjusted R-squared	0.085	0.084	0.054

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. OLS regressions. All regressions include a constant term. *Mineral state* is equal to 1 if the respondent lives in a state with lots of mineral resources, 0 if not. The sample is restricted to individuals living outside mineral states and individuals living in mineral states but who did not experienced any discoveries during their impressionable years. See the appendix for a presentation of other covariates. *Responsibility* is the answer, on a scale from 1 to 5, to the following question: “Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government’s responsibility, and that each person should take care of himself. Where would you place yourself on this scale?”. *Inequalities* is the answer, on scale from 1 to 7, to the following question: “Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. What score [...] comes closest to the way you feel?”. *Assistance* is the answer, on a scale from 1 to 3, to the following question: “We are faced with many problems in this country, none of which can be solved easily or inexpensively. I’m going to name some of these problems, and for each one I’d like you to tell me whether you think we’re spending too much money on it, too little money, or about the right amount. Are we spending too much, too little, or about the right amount on assistance to the poor?”.

eries”.

This requires us to define a “peak” of mineral discoveries for each state by taking the five years period with the most discoveries. According to all the former results, this “peak” should be a key date in the evolution of mineral resources related individualism in the state. Then, we construct the *distance to discoveries* of each individual by taking the difference between the year of interview and the “peak” in the state.³⁰

The effect of the *distance to discoveries* on individualism is presented in table 5.21 in appendix. The estimated coefficient of this variable is negative and statistically significant only when *responsibility* is the dependent variable. This patterns seems coherent with other results presented in this paper since *responsibility* is the dependent variable for which evidence of persistence were weaker. On the contrary, estimated coefficients presented in table 5.21 suggest that attenuation is weak for *inequalities* or *assistance*. All in all, these results confirm the strong persistence of individualistic values associated with mineral resources. In other words, the effect of mineral resources on individualism seems to vanish very slowly, if it ever does.

5.5 Beyond opposition to public intervention

The phrasing of the questions used until this point of the paper points to intervention of the government in economic activity, and most particularly to the redistribution of income. Redistribution is a multifaceted phenomenon that may be organized through formal institutions. It may also arise through decentralized individual decisions, e.g. through charity or volunteer work. In this section, we investigate whether the stronger opposition to federal public intervention by residents of mineral states is compensated by local individual actions. To achieve this, we look at the activity of non-profit organizations in different states and at private charity. Individuals can exhibit more or less solidarity either by taking specific material actions (e.g. volunteering) or by

30. We restrict the sample to individuals living in state for which the “peak” can be clearly identified as period where the number of discoveries is substantially higher than during other periods.

giving money to others (e.g. charitable giving).

In the General Social Survey, the number of individuals who have been asked about effective volunteering in non-profit organizations is too low to be used in any statistical analysis.³¹ However, the survey conveys some information about membership of non-profit organizations. For example, respondents are asked whether they are member of following organizations: fraternal groups, service clubs, veterans' groups, political clubs, labor unions, sports groups, youth groups, school service groups, hobby or garden clubs, school fraternities or sororities, nationality groups, farm organizations, literary, art, discussion or study groups, professional or academic societies, church-affiliated groups, and any other groups. We constructed a dummy variable equal to 1 if the respondent belongs to any of these organizations. In the first column of table 5.9, we regress this variable on the the mineral status of the state and other individual covariates. Individuals living in mineral states are 3% less likely to belong to one of the organizations listed above. In column 2, we restrict the sample to individuals who belong at least to one group and use the number of groups they belong to as dependent variable. On average, respondents living in mineral states belong to one less group than others, conditionnal on being member of at least one group.³²

These individual-level observation is consistent with comparisons across states. Using information provided by the National Center for Charitable Statistics,³³ we computed the number of non-profit organizations by state and compared mineral and non-mineral states. On average, there is 13 organizations per 10,000 inhabitants less in mineral states.³⁴ and 66 for non-mineral states. The difference is statistically significant at the 1% significance level.

Questions about money given to charity organizations have been asked

31. Still, in 1996 some respondents have been asked whether they did some volunteer work over the past year. The share of respondents who declared such activity is lower in states with lots of mineral resources.

32. Conditionnal on being member of at least one group, the average number of groups respondents belong to equals 2.5.

33. <http://nccs.urban.org>

34. In 2008, there was 60 non-profit organizations per 10,000 inhabitants in the United States. This value amounts 53 for mineral state

Table 5.9: Residence in a mineral state, participation to non-profit organizations, and charitable giving.

Dependent variables in columns' heads.				
	(1) Member of any group	(2) Number of groups	(3) Charity giving	(4) Frequency of charity giving
Mineral state	-0.030*** (0.009)	-0.091** (0.038)	-0.032 (0.019)	-0.029 (0.053)
Male	0.045*** (0.008)	0.074* (0.038)	-0.076*** (0.018)	0.044 (0.049)
Age	0.020 (0.015)	0.098 (0.061)	0.047 (0.035)	0.044 (0.088)
Age ²	0.001 (0.002)	-0.005 (0.006)	-0.001 (0.003)	0.006 (0.008)
Married	0.055*** (0.010)	0.031 (0.038)	0.105*** (0.019)	0.214*** (0.057)
Protestant	0.103*** (0.014)	0.349*** (0.058)	0.046** (0.020)	0.085* (0.048)
Catholic	0.064*** (0.014)	0.368*** (0.066)	0.038* (0.022)	0.205** (0.078)
Education	0.037*** (0.001)	0.188*** (0.008)	0.022*** (0.003)	0.038*** (0.009)
Employed	0.043*** (0.009)	0.017 (0.039)	0.061** (0.027)	0.039 (0.059)
White	-0.004 (0.013)	-0.050 (0.051)	0.049* (0.028)	-0.029 (0.069)
Income	0.020*** (0.002)	0.031** (0.013)	0.036*** (0.004)	0.039*** (0.011)
Observations	13,146	9,208	1,934	1,538
Adjusted R-squared	0.102	0.106	0.159	0.061

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. OLS regressions. All regressions include a constant term and year fixed effects. *Mineral state* is equal to 1 if the respondent lives in a state with lots of mineral resources, 0 if not. See the appendix for a presentation of other covariates. In column 1, the dependent variable is equal to 1 if the respondent is member of any of the following organizations: fraternal groups, service clubs, veterans' groups, political clubs, labor unions, sports groups, youth groups, school service groups, hobby or garden clubs, school fraternities or sororities, nationality groups, farm organizations, literary, art, discussion or study groups, professional or academic societies, church-affiliated groups, and any other groups. In column 2, the dependent variable is the number of different groups to which the respondent belongs. In columns 3, the dependent variable equal 1 if the respondent as given any money to a charity over the past 12 months. In column 4, the dependent variable indicates the frequency of charitable giving, conditional of any giving over the past 12 months. The dependent variable ranges from 1 for "*once in the past year*" to 5 for "*more than once a week*". In columns 3 and 4, the sample is restricted to respondents who were interviewed in 2002 or 2004.

only in the 2002 and 2004 waves of the GSS. The question is about the frequency to which the respondent has given to a charity over the the past 12 months. Interviewed individuals are asked to answer by choosing on a 6 items scale where 1 means “*more than once a week*”, 5 means “*once in the past year*”, and 6 stands for “*not at all in the past year*”. In column 3 of table 5.9, the dependent variable equals 1 if the respondent has given any money to a charity over the past 12 months. The estimated coefficient of the variable of interest lies just at the border of the 10% level of statistical significance. Individuals living in mineral states are 3% less likely to have given any money to a charity over the past year. In column 4, we restrict the sample to those who gave to charity and use the scale of frequency as dependent variable. We reverse the scale such that it reflects increasing frequency in giving. Conditional of having given any money, we do not find any difference in the frequency of giving between individuals living in mineral and non-mineral states.

There is no question about the amount of money that is really given to non-profit or charity organizations in the General Social Survey. To check whether effective giving is different or not in mineral and non-mineral states, we rely on state comparisons using data provided by The Catalogue for Philanthropy³⁵ about charitable contributions in 2002 and by Havens and Schervish (2006) for 2004.³⁶ We compared amounts given in absolute value and as a share of average after tax income. We do not find any evidence of differences between amounts given in *mineral* and *non-mineral* states.³⁷

All in all, results presented in this section show that individuals living in states with lots of mineral resources are less likely to engage in collective activities and to report charitable giving. This does not seem to translate into less frequent giving, nor into lower charitable giving in absolute or relative terms.

35. <http://www.catalogueforphilanthropy.org>

36. Both sources use data from the IRS.

37. Average reported charitable giving amounts 2% of income in the United States in 2002. Statistical tests strongly reject any difference in this value between both groups of states.

5.6 Conclusion

In this paper, we show that there is a strong relationship between mineral resources abundance and individualism. Individuals living in states with lots of mineral resources are more individualistic and support less redistribution than others. This result is robust to various alternative explanations. We also show that this opposition to public intervention at the federal level is not compensated by higher engagement in non-profit organizations or higher charitable giving in states with large mineral resources endowments.

This relationship may arise either because of the transmission of specific values within the society across time, or because of direct observations of mineral resources discoveries by individuals. We uncover these two channels and show that both matter. In states with lots of mineral resources, individuals who observed resources discoveries during their early adulthood are also more individualistic and support less redistribution than others. In the same time, individuals living in states with lots of mineral resources but who did not experienced mineral resources discoveries during their impressionable years are more individualistic than those who live in states without mineral resources. A back of the envelope calculation suggests that updates induced by by mineral discoveries during the twentieth century explain up to 45% of the overall difference in individualism between inhabitants of *mineral* and *non-mineral* states. The remaining part is explained by the transmission of inherited values. All in all, results presented in this paper stress the high persistence of individualistic values associated with mineral resources.

5.7 Appendix

Early times of mining in the US

A history of American mining as been written in 1932 by T. A. Rickard. It as been published under the auspices of the American Institute of Mining and Metallurgical Engineers. It aims to present the main steps of the development of mining industry in the United States. As acknowledged in the introduction, “*it is designed to give to those who have come late into the professions of mining engineering and metallurgy something of that background the older men built up as they went along*”. The introduction continues as follows:

*“The pioneers did not read history; they made it. We who come later, facing different and more complex situations, have much to learn from their experiences. In developing the mineral wealth of a continent and building a great industry things do not “just happen”; they are brought about by men who have the wit to see and the courage to do. Our predecessors were men with these qualities. They fought great battles against heavy odds and they have left us a great heritage.”*³⁸

The first chapter of the book – *The gold discoveries* – emphasizes the social and technical conditions of mining activity at this time as well as characteristic traits of early diggers. About them, the author writes:

*“They had the machinery most used in mining: human muscle; they had the science most approved in that ancient art: organized common sense; they achieved the basic purpose of mining: to exploit mineral at a profit.”*³⁹

Their greed is highlighted by the following words, attributed to a pioneer;

“It was no uncommon event for a man alone to take out five hundred dollars in a day, or for two or three, if working together,

38. Rickard (1932), page ix.

39. Rickard (1932), page 29.

*to divide the dust at the end of the week by measuring it with tin cups. But we were never satisfied.”*⁴⁰

Rickard also quote the following words of the general in command of Pacific division in 1949, who was clearly opposed to any governmental intervention in mining operations:

*“I do not conceive that it would be desirable to have the mines worked for the benefit of the public treasury. To do that would require an army of officers and inferior agents, all with high salaries, and with opportunities and temptations for corruption too strong for ordinary human nature. The whole population would be put in opposition to the government array, and violent collisions would lead even to bloodshed.”*⁴¹

The author also draws a mixed picture of values that prevailed among diggers:

*“The stories of the golden days leave contradictory impressions; on the one hand we read of order, generosity, honor, and high aim; on the other we see pictures of riot, bloodshed, fraud, and frenzy. Neither extreme is altogether true, but the facts are given more reliably in the chronicles of the time than in the later reminiscences of garrulous pioneers. The life of the mining-camp, as Royce says, was “the struggle of society to impress the true dignity and majesty of its claims on wayward and blind individuals, and the struggle of the individual man, meanwhile, to escape, like a fool, from his moral obligation to society”. In such a frontier community, made up of men that had left their homes, their families, and their old vexations in an attempt to find a golden paradise, the social struggle came to the surface and was to be seen in its true light; for social duties of any sort are a nuisance amid the excited digging for gold [...].”*⁴²

40. Ibid.

41. Ibid., page 33.

42. Ibid., page 35.

These some quotes from the book written by Rickard illustrate pretty well how individualistic values were associated with historical mining activities.

Natural resources and beliefs in Montana

As indicated by its title *Collapse : How societies choose to fail or to survive* , the book of Jared Diamond presents a large number of cases where societies face challenges at some point in their history. Some of them succeed, whereas others fail in doing so.

The first chapter of the book – *Under Montana's big sky* – is devoted to the American state of Montana. This state faces major challenges regarding the evolution of its economy and various natural disasters are threatening its survival. Indeed, the economy of Montana heavily relies on natural resources exploitation. According to Diamond, this economic organization has strong ties with inhabitants attitudes and political orientations. As a consequence, individual attitudes becomes in turn a barrier to solve new problems:

*“Despite Montanans’ longstanding embrace of mining as a traditional value defining their state’s identity, they have recently become increasingly disillusioned with mining and have contributed to the industry’s near-demise within Montana.”*⁴³

*“In modern times a reason why Montanans have been so reluctant to solve their problems caused by mining, logging, and ranching is that those three industries used to be the pillars of the Montana economy, and that they became bound up with Montana’s pioneer spirit and identity.”*⁴⁴

Diamond points out the crucial role of natural resources in Montanan’s values by describing “old timers” as

“[...] people born in Montana, of families resident in the state for many generations, respecting a lifestyle and economy traditionally built on the three pillars of mining, logging, and agriculture

43. Diamond (2006), page 37.

44. Ibid., page 432.

[...]”⁴⁵

These values are linked to right-wing orientations and have their roots in the deep history of American development:

“[...] *Montanans tend to be conservative, and suspicious of governmental regulation. That attitude arose historically because early settlers were living at low population density on a frontier far from government centers, had to be self-sufficient, and couldn't look to government to solve their problems.*”⁴⁶

The work by Jared Diamond offers an rich and interesting case study of the link between natural resources and individual orientations. The book does not offer any support for the hypothesis that natural resources abundance *induces* selfish and anti-redistributive behaviors, however, it documents the interplay between natural resources and individualist orientations. The latter have thus an impact both on general economic orientations and on the management of natural resources.

To sum up, Jared Diamond description of Montana's society illustrates the interplay between natural resources, values and economic organization.

Assessing the importance of the omitted variables bias

The introduction of additional explanatory variables changes the size of the coefficient of *mineral state*. The relative importance of such changes can be used to asses the potential omitted variable bias as suggested by Altonji et al. (2005). Here, we follow the method as implemented by Bellows and Miguel (2009) using ordinary least squares.

In table 5.24, we present the estimated coefficient of the variable *mineral state* when different sets of covariates are introduced. No covariates are included in columns 1, 4, and 7. In columns 2, 5, and 8 we introduce the set of individual characteristics already presented. In columns 3, 6, and 9, we add all state-level variables. In order to make coefficients comparable across

45. Ibid., page 57.

46. Ibid., page 63.

specifications, we restrict the sample of observations to individuals for which all individual as well as state-level variables are available.

In the upper part of table 5.24, the dependent variable is *responsibility*. The comparison of the coefficient of the variable of interest across columns does not convey any information. In the bottom part of the table, the dependent variable is *assistance*. In this case, the estimated coefficient of *mineral state* is equal to 0.042 without covariates, to 0.047 with individual characteristics only, and to 0.071 with individual and state characteristics. It is thus increasing as we introduce covariates. This suggests that it is unlikely that the effect of *mineral state* fades away if supplementary variables were introduced (see Altonji et al. (2005) or Bellows and Miguel (2009)).

In the middle part of the table, the dependent variable is *assistance*. In this case, the estimated coefficient of *mineral state* is equal to 0.173 without covariates, to 0.159 with individual characteristics only, and to 0.122 with individual and state characteristics. It is thus decreasing as covariates are introduced. Accordingly, this suggests that the further inclusion of more controls would lower the estimated effect of *mineral state*. The change of the coefficient between columns 4 and 5 amounts 0.014. Following Bellows and Miguel (2009), this implies that the explanatory power of further individual characteristics should be more than 11 times larger than the one of observed characteristics to eradicate the effect of the variable of interest. The change of the coefficient of *mineral state* between columns 5 and 6 amounts 0.037. The same calculation as above implies that the explanatory power of further state characteristics should be 3.3 times larger than the one of observed state characteristics to cancel the effect of the variable of interest.

All in all, these results make us confident that results are not driven by omitted variables.

Table 5.10: Distribution of mineral resources.

	Points	Mines		Points	Mines
<i>Non-mineral states</i>					
Delaware	0	0	South Carolina	1	1
District of Columbia	0	0	Vermont	1	1
Hawaii	1	0	Virginia	1	1
Illinois	9	0			
Indiana	0	0	<i>Mineral states</i>		
Iowa	0	0	New Hampshire	10	3
Kansas	0	0	New York	12	4
Kentucky	0	0	Florida	28	5
Maryland	4	0	Georgia	82	5
Massachusetts	1	0	Arkansas	14	6
Michigan	0	0	Oklahoma	144	47
Minnesota	2	0	Wyoming	370	54
Mississippi	0	0	Idaho	237	67
Nebraska	0	0	North Carolina	134	77
North Dakota	0	0	New Jersey	238	224
Ohio	0	0	South Dakota	395	272
Pennsylvania	8	0	Washington	1598	298
Tennessee	5	0	Texas	629	427
West Virginia	3	0	Colorado	1411	546
Wisconsin	1	0	New Mexico	947	588
Alabama	1	1	Montana	1382	663
Connecticut	3	1	Alaska	2432	727
Louisiana	1	1	Arizona	2475	1358
Maine	15	1	Utah	2327	1377
Missouri	1	1	Nevada	2648	1385
Rhode Island	3	1	California	4138	1493
			Oregon	4850	3840

Source: Mineral Resources Data System. *Points* is the number of entries in the data set. *Mines* is the number of places where mining has been operated. *Mineral states* are all states with a number of mines larger than the median.

Table 5.11: Major commodities, by type of observation.

	Occurrence %	Prospect %	Production %	Total %
Copper	14,6	30,9	9,5	12,6
Gold	31,3	48,2	30,8	31,6
Iron	2,5	1,3	1,8	2,1
Lead	8,1	18,5	10,0	9,4
Silver	13,8	28,8	18,2	16,6
Tungsten	3,7	3,1	3,0	3,3
Uranium	8,6	3,4	5,2	6,7
Zinc	4,2	12,7	3,4	4,1
Other	38,7	19,4	44,7	41,0

Source: Mineral Resources Data System. The sum of percentages is not equal to 100 because the same resource may contain several commodities. *Occurrence*: No production has taken place and there has been no or little activity since discovery. *Prospect*: Work such as surface trenching, adits, or shafts, drill holes, extensive geophysics, geochemistry, and/or geologic mapping has been carried out. *Production*: Mining has been operated. "Other" means none of the above commodities.

Table 5.12: Summary statistics.

	Obs	Mean	Std. Dev.	Min	Max
Responsibility	17,848	2,9	1,16	1	5
Inequalities	20,056	3,73	1,95	1	7
Assistance	13,261	1,46	0,67	1	3
Hard work	14,194	0,88	0,33	0	1
Mineral state	25,242	0,49	0,5	0	1
Mineral discoveries observed	7,395	0,37	0,48	0	1
Male	25,242	0,44	0,5	0	1
Age	25,242	4,47	1,71	1,8	8,9
Married	25,242	0,53	0,5	0	1
Protestant	25,242	0,6	0,49	0	1
Catholic	25,242	0,24	0,43	0	1
Education	25,242	12,95	3,06	0	20
Employed	25,242	0,68	0,47	0	1
White	25,242	0,82	0,38	0	1
Income	25,242	2,78	1,95	0,1	10
Mover	25,107	0,33	0,47	0	1

Summary statistics are computed using all individuals that appear in at least one regression. Definitions of variables are given in the text and in appendix. Note that estimated coefficients for *age* presented in tables correspond to *age*/10.

Table 5.13: Sample composition.

	Mineral state	Non mineral state	Total
Non-movers	29%	37%	16,716
Movers	20%	14%	8,391
Total	12,250	12,857	25,107

Each cell of the table gives the share of each group as a share of the full sample. See the text for the definition of *mineral* and *non-mineral* states. *Non-movers* are respondents who declare at the time of interview that they were living in the same state when they were 16 years old.

Table 5.14: Residence in a mineral state and perceived determinant of success.

	<i>Hard work</i>		
Mineral state	0.013** (0.006)	Education	0.002** (0.001)
Male	-0.037*** (0.006)	Employed	0.001 (0.007)
Age	-0.033*** (0.009)	White	0.025*** (0.008)
Age ²	0.003*** (0.001)	Income	0.002 (0.002)
Married	0.029*** (0.006)	Year fixed effects	Yes
Protestant	0.029*** (0.008)		
Catholic	0.011 (0.008)	Observations	14,194
		Adjusted R-squared	0.012

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. OLS regressions. The regression also includes a constant term. *Mineral state* is equal to 1 if the respondent lives in a state with lots of mineral resources, 0 if not. See the appendix for a presentation of other covariates. *Hard work* is equal to 1 if the respondent answers “*hard work is most important*” or “*hard work and luck are equally important*”, rather than “*luck is most important*” to the following question: “*Some people say that people get ahead by their own hard work; others say that lucky breaks or help from other people are more important. Which do you think is most important?*”.

Table 5.15: Residence in a mineral state and individualism: movers incidence (alternative approach).

	(1) <i>Responsibility</i>	(2) <i>Inequalities</i>	(3) <i>Assistance</i>
Non-Mineral State (<i>A</i>)	-0.054** (0.023)	-0.196*** (0.039)	-0.044*** (0.015)
Mover (<i>B</i>)	-0.018 (0.023)	-0.048 (0.041)	-0.002 (0.017)
$A \times B$	0.030 (0.037)	0.160** (0.064)	-0.000 (0.025)
Observations	17,742	19,940	13,201
Adjusted R-squared	0.086	0.084	0.057

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. OLS regressions. All regressions include a constant term, fixed effects for the year of interview, and following individual covariates: gender, age, age², marital status, religion, education, employment status, race, and income. *Non-mineral state* is equal to 1 if the respondent does not live in a *mineral state*, 0 otherwise. See the text for the definition of *mineral state*. See the appendix for a presentation of other covariates. *Mover* is equal to 1 if the respondent does not live in the same state as when it was 16 years old. *Responsibility* is the answer, on a scale from 1 to 5, to the following question: “Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government’s responsibility, and that each person should take care of himself. Where would you place yourself on this scale?”. *Inequalities* is the answer, on scale from 1 to 7, to the following question: “Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. What score [...] comes closest to the way you feel?”. *Assistance* is the answer, on a scale from 1 to 3, to the following question: “We are faced with many problems in this country, none of which can be solved easily or inexpensively. I’m going to name some of these problems, and for each one I’d like you to tell me whether you think we’re spending too much money on it, too little money, or about the right amount. Are we spending too much, too little, or about the right amount on assistance to the poor?”.

Table 5.16: *Experience* channel: Controlling for ancestors' country and industry fixed effects.

	(1)	(2)	(3)
		<i>Responsibility</i>	
Mineral discoveries observed	0.079** (0.036)	0.075* (0.044)	0.072 (0.045)
Origin country fixed effects	Yes		Yes
Industry fixed effects		Yes	Yes
Observations	4,962	4,037	3,852
Adjusted R-squared	0.091	0.090	0.087
	(4)	(5)	(6)
		<i>Inequalities</i>	
Mineral discoveries observed	0.162*** (0.060)	0.166** (0.064)	0.147** (0.067)
Origin country fixed effects	Yes		Yes
Industry fixed effects		Yes	Yes
Observations	5,504	4,494	4,279
Adjusted R-squared	0.082	0.078	0.080
	(7)	(8)	(9)
		<i>Assistance</i>	
Mineral discoveries observed	0.053** (0.024)	0.051* (0.027)	0.060** (0.027)
Origin country fixed effects	Yes		Yes
Industry fixed effects		Yes	Yes
Observations	3,758	3,057	2,916
Adjusted R-squared	0.064	0.071	0.072

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. OLS regressions. All regressions include a constant term, fixed effects for the year of interview, and following individual covariates: gender, age, age², marital status, religion, education, employment status, race, and income. The sample is restricted to individuals living in mineral states at the time of interview and when they were young. *Mineral discoveries observed* equals 1 if there has been mineral discoveries in the state during the respondent's impressionable years. See the appendix for a presentation of other covariates. *Origin country fixed effects* are created using the answer to the following question: "From what countries or part of the world did your ancestors come?". *Industry fixed effects* are created using a 10 items classification. *Responsibility* is the answer, on a scale from 1 to 5, to the following question: "Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government's responsibility, and that each person should take care of himself. Where would you place yourself on this scale?". *Inequalities* is the answer, on scale from 1 to 7, to the following question: "Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. What score [...] comes closest to the way you feel?". *Assistance* is the answer, on a scale from 1 to 3, to the following question: "We are faced with many problems in this country, none of which can be solved easily or inexpensively. I'm going to name some of these problems, and for each one I'd like you to tell me whether you think we're spending too much money on it, too little money, or about the right amount. Are we spending too much, too little, or about the right amount on assistance to the poor?".

Table 5.17: *Experience* channel: Controlling for state-level variables.

	(1)	(2)	(3)	(4)	(5)
			<i>Responsibility</i>		
Mineral discoveries observed	0.043 (0.038)	0.079** (0.036)	0.059 (0.037)	0.079** (0.040)	0.084** (0.036)
Population density	-0.226*** (0.060)				
Ranney index		-0.179* (0.092)			
Per capita income			-0.017*** (0.006)		
Gini coefficient				-0.216 (0.803)	
Mineral dependency					-0.000 (0.012)
Observations	5,218	5,201	5,218	4,209	5,218
Adjusted R-squared	0.093	0.092	0.092	0.099	0.091
	(6)	(7)	(8)	(9)	(10)
			<i>Inequalities</i>		
Mineral discoveries observed	0.131** (0.062)	0.153*** (0.057)	0.152*** (0.057)	0.164*** (0.059)	0.178*** (0.058)
Population density	-0.243* (0.130)				
Ranney index		-0.443*** (0.143)			
Per capita income			-0.021** (0.011)		
Gini coefficient				2.353 (1.448)	
Mineral dependency					-0.006 (0.021)
Observations	5,803	5,786	5,803	4,787	5,803
Adjusted R-squared	0.079	0.080	0.079	0.083	0.079
	(11)	(12)	(13)	(14)	(15)
			<i>Assistance</i>		
Mineral discoveries observed	0.046* (0.025)	0.049** (0.024)	0.046* (0.024)	0.056** (0.028)	0.051** (0.024)
Population density	-0.027 (0.056)				
Ranney index		-0.077 (0.065)			
Per capita income			-0.003 (0.004)		
Gini coefficient				1.034 (0.664)	
Mineral dependency					-0.001 (0.012)
Observations	3,952	3,939	3,952	2,785	3,952
Adjusted R-squared	0.064	0.064	0.064	0.065	0.064

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. OLS regressions. All regressions include a constant term, fixed effects for the year of interview, and following individual covariates: gender, age, age², marital status, religion, education, employment status, race, and income. The sample is restricted to individuals living in mineral states at the time of interview and when they were young. *Mineral discoveries observed* equals 1 if there has been mineral discoveries in the state during the respondent's impressionable years. See the appendix for a presentation of individual covariates. See footnotes of other tables for the definitions of *responsibility*, *inequalities*, and *assistance*. See the appendix for a presentation of state-level covariates.

Table 5.18: *Experience* channel: Controlling for the situation during impressionable years.

	(1)	(2)	(3)	(4)
	<i>Responsibility</i>			
Mineral discoveries observed	0.083** (0.037)	0.117*** (0.043)	0.088** (0.037)	0.096** (0.041)
Past family income		0.040 (0.026)		
Past per capita income			0.004 (0.006)	
Birth cohort fixed effects	Yes			
Parents education dummies				Yes
Observations	5,218	3,538	5,156	3,581
Adjusted R-squared	0.094	0.098	0.092	0.091
	(5)	(6)	(7)	(8)
	<i>Inequalities</i>			
Mineral discoveries observed	0.204*** (0.060)	0.146** (0.065)	0.200*** (0.059)	0.137* (0.071)
Past family income		0.064 (0.042)		
Past per capita income			0.021** (0.008)	
Birth cohort fixed effects	Yes			
Parents education dummies				Yes
Observations	5,803	4,106	5,707	3,979
Adjusted R-squared	0.080	0.079	0.079	0.073
	(9)	(10)	(11)	(12)
	<i>Assistance</i>			
Mineral discoveries observed	0.054** (0.024)	0.030 (0.031)	0.061** (0.024)	0.038 (0.030)
Past family income		-0.002 (0.017)		
Past per capita income			0.002 (0.004)	
Birth cohort fixed effects	Yes			
Parents education dummies				Yes
Observations	3,952	2,513	3,917	2,708
Adjusted R-squared	0.061	0.053	0.064	0.068

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. OLS regressions. All regressions include a constant term, fixed effects for the year of interview, and following individual covariates: gender, age, age², marital status, religion, education, employment status, race, and income. The sample is restricted to individuals living in mineral states at the time of interview and when they were young. *Mineral discoveries observed* equals 1 if there has been mineral discoveries in the state during the respondent's impressionable years. See the appendix for a presentation of other covariates. *Birth cohort fixed effects* is a set of dummy variables. *Past family income* is the answer, on a 5 items scale, to the following question: "Thinking about the time when you were 16 years old, compared with American families in general then, would you say your family income was far below average, below average, average, above average, or far above average?". The variable *past per capita income* is defined at the state level and represents per capita income when respondent was 20 years old. *Parents education dummies* are two sets of dummy variable for education levels of respondent's parents. See footnotes of other tables for the definitions of *responsibility*, *inequalities*, and *assistance*.

Table 5.19: *Transmission* channel: Controlling for ancestors' country and industry fixed effects.

	(1)	(2)	(3)
		<i>Responsibility</i>	
Mineral state	0.032 (0.020)	0.053** (0.022)	0.052** (0.022)
Origin country fixed effects	Yes		Yes
Industry fixed effects		Yes	Yes
Observations	15,098	12,620	12,012
Adjusted R-squared	0.085	0.089	0.088
	(4)	(5)	(6)
		<i>Inequalities</i>	
Mineral state	0.106*** (0.034)	0.076** (0.035)	0.072** (0.036)
Origin country fixed effects	Yes		Yes
Industry fixed effects		Yes	Yes
Observations	16,852	14,095	13,392
Adjusted R-squared	0.087	0.083	0.085
	(7)	(8)	(9)
		<i>Assistance</i>	
Mineral state	0.036** (0.014)	0.022 (0.015)	0.027* (0.015)
Origin country fixed effects	Yes		Yes
Industry fixed effects		Yes	Yes
Observations	11,226	9,386	8,910
Adjusted R-squared	0.054	0.062	0.060

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. OLS regressions. All regressions include a constant term, fixed effects for the year of interview, and following individual covariates: gender, age, age², marital status, religion, education, employment status, race, and income. *Mineral state* is equal to 1 if the respondent lives in a state with lots of mineral resources, 0 if not. The sample is restricted to individuals living outside mineral states and individuals living in mineral states but who did not experienced any discoveries during their impressionable years. See the appendix for a presentation of other covariates. *Origin country fixed effects* are created using the answer to the following question: "From what countries or part of the world did your ancestors come?". *Industry fixed effects* are created using a 10 items classification. See footnotes of other tables for the definitions of *responsibility*, *inequalities*, and *assistance*.

Table 5.20: *Transmission* channel: Controlling for state-level variables.

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Responsibility</i>					
Mineral state	0.026 (0.026)	0.026 (0.021)	0.033 (0.020)	0.051*** (0.019)	0.039 (0.025)	0.033 (0.020)
Longitude	0.078 (0.164)					
Population density		-0.016* (0.008)				
Ranney index			-0.176*** (0.057)			
Per capita income				-0.019*** (0.004)		
Gini coefficient					-0.047 (0.569)	
Mineral dependency						-0.002 (0.010)
Region fixed effects	Yes					
Observations	15,927	15,927	15,850	15,927	13,102	15,927
Adjusted R-squared	0.087	0.085	0.086	0.086	0.092	0.085
	(8)	(9)	(10)	(11)	(12)	(13)
	<i>Inequalities</i>					
Mineral state	0.069* (0.042)	0.104*** (0.034)	0.107*** (0.032)	0.130*** (0.033)	0.111*** (0.041)	0.108*** (0.033)
Longitude	0.259 (0.295)					
Population density		-0.011 (0.012)				
Ranney index			-0.406*** (0.078)			
Per capita income				-0.022*** (0.006)		
Gini coefficient					0.644 (0.977)	
Mineral dependency						-0.002 (0.012)
Region fixed effects	Yes					
Observations	17,816	17,816	17,735	17,816	14,951	17,816
Adjusted R-squared	0.086	0.084	0.086	0.085	0.087	0.084
	(15)	(16)	(17)	(18)	(19)	(20)
	<i>Assistance</i>					
Mineral state	0.059*** (0.018)	0.023* (0.014)	0.032** (0.014)	0.043*** (0.013)	0.043** (0.019)	0.034** (0.014)
Longitude	0.111 (0.109)					
Population density		-0.025*** (0.005)				
Ranney index			0.041 (0.038)			
Per capita income				-0.010*** (0.002)		
Gini coefficient					-0.193 (0.449)	
Mineral dependency						0.008 (0.008)
Region fixed effects	Yes					
Observations	11,863	11,863	11,792	11,863	8,573	11,863
Adjusted R-squared	0.057	0.056	0.054	0.056	0.059	0.054

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. OLS regressions. All regressions include a constant term, fixed effects for the year of interview, and following individual covariates: gender, age, age², marital status, religion, education, employment status, race, and income. *Mineral state* is equal to 1 if the respondent lives in a state with lots of mineral resources, 0 if not. The sample is restricted to individuals living outside mineral states and individuals living in mineral states but who did not experienced any discoveries during their impressionable years. See the appendix for a presentation of individual covariates. See footnotes of other tables for the definitions of *responsibility*, *inequalities*, and *assistance*. See the appendix for a presentation of state-level covariates.

Table 5.21: Distance to discoveries and individualism.

	(1) <i>Responsibility</i>	(2) <i>Inequalities</i>	(3) <i>Assistance</i>
Distance to discoveries	-0.063** (0.029)	0.045 (0.053)	0.036 (0.023)
Observations	5,918	6,579	4,447
Adjusted R-squared	0.082	0.081	0.048

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. OLS regressions. All regressions include a constant term, fixed effects for the year of interview, and following individual covariates: gender, age, age², marital status, religion, education, employment status, race, and income. *Distance to discoveries* is the difference between the year of interview and the peak of discoveries in the state. See the appendix for a presentation of other covariates. The sample is restricted to individuals living in mineral states and to states for which the number of discoveries at the peak is substantial. *Responsibility* is the answer, on a scale from 1 to 5, to the following question: “Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government’s responsibility, and that each person should take care of himself. Where would you place yourself on this scale?”. *Inequalities* is the answer, on scale from 1 to 7, to the following question: “Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. What score [...] comes closest to the way you feel?”. *Assistance* is the answer, on a scale from 1 to 3, to the following question: “We are faced with many problems in this country, none of which can be solved easily or inexpensively. I’m going to name some of these problems, and for each one I’d like you to tell me whether you think we’re spending too much money on it, too little money, or about the right amount. Are we spending too much, too little, or about the right amount on assistance to the poor?”.

Table 5.22: Number of mines and individualism.

Panel A: All states			
	(1) <i>Responsibility</i>	(2) <i>Inequalities</i>	(3) <i>Assistance</i>
Number of mines	0.021 (0.015)	0.088*** (0.024)	0.020** (0.010)
Observations	17,848	20,056	13,261
Adjusted R-squared	0.086	0.083	0.056
Panel B: Only <i>mineral</i> states			
	(1) <i>Responsibility</i>	(2) <i>Inequalities</i>	(3) <i>Assistance</i>
Number of mines	0.008 (0.015)	0.047* (0.024)	0.007 (0.011)
Observations	8,776	9,716	6,581
Adjusted R-squared	0.088	0.082	0.055

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. OLS regressions. All regressions include a constant term, fixed effects for the year of interview, and following individual covariates: gender, age, age², marital status, religion, education, employment status, race, and income. *Number of mines* is the number of mines in each state, divided by 1000. In panel B, the sample is restricted to individuals living in *mineral* states. See the appendix for a presentation of other covariates. *Responsibility* is the answer, on a scale from 1 to 5, to the following question: “Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government’s responsibility, and that each person should take care of himself. Where would you place yourself on this scale?”. *Inequalities* is the answer, on scale from 1 to 7, to the following question: “Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. What score [...] comes closest to the way you feel?”. *Assistance* is the answer, on a scale from 1 to 3, to the following question: “We are faced with many problems in this country, none of which can be solved easily or inexpensively. I’m going to name some of these problems, and for each one I’d like you to tell me whether you think we’re spending too much money on it, too little money, or about the right amount. Are we spending too much, too little, or about the right amount on assistance to the poor?”.

Table 5.23: Residence in a mineral state and confidence in various institutions.

	(1) Confidence in the executive branch of Federal Government	(2) Confidence in the Congress	(3) Confidence in television
Mineral state	-0.015 (0.012)	-0.009 (0.010)	0.006 (0.010)
Observations	19,350	19,373	19,614
Adjusted R-squared	0.030	0.045	0.044

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. OLS regressions. All regressions include a constant term, fixed effects for the year of interview, and following individual covariates: gender, age, age², marital status, religion, education, employment status, race, and income. *Mineral state* is equal to 1 if the respondent lives in a state with lots of mineral resources, 0 if not. See the appendix for a presentation of other covariates. *Confidence in the executive branch of Federal Government*, *confidence in the Congress*, and *confidence in television* are answers, on a 3 items scale, to the following question: “I am going to name some institutions in this country. As far as the people running these institutions are concerned, would you say you have a great deal of confidence, only some confidence, or hardly any confidence at all in them?”.

Table 5.24: Importance of the omitted variables bias.

	(1)	(2)	(3)
		<i>Responsibility</i>	
Mineral state	0.042 (0.028)	0.049** (0.021)	0.039 (0.031)
Individual characteristics		Yes	Yes
State characteristics			Yes
Observations	14,693	14,693	14,693
Adjusted R-squared	0.000	0.092	0.095
	(4)	(5)	(6)
		<i>Inequalities</i>	
Mineral state	0.173*** (0.042)	0.159*** (0.034)	0.122** (0.048)
Individual characteristics		Yes	Yes
State characteristics			Yes
Observations	16,856	16,856	16,856
Adjusted R-squared	0.002	0.087	0.089
	(7)	(8)	(9)
		<i>Assistance</i>	
Mineral state	0.042** (0.020)	0.047*** (0.016)	0.071*** (0.023)
Individual characteristics		Yes	Yes
State characteristics			Yes
Observations	9,633	9,633	9,633
Adjusted R-squared	0.001	0.061	0.065

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. OLS regressions. All regressions include a constant term. *Individual characteristics* include gender, age, age², marital status, religion, education, employment status, race, income and fixed effects for the year of interview. *State characteristics* include the longitude of the state's capital, region fixed effects, population density, Ranney index, per capita income, Gini coefficient and mineral dependency at the time of interview. *Mineral state* is equal to 1 if the respondent lives in a state with lots of mineral resources, 0 if not. The sample is restricted to individuals for which all variables are available. *Responsibility* is the answer, on a scale from 1 to 5, to the following question: "Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government's responsibility, and that each person should take care of himself. Where would you place yourself on this scale?". *Inequalities* is the answer, on scale from 1 to 7, to the following question: "Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. What score [...] comes closest to the way you feel?". *Assistance* is the answer, on a scale from 1 to 3, to the following question: "We are faced with many problems in this country, none of which can be solved easily or inexpensively. I'm going to name some of these problems, and for each one I'd like you to tell me whether you think we're spending too much money on it, too little money, or about the right amount. Are we spending too much, too little, or about the right amount on assistance to the poor?".

Table 5.25: Definitions of individual covariates from the General Social Survey used in regressions.

Male	Respondent's gender. Equals 1 for males, and 0 for females.
Age	Respondent's age in years. Coefficients presented in tables correspond to age divided by 10.
Age ²	Square of respondent's age. Coefficient presented in tables correspond to age ² divided by 100.
Married	Respondent's marital status. Equals 1 if married, and 0 if not.
Protestant and Catholic	Respondent's religious affiliation. The omitted category is "other" or "none".
Education	Completed years of formal education.
Employed	Respondent's employment status. Equals 1 for "full time", "part time" or "self employed". The omitted category is "retired", "housewife", "student", "unemployed" or "other".
White	Respondent's skin color. Equals 1 for "white". The omitted category is "black" or "other".
Income	Respondent's family income, corrected for family size. Our measure of income is slightly different from the one use in other analysis using the GSS. Usually, the GSS variable INCOME is used as a measure of income differences. This variable gives information about the respondent's total family income and is coded using 12 income brackets for the entire period covered by the survey. Using this variable without any transformation has two drawbacks. First, this does not take into account the size of the family. Second, the fact that the same coding is used for the whole period makes it an inappropriate measure because both of inflation and the increasing standard of living. Hence, we first create broad family income deciles using the income variables definer for shorter time periods (INCOME72, INCOME77, etc.). Then, we divide this new variable by the household's size using the HOMPOP variable.

All our results are robust to alternative definitions of the variables.

Table 5.26: Definitions of state-level covariates used in regressions.

Longitude	Longitude of the capital of the state. Coefficients presented in tables correspond to the original longitude divided by 100.
Population density	State population in thousands at the time of interview, divided by the surface of the state in squared miles. Source: Bureau of Economic Analysis.
Ranney index	Share of Democrats in the two main chambers of each state at the time of interview, between 0 and 1. Source: Berkowitz and Clay (2010).
Per capita income	Per capita income of the state at the time of interview, in thousands dollars. Source: Bureau of Economic Analysis.
Past per capita income	Per capita income of the state when respondent was 20 years old, in thousands dollars. Source: Bureau of Economic Analysis.
Gini coefficient	Gini coefficient of the state at the time of interview, between 0 and 1. Source: US Census Bureau.
Mineral dependency	Share of mineral mining industry in state domestic product at the time of interview, between 0 and 100. Source: Bureau of Economic Analysis.
Region fixed effects	Set of four fixed effects for the following regions: Midwest, Northeast, South, and West. Source: US Census Bureau.

Table 5.27: Residence in a mineral state and *responsibility*, ordered logit.

	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	<i>Responsibility</i> $\mathbb{P}(y = 3)$	$\mathbb{P}(y = 4)$	$\mathbb{P}(y = 5)$
Mineral state	-0.010* (0.004)	-0.006* (0.002)	0.002* (0.001)	0.008* (0.003)	0.007* (0.003)
Male	-0.031*** (0.004)	-0.019*** (0.002)	0.006*** (0.001)	0.023*** (0.003)	0.021*** (0.002)
Age	0.029*** (0.007)	0.018*** (0.004)	-0.006*** (0.002)	-0.022*** (0.005)	-0.019*** (0.005)
Age ²	-0.004*** (0.001)	-0.002*** (0.000)	0.001*** (0.000)	0.003*** (0.001)	0.003*** (0.000)
Married	-0.037*** (0.004)	-0.022*** (0.002)	0.007*** (0.001)	0.027*** (0.003)	0.024*** (0.003)
Protestant	-0.047*** (0.005)	-0.028*** (0.003)	0.009*** (0.001)	0.035*** (0.004)	0.031*** (0.003)
Catholic	-0.018** (0.006)	-0.011** (0.004)	0.003** (0.001)	0.013** (0.004)	0.012** (0.004)
Education	-0.008*** (0.001)	-0.005*** (0.000)	0.001*** (0.000)	0.006*** (0.001)	0.005*** (0.000)
Employed	-0.021*** (0.004)	-0.013*** (0.003)	0.004*** (0.001)	0.016*** (0.003)	0.014*** (0.003)
White	-0.113*** (0.006)	-0.068*** (0.004)	0.022*** (0.003)	0.084*** (0.005)	0.075*** (0.004)
Income	-0.010*** (0.001)	-0.006*** (0.001)	0.002*** (0.000)	0.008*** (0.001)	0.007*** (0.001)

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. The table presents marginal effects from an ordered logit model for each outcome of the independent variable. Marginal effects are estimated at the mean of covariates. The regression includes year fixed effects. *Mineral state* is equal to 1 if the respondent lives in a state with lots of mineral resources, 0 if not. See the appendix for a presentation of other covariates. *Responsibility* is the answer, on a scale from 1 to 5, to the following question: “Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government’s responsibility, and that each person should take care of himself. Where would you place yourself on this scale?”.

Table 5.28: Residence in a mineral state and *inequalities*, ordered logit.

	<i>Inequalities</i>						
	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$	$\mathbb{P}(y = 4)$	$\mathbb{P}(y = 5)$	$\mathbb{P}(y = 6)$	$\mathbb{P}(y = 7)$
Mineral state	-0.019*** (0.004)	-0.008*** (0.002)	-0.006*** (0.001)	0.004*** (0.001)	0.009*** (0.002)	0.007*** (0.002)	0.014*** (0.003)
Male	-0.038*** (0.004)	-0.015*** (0.002)	-0.012*** (0.001)	0.008*** (0.001)	0.016*** (0.002)	0.013*** (0.001)	0.027*** (0.003)
Age	0.011 (0.007)	0.004 (0.003)	0.003 (0.002)	-0.002 (0.001)	-0.005 (0.003)	-0.004 (0.002)	-0.008 (0.005)
Age ²	-0.002* (0.001)	-0.001* (0.000)	-0.001* (0.000)	0.000* (0.000)	0.001* (0.000)	0.001* (0.000)	0.001* (0.000)
Married	-0.038*** (0.004)	-0.016*** (0.002)	-0.012*** (0.001)	0.008*** (0.001)	0.017*** (0.002)	0.014*** (0.002)	0.028*** (0.003)
Protestant	-0.041*** (0.006)	-0.017*** (0.002)	-0.013*** (0.002)	0.009*** (0.001)	0.018*** (0.002)	0.015*** (0.002)	0.030*** (0.004)
Catholic	-0.023*** (0.006)	-0.009*** (0.002)	-0.007*** (0.002)	0.005*** (0.001)	0.010*** (0.003)	0.008*** (0.002)	0.017*** (0.004)
Education	-0.013*** (0.001)	-0.005*** (0.000)	-0.004*** (0.000)	0.003*** (0.000)	0.006*** (0.000)	0.005*** (0.000)	0.010*** (0.001)
Employed	-0.007 (0.004)	-0.003 (0.002)	-0.002 (0.001)	0.002 (0.001)	0.003 (0.002)	0.003 (0.002)	0.005 (0.003)
White	-0.095*** (0.006)	-0.039*** (0.002)	-0.031*** (0.002)	0.020*** (0.002)	0.042*** (0.003)	0.034*** (0.002)	0.069*** (0.004)
Income	-0.011*** (0.001)	-0.004*** (0.000)	-0.003*** (0.000)	0.002*** (0.000)	0.005*** (0.001)	0.004*** (0.000)	0.008*** (0.001)

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. The table presents marginal effects from an ordered logit model for each outcome of the independent variable. Marginal effects are estimated at the mean of covariates. The regression includes year fixed effects. *Mineral state* is equal to 1 if the respondent lives in a state with lots of mineral resources, 0 if not. See the appendix for a presentation of other covariates. *Inequalities* is the answer, on scale from 1 to 7, to the following question: “Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. What score [...] comes closest to the way you feel?”.

Table 5.29: Residence in a mineral state and *assistance*, ordered logit.

	$\mathbb{P}(y = 1)$	<i>Assistance</i> $\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$
Mineral state	-0.031** (0.009)	0.019** (0.006)	0.012** (0.004)
Male	-0.034*** (0.008)	0.021*** (0.005)	0.013*** (0.003)
Age	0.047** (0.015)	-0.030** (0.010)	-0.018** (0.006)
Age ²	-0.007*** (0.002)	0.005*** (0.001)	0.003*** (0.001)
Married	-0.052*** (0.009)	0.032*** (0.005)	0.020*** (0.003)
Protestant	-0.043*** (0.012)	0.027*** (0.007)	0.016*** (0.005)
Catholic	-0.001 (0.014)	0.000 (0.009)	0.000 (0.005)
Education	-0.011*** (0.002)	0.007*** (0.001)	0.004*** (0.001)
Employed	-0.039*** (0.010)	0.024*** (0.006)	0.015*** (0.004)
White	-0.209*** (0.014)	0.130*** (0.009)	0.078*** (0.005)
Income	-0.011*** (0.003)	0.007*** (0.002)	0.004*** (0.001)

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. The table presents marginal effects from an ordered logit model for each outcome of the independent variable. Marginal effects are estimated at the mean of covariates. The regression includes year fixed effects. *Mineral state* is equal to 1 if the respondent lives in a state with lots of mineral resources, 0 if not. See the appendix for a presentation of other covariates. *Assistance* is the answer, on a scale from 1 to 3, to the following question: “We are faced with many problems in this country, none of which can be solved easily or inexpensively. I’m going to name some of these problems, and for each one I’d like you to tell me whether you think we’re spending too much money on it, too little money, or about the right amount. Are we spending too much, too little, or about the right amount on assistance to the poor?”.

Table 5.30: Residence in a mineral state and *responsibility*, ordered probit.

	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	<i>Responsibility</i> $\mathbb{P}(y = 3)$	$\mathbb{P}(y = 4)$	$\mathbb{P}(y = 5)$
Mineral state	-0.010* (0.004)	-0.005* (0.002)	0.001* (0.001)	0.006* (0.003)	0.008* (0.003)
Male	-0.033*** (0.004)	-0.015*** (0.002)	0.004*** (0.001)	0.020*** (0.002)	0.024*** (0.003)
Age	0.029*** (0.007)	0.013*** (0.003)	-0.004*** (0.001)	-0.018*** (0.004)	-0.021*** (0.005)
Age ²	-0.004*** (0.001)	-0.002*** (0.000)	0.001*** (0.000)	0.002*** (0.000)	0.003*** (0.001)
Married	-0.037*** (0.004)	-0.017*** (0.002)	0.005*** (0.001)	0.022*** (0.003)	0.027*** (0.003)
Protestant	-0.048*** (0.005)	-0.022*** (0.002)	0.006*** (0.001)	0.029*** (0.003)	0.034*** (0.004)
Catholic	-0.018** (0.006)	-0.008** (0.003)	0.002** (0.001)	0.011** (0.004)	0.013** (0.004)
Education	-0.007*** (0.001)	-0.003*** (0.000)	0.001*** (0.000)	0.005*** (0.001)	0.005*** (0.001)
Employed	-0.022*** (0.005)	-0.010*** (0.002)	0.003*** (0.001)	0.013*** (0.003)	0.016*** (0.003)
White	-0.118*** (0.007)	-0.055*** (0.003)	0.016*** (0.002)	0.072*** (0.004)	0.085*** (0.005)
Income	-0.011*** (0.001)	-0.005*** (0.001)	0.001*** (0.000)	0.007*** (0.001)	0.008*** (0.001)

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. The table presents marginal effects from an ordered probit model for each outcome of the independent variable. Marginal effects are estimated at the mean of covariates. The regression includes year fixed effects. *Mineral state* is equal to 1 if the respondent lives in a state with lots of mineral resources, 0 if not. See the appendix for a presentation of other covariates. *Responsibility* is the answer, on a scale from 1 to 5, to the following question: “Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government’s responsibility, and that each person should take care of himself. Where would you place yourself on this scale?”.

Table 5.31: Residence in a mineral state and *inequalities*, ordered probit.

	<i>Inequalities</i>						
	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$	$\mathbb{P}(y = 4)$	$\mathbb{P}(y = 5)$	$\mathbb{P}(y = 6)$	$\mathbb{P}(y = 7)$
Mineral state	-0.020*** (0.005)	-0.006*** (0.001)	-0.005*** (0.001)	0.003*** (0.001)	0.007*** (0.001)	0.006*** (0.001)	0.016*** (0.003)
Male	-0.040*** (0.004)	-0.013*** (0.001)	-0.009*** (0.001)	0.006*** (0.001)	0.013*** (0.001)	0.012*** (0.001)	0.031*** (0.003)
Age	0.009 (0.007)	0.003 (0.002)	0.002 (0.002)	-0.001 (0.001)	-0.003 (0.002)	-0.003 (0.002)	-0.007 (0.005)
Age ²	-0.002* (0.001)	-0.000* (0.000)	-0.000* (0.000)	0.000* (0.000)	0.001* (0.000)	0.000* (0.000)	0.001* (0.001)
Married	-0.039*** (0.004)	-0.013*** (0.001)	-0.009*** (0.001)	0.006*** (0.001)	0.013*** (0.002)	0.012*** (0.001)	0.030*** (0.003)
Protestant	-0.044*** (0.006)	-0.014*** (0.002)	-0.010*** (0.001)	0.006*** (0.001)	0.014*** (0.002)	0.013*** (0.002)	0.034*** (0.005)
Catholic	-0.024*** (0.006)	-0.008*** (0.002)	-0.005*** (0.001)	0.004*** (0.001)	0.008*** (0.002)	0.007*** (0.002)	0.019*** (0.005)
Education	-0.014*** (0.001)	-0.004*** (0.000)	-0.003*** (0.000)	0.002*** (0.000)	0.004*** (0.000)	0.004*** (0.000)	0.011*** (0.001)
Employed	-0.009 (0.005)	-0.003 (0.001)	-0.002 (0.001)	0.001 (0.001)	0.003 (0.002)	0.003 (0.001)	0.007 (0.004)
White	-0.102*** (0.006)	-0.032*** (0.002)	-0.023*** (0.002)	0.015*** (0.001)	0.034*** (0.002)	0.030*** (0.002)	0.079*** (0.005)
Income	-0.011*** (0.001)	-0.004*** (0.000)	-0.003*** (0.000)	0.002*** (0.000)	0.004*** (0.000)	0.003*** (0.000)	0.009*** (0.001)

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. The table presents marginal effects from an ordered probit model for each outcome of the independent variable. Marginal effects are estimated at the mean of covariates. The regression includes year fixed effects. *Mineral state* is equal to 1 if the respondent lives in a state with lots of mineral resources, 0 if not. See the appendix for a presentation of other covariates. *Inequalities* is the answer, on scale from 1 to 7, to the following question: “Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. What score [...] comes closest to the way you feel?”.

Table 5.32: Residence in a mineral state and *assistance*, ordered probit.

	$\mathbb{P}(y = 1)$	<i>Assistance</i> $\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$
Mineral state	-0.030*** (0.009)	0.017*** (0.005)	0.014*** (0.004)
Male	-0.031*** (0.008)	0.017*** (0.004)	0.014*** (0.004)
Age	0.043** (0.015)	-0.024** (0.008)	-0.019** (0.007)
Age ²	-0.007*** (0.001)	0.004*** (0.001)	0.003*** (0.001)
Married	-0.051*** (0.008)	0.028*** (0.005)	0.023*** (0.004)
Protestant	-0.036** (0.012)	0.020** (0.006)	0.016** (0.005)
Catholic	0.003 (0.014)	-0.002 (0.007)	-0.001 (0.006)
Education	-0.009*** (0.002)	0.005*** (0.001)	0.004*** (0.001)
Employed	-0.037*** (0.010)	0.021*** (0.005)	0.017*** (0.004)
White	-0.196*** (0.013)	0.107*** (0.007)	0.088*** (0.006)
Income	-0.011*** (0.002)	0.006*** (0.001)	0.005*** (0.001)

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. The table presents marginal effects from an ordered probit model for each outcome of the independent variable. Marginal effects are estimated at the mean of covariates. The regression includes year fixed effects. *Mineral state* is equal to 1 if the respondent lives in a state with lots of mineral resources, 0 if not. See the appendix for a presentation of other covariates. *Assistance* is the answer, on a scale from 1 to 3, to the following question: “*We are faced with many problems in this country, none of which can be solved easily or inexpensively. I’m going to name some of these problems, and for each one I’d like you to tell me whether you think we’re spending too much money on it, too little money, or about the right amount. Are we spending too much, too little, or about the right amount on assistance to the poor?*”.

Table 5.33: *Experience* channel: Mineral resources discoveries during impressionable years and individualism, ordered logit.

	<i>Responsibility</i>				
	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$	$\mathbb{P}(y = 4)$	$\mathbb{P}(y = 5)$
Mineral discoveries observed	-0.021** (0.008)	-0.011** (0.004)	0.004** (0.002)	0.015** (0.006)	0.013** (0.005)

	<i>Inequalities</i>						
	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$	$\mathbb{P}(y = 4)$	$\mathbb{P}(y = 5)$	$\mathbb{P}(y = 6)$	$\mathbb{P}(y = 7)$
Mineral discoveries observed	-0.025*** (0.008)	-0.010*** (0.003)	-0.009*** (0.003)	0.004*** (0.001)	0.011*** (0.003)	0.009*** (0.003)	0.020*** (0.006)

	<i>Assistance</i>		
	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$
Mineral discoveries observed	-0.034* (0.016)	0.020* (0.010)	0.013* (0.006)

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. The table presents marginal effects from ordered logit models for each outcome of the independent variables. Each line corresponds to a distinct regression. Marginal effects are estimated at the mean of covariates. All regressions include fixed effects for the year of interview, and following individual covariates: gender, age, age², marital status, religion, education, employment status, race, and income. The sample is restricted to individuals living in mineral states at the time of interview and when they were young. *Mineral discoveries observed* equals 1 if there has been mineral discoveries in the state during the respondent's impressionable years. See the appendix for a presentation of other covariates. *Responsibility* is the answer, on a scale from 1 to 5, to the following question: "Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government's responsibility, and that each person should take care of himself. Where would you place yourself on this scale?". *Inequalities* is the answer, on scale from 1 to 7, to the following question: "Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. What score [...] comes closest to the way you feel?". *Assistance* is the answer, on a scale from 1 to 3, to the following question: "We are faced with many problems in this country, none of which can be solved easily or inexpensively. I'm going to name some of these problems, and for each one I'd like you to tell me whether you think we're spending too much money on it, too little money, or about the right amount. Are we spending too much, too little, or about the right amount on assistance to the poor?".

Table 5.34: *Experience* channel: Mineral resources discoveries during impressionable years and individualism, ordered probit.

	<i>Responsibility</i>						
	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$	$\mathbb{P}(y = 4)$	$\mathbb{P}(y = 5)$		
Mineral discoveries observed	-0.020* (0.008)	-0.008* (0.004)	0.002* (0.001)	0.012* (0.005)	0.014* (0.006)		
	<i>Inequalities</i>						
	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$	$\mathbb{P}(y = 4)$	$\mathbb{P}(y = 5)$	$\mathbb{P}(y = 6)$	$\mathbb{P}(y = 7)$
Mineral discoveries observed	-0.024** (0.008)	-0.008** (0.003)	-0.006** (0.002)	0.003** (0.001)	0.008** (0.003)	0.007** (0.002)	0.020** (0.007)
	<i>Assistance</i>						
	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$				
Mineral discoveries observed	-0.030 (0.016)	0.016 (0.009)	0.014 (0.008)				

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. The table presents marginal effects from ordered probit models for each outcome of the independent variables. Each line corresponds to a distinct regression. Marginal effects are estimated at the mean of covariates. All regressions include fixed effects for the year of interview, and following individual covariates: gender, age, age², marital status, religion, education, employment status, race, and income. The sample is restricted to individuals living in mineral states at the time of interview and when they were young. *Mineral discoveries observed* equals 1 if there has been mineral discoveries in the state during the respondent's impressionable years. See the appendix for a presentation of other covariates. *Responsibility* is the answer, on a scale from 1 to 5, to the following question: "Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government's responsibility, and that each person should take care of himself. Where would you place yourself on this scale?". *Inequalities* is the answer, on scale from 1 to 7, to the following question: "Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. What score [...] comes closest to the way you feel?". *Assistance* is the answer, on a scale from 1 to 3, to the following question: "We are faced with many problems in this country, none of which can be solved easily or inexpensively. I'm going to name some of these problems, and for each one I'd like you to tell me whether you think we're spending too much money on it, too little money, or about the right amount. Are we spending too much, too little, or about the right amount on assistance to the poor?".

Table 5.35: *Transmission* channel: Residence in a mineral state and individualism, excluding individuals who experienced discoveries during their impressionable years, ordered logit.

	<i>Responsibility</i>						
	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$	$\mathbb{P}(y = 4)$	$\mathbb{P}(y = 5)$		
Mineral state	-0.008 (0.004)	-0.005 (0.003)	0.002 (0.001)	0.006 (0.003)	0.005 (0.003)		
	<i>Inequalities</i>						
	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$	$\mathbb{P}(y = 4)$	$\mathbb{P}(y = 5)$	$\mathbb{P}(y = 6)$	$\mathbb{P}(y = 7)$
Mineral state	-0.014** (0.005)	-0.006** (0.002)	-0.005** (0.001)	0.003** (0.001)	0.006** (0.002)	0.005** (0.002)	0.010** (0.003)
	<i>Assistance</i>						
	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$				
Mineral state	-0.025* (0.010)	0.016* (0.006)	0.009* (0.004)				

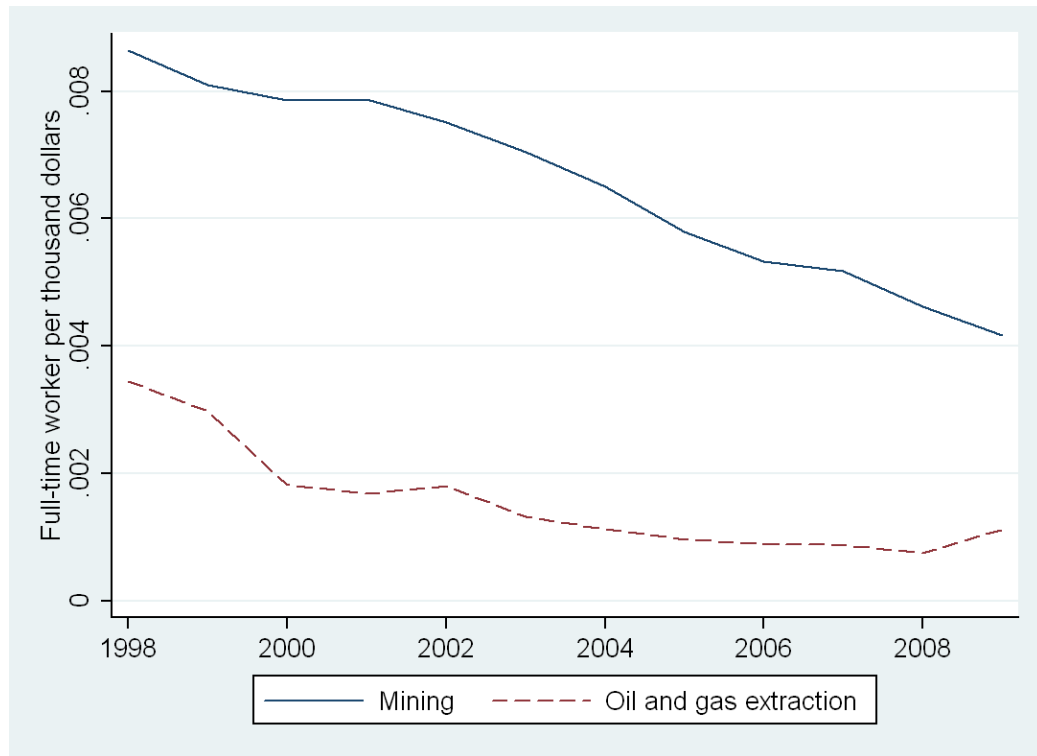
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. The table presents marginal effects from ordered logit models for each outcome of the independent variables. Each line corresponds to a distinct regression. Marginal effects are estimated at the mean of covariates. All regressions include fixed effects for the year of interview, and following individual covariates: gender, age, age², marital status, religion, education, employment status, race, and income. *Mineral state* is equal to 1 if the respondent lives in a state with lots of mineral resources, 0 if not. The sample is restricted to individuals living outside mineral states and individuals living in mineral states but who did not experienced any discoveries during their impressionable years. See the appendix for a presentation of other covariates. *Responsibility* is the answer, on a scale from 1 to 5, to the following question: “Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government’s responsibility, and that each person should take care of himself. Where would you place yourself on this scale?”. *Inequalities* is the answer, on scale from 1 to 7, to the following question: “Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. What score [...] comes closest to the way you feel?”. *Assistance* is the answer, on a scale from 1 to 3, to the following question: “We are faced with many problems in this country, none of which can be solved easily or inexpensively. I’m going to name some of these problems, and for each one I’d like you to tell me whether you think we’re spending too much money on it, too little money, or about the right amount. Are we spending too much, too little, or about the right amount on assistance to the poor?”.

Table 5.36: *Transmission* channel: Residence in a mineral state and individualism, excluding individuals who experienced discoveries during their impressionable years, ordered probit.

	<i>Responsibility</i>						
	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$	$\mathbb{P}(y = 4)$	$\mathbb{P}(y = 5)$		
Mineral state	-0.008 (0.005)	-0.004 (0.002)	0.001 (0.001)	0.005 (0.003)	0.006 (0.003)		
	<i>Inequalities</i>						
	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$	$\mathbb{P}(y = 4)$	$\mathbb{P}(y = 5)$	$\mathbb{P}(y = 6)$	$\mathbb{P}(y = 7)$
Mineral state	-0.015** (0.005)	-0.005** (0.002)	-0.003** (0.001)	0.002** (0.001)	0.005** (0.002)	0.004** (0.001)	0.011** (0.004)
	<i>Assistance</i>						
	$\mathbb{P}(y = 1)$	$\mathbb{P}(y = 2)$	$\mathbb{P}(y = 3)$				
Mineral state	-0.024* (0.010)	0.014* (0.005)	0.011* (0.004)				

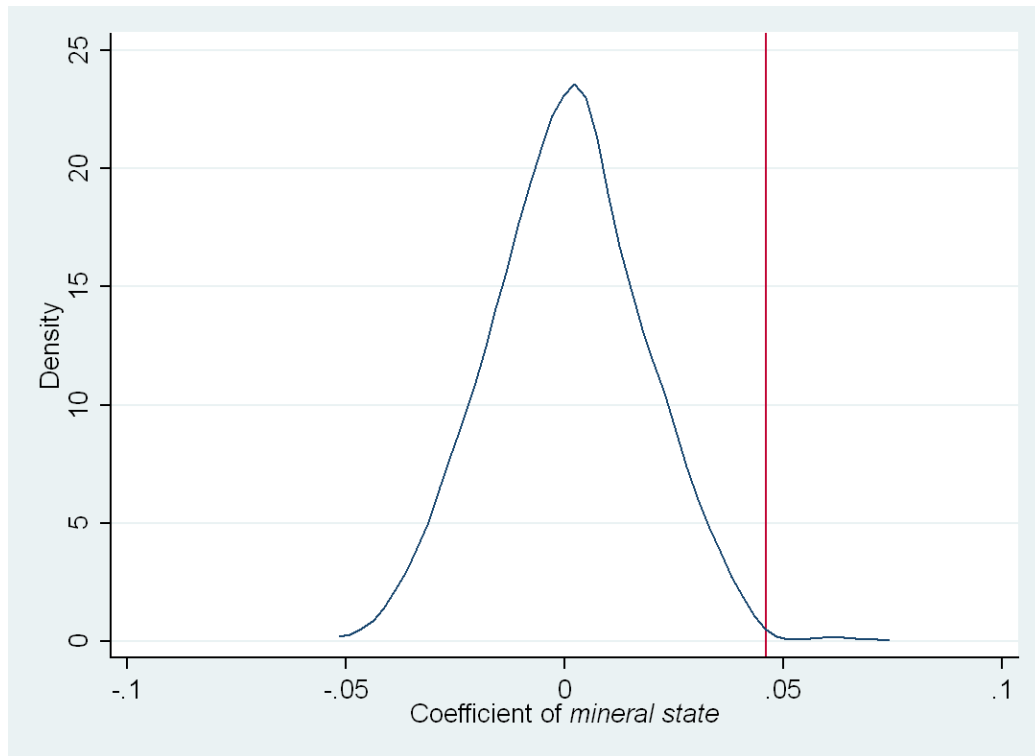
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses, clustered by year of interview \times state. The table presents marginal effects from ordered probit models for each outcome of the independent variables. Each line corresponds to a distinct regression. Marginal effects are estimated at the mean of covariates. All regressions include fixed effects for the year of interview, and following individual covariates: gender, age, age², marital status, religion, education, employment status, race, and income. *Mineral state* is equal to 1 if the respondent lives in a state with lots of mineral resources, 0 if not. The sample is restricted to individuals living outside mineral states and individuals living in mineral states but who did not experienced any discoveries during their impressionable years. See the appendix for a presentation of other covariates. *Responsibility* is the answer, on a scale from 1 to 5, to the following question: “Some people think that the government in Washington should do everything possible to improve the standard of living of all poor Americans. Other people think it is not the government’s responsibility, and that each person should take care of himself. Where would you place yourself on this scale?”. *Inequalities* is the answer, on scale from 1 to 7, to the following question: “Some people think that the government in Washington ought to reduce the income differences between the rich and the poor, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor. Others think that the government should not concern itself with reducing this income difference between the rich and the poor. What score [...] comes closest to the way you feel?”. *Assistance* is the answer, on a scale from 1 to 3, to the following question: “We are faced with many problems in this country, none of which can be solved easily or inexpensively. I’m going to name some of these problems, and for each one I’d like you to tell me whether you think we’re spending too much money on it, too little money, or about the right amount. Are we spending too much, too little, or about the right amount on assistance to the poor?”.

Figure 5.10: Labor intensity in mining and oil extraction industries (1998-2009).



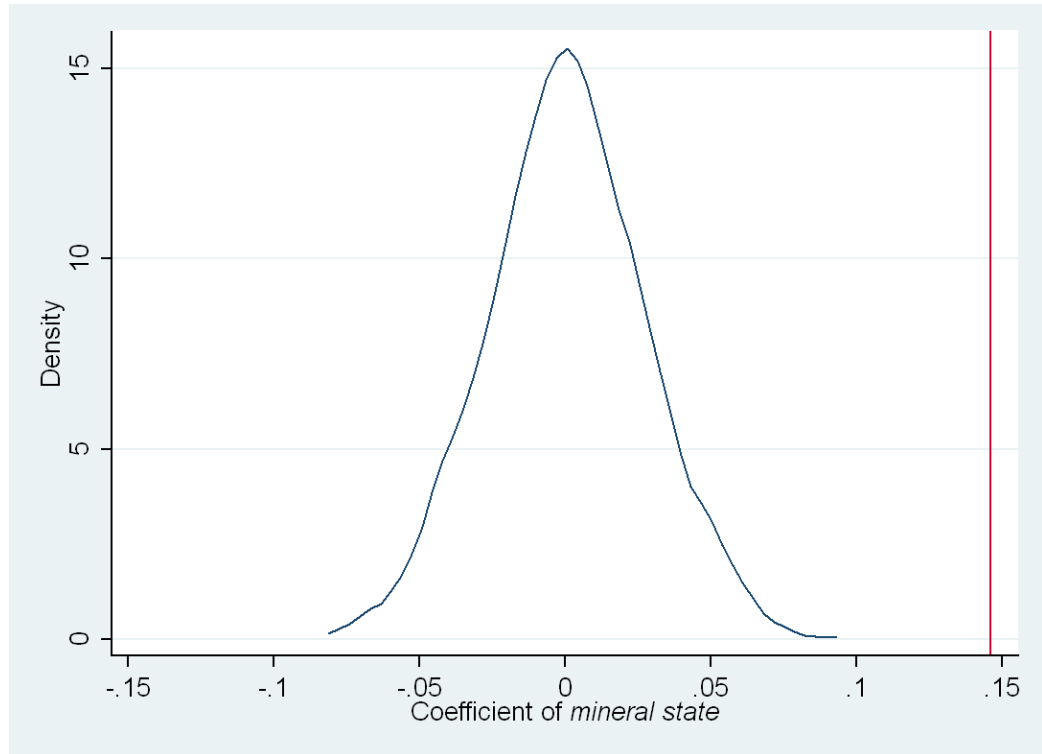
Source: Bureau of Economic Analysis. Yearly ratio of labor (in full-time equivalent employees) to value added (in dollars) in the mining industry and in the oil and gas extraction industry from 1998 to 2009. The ratio is expressed in worker per thousand dollars.

Figure 5.11: Falsification test with randomization at the individual level: *Responsibility* as dependent variable.



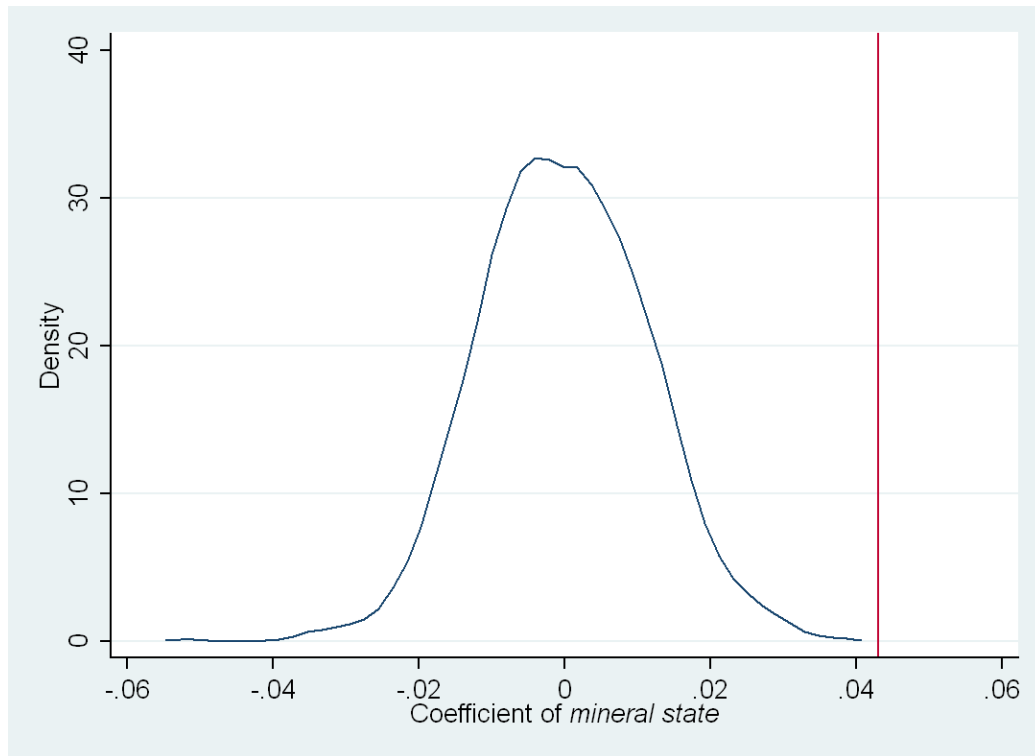
Distribution of coefficients of *mineral state* from 1,000 estimations of equation (5.1) with individual covariates. Each simulation randomly assigns each individual to a new state, keeping the mineral status of the state unchanged. The vertical line indicates the estimated coefficient of *mineral state* as in table 5.2 when *responsibility* is the dependent variable.

Figure 5.12: Falsification test with randomization at the individual level: *Inequalities* as dependent variable.



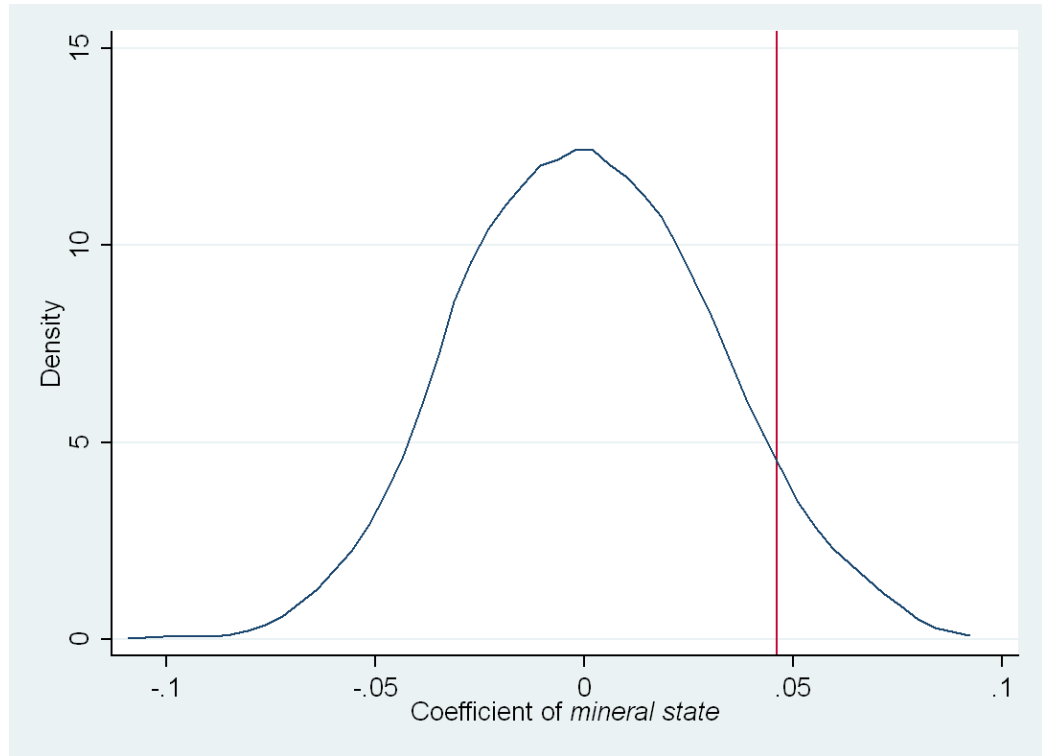
Distribution of coefficients of *mineral state* from 1,000 estimations of equation (5.1) with individual covariates. Each simulation randomly assigns each individual to a new state, keeping the mineral status of the state unchanged. The vertical line indicates the estimated coefficient of *mineral state* as in table 5.2 when *inequalities* is the dependent variable.

Figure 5.13: Falsification test with randomization at the individual level: *Assistance* as dependent variable.



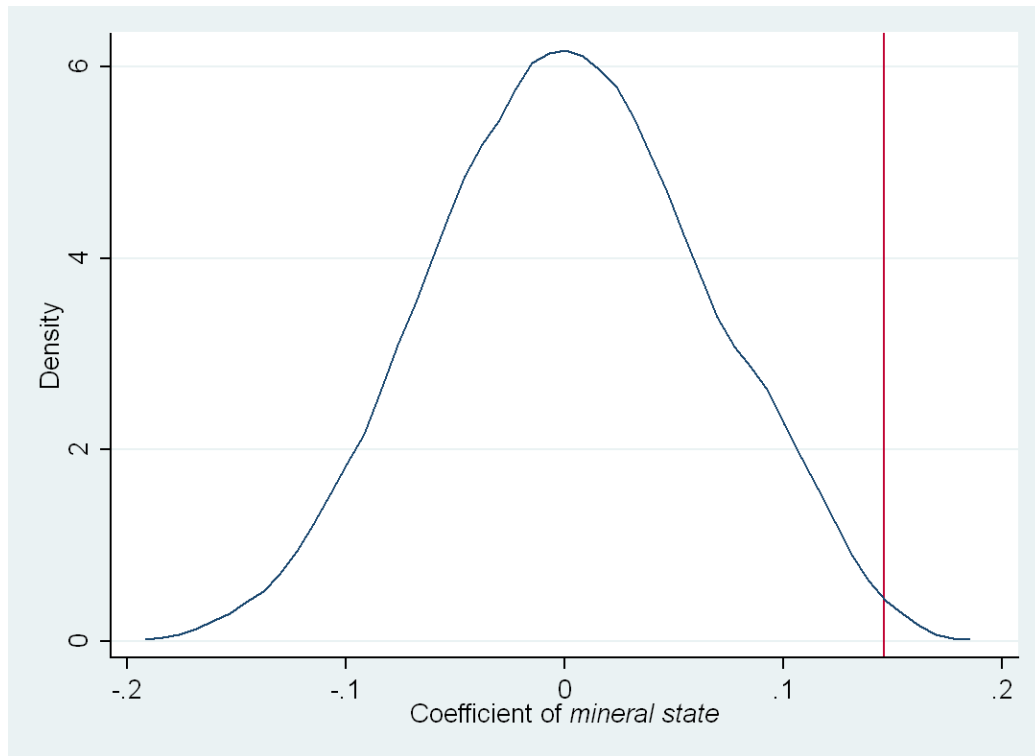
Distribution of coefficients of *mineral state* from 1,000 estimations of equation (5.1) with individual covariates. Each simulation randomly assigns each individual to a new state, keeping the mineral status of the state unchanged. The vertical line indicates the estimated coefficient of *mineral state* as in table 5.2 when *assistance* is the dependent variable.

Figure 5.14: Falsification test with randomization at the state level: *Responsibility* as dependent variable.



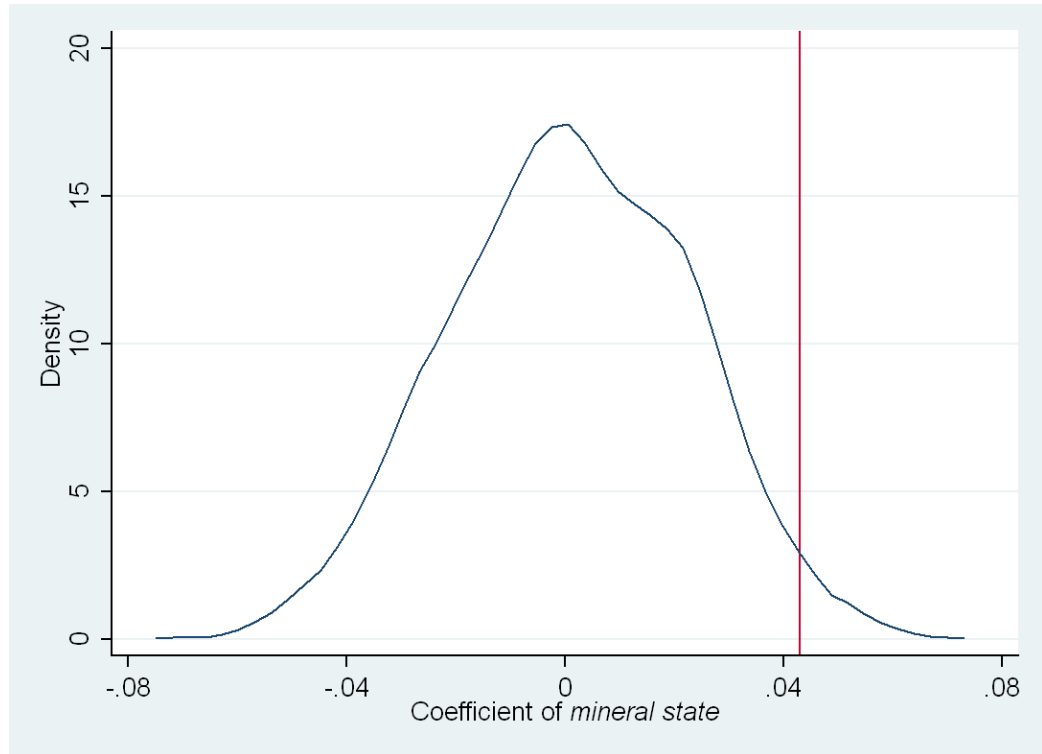
Distribution of coefficients of *mineral state* from 1,000 estimations of equation (5.1) with individual covariates. Each simulation randomly assigns each individual to a new state, keeping the mineral status of the state unchanged. The vertical line indicates the estimated coefficient of *mineral state* as in table 5.2 when *responsibility* is the dependent variable.

Figure 5.15: Falsification test with randomization at the state level: *Inequalities* as dependent variable.



Distribution of coefficients of *mineral state* from 1,000 estimations of equation (5.1) with individual covariates. Each simulation randomly assigns each individual to a new state, keeping the mineral status of the state unchanged. The vertical line indicates the estimated coefficient of *mineral state* as in table 5.2 when *inequalities* is the dependent variable.

Figure 5.16: Falsification test with randomization at the state level: *Assistance* as dependent variable.



Distribution of coefficients of *mineral state* from 1,000 estimations of equation (5.1) with individual covariates. Each simulation randomly assign the mineral status of each state, leaving unchanged the individual composition of each state. The vertical line indicates the estimated coefficient of *mineral state* as in table 5.2 when *assistance* is the dependent variable.

Chapter 6

Protests and beliefs in social coordination in Africa¹

Leaders misbehaviors may durably alter trust in monitoring institutions and beliefs in national coordination. Riots can be understood as a sudden signal sent on a leader's action from which citizens extract information on the country institutions. We explore these intuitions and study the aftermath of social protests and riots using individual level data and geo-localized conflicts in Africa. We find that both trust in institutions such as the army or the electoral commission strongly evolve after riots, together with trust in leaders. In parallel, the sentiment to be part of a nation rather than a group plunges. We interpret these findings in a model where agents lend their taxes to a leader with imperfect information on the immediate quality of the leader and the underlying capacity of institutions to monitor her. A misbehavior is then interpreted as a failure of institutions to secure taxes given by citizens and makes agents reluctant to contribute to the state effort.

6.1 Introduction

In environments with externalities between agents and imperfect access to information, an apparently minor signal may drive beliefs far from their

1. This chapter is based on a joint work with Yanos Zylberberg.

previous levels. The Jasmine Revolution in Tunisia, and more generally the Arab spring, illustrates this intuition. A small riot might allegedly act as a spark and deeply modify beliefs of an entire population in the viability and stability of current institutions. Once a signal is sent that leaders extract rents, a fraction of the population does not believe in social coordination anymore. Agents may revise their priors and infer that institutions are insufficient to protect their investments in the state. This rational update might lead to unstable dynamics where an entire country switches in few days from national coordination to identity fallback. This paper captures this dynamics of beliefs in the aftermath of conflicting events using the precise timing of surveys and geo-localized conflicts in Africa. It also proposes a simple theoretical framework to account for these effects.

Trust in leaders, in institutions monitoring the leaders, and beliefs in social coordination are central in the performance of an economy, as the ability of the state to provide public goods relies in its credibility. Under the authority of a corrupted government, a large fraction of the population may refuse to invest in the state and dampen for quite a while the provision of public goods. In fact, the government does not need to be corrupted for investment to freeze. The mere belief that institutions will be failing might allegedly generate the same outcome.

In this paper, we investigate the evolution of trust toward leaders and institutions immediately after social protests and riots using the Afrobarometer survey and a database on local conflicts in Africa (ACLED: Armed Conflict Location and Event Dataset). Our findings indicate very large movements in opinions regarding leaders and institutions. The occurrence of a single riot during the previous month and within a radius of 20 kilometers reduces the probability for respondents to declare themselves as being part of a nation (as opposed to being part of a local group) by up to a third of a standard deviation. The same amplitude is recorded for trust in institutions that supposedly exert some monitoring on the leaders in charge (e.g. electoral commission or army). These changes are at least of the same order of magnitude as long-term differences between regions. The social unrest is not anticipated by respondents as surveyed households do not report any distrust

in the premise of a riot (i.e. the month before). Overall, these results point out that trust is not only a capital which slowly accumulates over decades. Beliefs in institutions and leaders also reflect forward expectations and their sudden change.

Surprisingly, the amplitude of the response does not differ much across ethnic groups and their importance in the region or the country. This indicates that social unrest echoes the extraction of private benefits rather than ethnic tensions. It is however noticeable that fractionalization might play a role as it increases the room available for the leader to break potential threatening coalitions.

We explain these stylized facts in an illustrative model where groups revise their priors on the monitoring capacity of institutions after having experienced rent extraction from a leader. This revision reduces the expectations on retrieving the investment from their taxes and induces the agents to refuse to contribute in the state effort ex-ante. Two features amplify this effect. First, agents can not commit to punish the leader and renegotiate ex-post. As in Hart and Moore (1988) and Aghion and Bolton (1992), the ex-post efficiency comes at the expense of ex-ante efficiency. This mechanism is reinforced as we allow the coalition to break and the leader to renegotiate continuation with one of the agent. This trait relates to the possibility for leaders to invest in group specific goods such as to ensure the stability of the regime. Accordingly, poor quality monitoring will always make agents worse-off ex-ante but a group may benefit ex-post from the misbehavior of leaders. Second, agents do not internalize how their contributions may benefit the other agents in the economy.

A surprising feature of our findings is that our social conflicts do not seem to rely heavily on ethnic tensions. Africa is plagued by conflicts since 1960 and the latest wave of Independence. Once engaged into civil conflicts, countries hardly escape this situation. Historically divided into a Muslim northern region close to Egypt and a Christian (and Animist) southern region, Sudan has experienced 26 years² of civil war since 1960. The British Administration

2. Source : Correlates of War. Only years with more than 1000 deaths are taken into account.

exacerbated the historical partition³. Consequently, the protected South anticipated that the North would try to take over the country following the Independence. The civil war then started even before the British left the country. This extreme example illustrates how beliefs in nationwide coordination might trigger non-cooperative behaviors. After years of civil conflicts, the threats of expropriation have eventually deterred the different groups from investing in state technology. In February 2011, the split between the North and the South was decided and implemented in July 2011.

Besides, even countries that have been stable over decades might fall into this conflict trap. From Independence to 1993, Félix Houphouët-Boigny managed to alleviate ethnic differences and opened Ivory Coast to trade and migration. After he died, his successor created the concept of “ivoirité” to define a superior ethnic group among residents. The threat of being excluded from the reallocation of public goods led to protests and a coup in December 1999. Following this coup, the country underwent severe conflicts between the government in the South and rebels in the North. The New Forces of Ivory Coast occupied more than half of the country. Along with fights, both groups were ensuring the authority in each area and acted as different states. In 2007, trust between the two parties went up and the rebel leader entered the government putting an end to the open conflict. Nonetheless, the presidential election of 2010 highlighted the persistence of severe tensions between the two main political groups, raising fears of a resurgence of the civil war.

We attribute these situations to cohesion failures triggered by pessimistic beliefs regarding state coordination. Another explanation behind these situations would be very strong ethnic resentments or the persistence of weak states. A low capacity to raise taxes keeps the state under the threat of internal conflicts. See Besley and Coate (2001), Besley and Ghatak (2001), and Besley and Persson (2010, 2011) for insights on this issue.

Trust is the mechanism through which fractionalization persists. Beliefs in others shape the attitudes of agents toward trade as in Rohner et al. (2011)

3. To avoid the propagation of infectious diseases and prevent Muslims from moving to the South, a law established a frontier between the 8th and 10th parallel.

or demand for regulation as in Aghion et al. (2010). Distrust reflects the forward-looking expectation in the fairness of the government leader in power. When agents anticipate polarization, they are tempted to provide support for their group and try to establish their leaders as the country government. As in Alesina et al. (2003), this mechanism highlights the existence of self-fulfilled expectations. In line with this reasoning, a low level of trust would persist over time and affect durably economic performance. On this issue, see for example Nunn (2008) and Nunn and Wantchekon (2011) who use slave trade intensity in Africa. The dynamic we describe can also be related to the one highlighted by Shayo and Zussman (2011) who identify stronger in-group bias by Israeli judges in the aftermath of terrorist events. However, we depart from this paper in three ways. First, we look at evolutions of beliefs and do not observe actions. Second, we are interested in social conflicts (riots and protests) and not terrorist actions. Finally, we observe the reaction of the public rather than changes in beliefs of people running institutions.

To our knowledge, this project is the first empirical paper focusing on the link between social conflicts and the perception of institutions by individuals. An important contribution of our paper is to construct very disaggregated data on conflicts. It echoes the call by Blattman and Miguel (2010) to local (e.g. sub-national) investigation and identification of causes and consequences of conflicts. Each riot/protest is precisely located and matched with respondents of the survey to extract how each violent event could contribute to explaining the local sentiment toward institutions. In addition, this geographic analysis allows us to precisely assess the environment of each individual at district level. Overall, our results highlight the very volatile nature of beliefs. Note again that surveyed households do not anticipate these changes of beliefs and are not less trustful even one month before social unrest.

Section 6.2 details the methodology to construct the dataset, some descriptive statistics and documents the exposure to civil conflicts and inclinations toward the state institutions. In section 6.3, we present the empirical specifications and the main results. In section 6.4, we propose a theoretical framework to interpret the empirical findings. Section 6.5 briefly concludes.

6.2 Data and methodology

The following section describes the data sources and document the construction of local measures of exposure to conflicts. We then present descriptive statistics on the average respondent in the Afrobarometer survey. Finally, we describe the empirical identification strategy.

The ideal setting to identify how beliefs such as trust in leaders react to social conflicts would be to have a completely exogenous social conflict affecting a precise population that is surveyed before and after the event, and not affecting another similar population. Because riots and protests are social by nature, such a natural experiment would hardly exist. Another approach to investigate how beliefs react to events is to conduct precise survey on a local population whose behavior and attitudes can be clearly identified. Such an approach is undertaken by Becchetti et al. (2011) or Cassar et al. (2011). Our approach is quite different. We rather take advantage of the large number of respondents interviewed in the Afrobarometer and locate them very precisely. We thus compare individuals living in different places within the same administrative region.

6.2.1 Data construction

The Afrobarometer is a qualitative survey conducted in 20 African countries⁴. We use the most recent rounds of this survey, i.e. rounds 3 and 4 conducted between 2005 and 2009, for which we can identify the date of interview and the precise location of respondents. All countries pooled together, we observe about 40,000 individuals living in 2,300 districts and 220 regions.⁵ The Afrobarometer gives a very detailed picture of their opinions regarding politics, religion, and social issues. In particular, the survey documents (i) the distrust of individuals regarding leaders in power, the parliament, institutions such as the court and the police, and (ii) the sentiment

4. Benin, Botswana, Burkina Faso, Cape Verde, Ghana, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Nigeria, Senegal, South Africa, Tanzania, Uganda, Zambia, and Zimbabwe.

5. In this paper, we refer to “region” as the first level administrative area in a country. Information about “districts” are used to localize respondents inside each region.

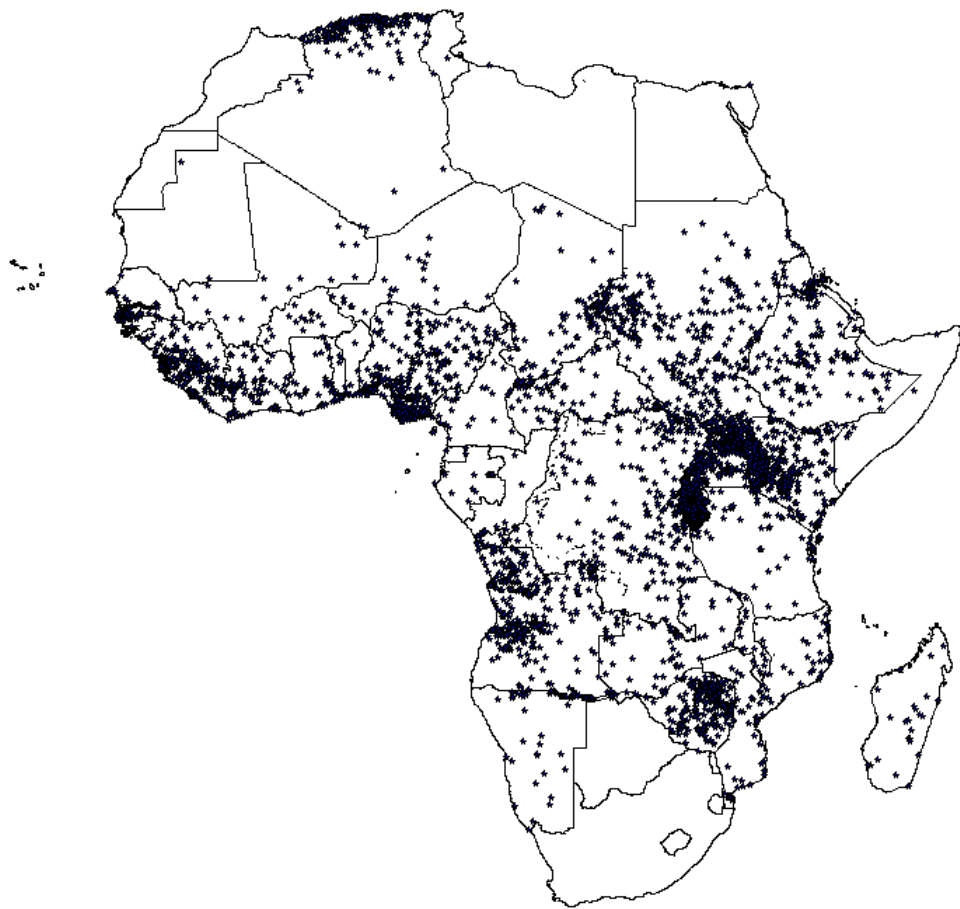
to belong to a community. As is frequent with those surveys, education, income, and households characteristics are very poorly documented. On a more positive note, households can be located inside each region using information about districts, which allows us to reconstitute the environment of households in terms of exposure to conflicts for example. See the appendix for a detailed description of the method used to localize respondents.

The Armed Conflict Location and Event Data set (ACLED) provides detailed information about conflicts in almost all African countries from 1997 onwards. Available information include the precise geographical coordinates, involved actors, the type of event (battles, riots, violences against civilians), the outcome of the conflict and whether the conflict was covered by dominant media such as the BBC. More than 30,000 of these events are documented and classified along rough categories, i.e. riots, battles, lobbying, protests, peace agreements. In this paper, we restrict ourselves to riots, protests, or violence against civilians. We refer to these events as “social conflicts” and use them as a signal of social unrest. In addition, we take advantage of information on the repression of riots or protest conveyed by the data set and define events repressed by the authorities as “social conflicts repressed by the government”. We also use information about local occurrences of battles and civil wars as control variables in empirical estimations.

Figure 6.1 illustrate the number of entries of conflicts or riots as reported in the ACLED dataset. Note that the occurrences of conflicts are severely autocorrelated but this pattern is essentially driven by the fact that half of the districts did not experience any conflict of any kind.

From the precise geographical coordinates, we match social conflicts and Afrobarometer’s respondents if the event occurred within a k kilometers radius from the place where the respondent is living. We chose to set k equals to 20 for baseline estimations. We also used $k = 5, 10, 40$. Together with the precise dates of conflicts and interviews, this matching procedure allows us to construct the exposure to both recent and past social conflicts at the individual level. For each individual, we define its exposure to recent social conflicts as the number of conflicts during the month immediately preceding the interview within the 20 kilometers radius. We define past exposure as

Figure 6.1: Location of social conflicts registered in the ACLED dataset (1997-2009).



Source: Armed Conflict Location and Event Dataset.

the average number of events per month prior to 2004 inside the same area. Except if differently specified, we use the term “social conflicts” to refer to *recent* events.

The precise localization of respondents also allows us to construct additional control variables such as the distance to the coast or the local population density. Nunn and Wantchekon (2011) has indeed shown that the distance between Afrobarometer’s respondents and the coast is positively associated with various measures of trust. In their approach, this distance is a proxy for the intensity of past slaves’ trade. Places closer to the coast are more likely to have suffered more from slaves’ trade. In addition, we draw from the Global Rural-Urban Mapping Project⁶ the population within a 20 kilometers around each respondent. This allow to partially account that attitudes may differ in more populated places and that cities may also be more prone to social conflicts.

Table 6.5 in appendix gives the average profile of Afrobarometer’s respondents and compares these characteristics along the exposure to conflicts. We distinguish places where some conflicts have taken place over the past month from places where this is not the case. In the right part of the table, we focus on individuals living in places without any social conflict since 1997 and individuals living in places with at least one social conflict since the same date. The Afrobarometer survey draws a representative sample of adults in Christian countries mainly. A large fraction (two third) of the sample is unemployed or inactive and a about one half of respondents has no education or has only attained primary school. In places where conflicts have been reported since 1997, surveyed individuals are relatively more educated.

We use a series of question form the Afrobaromter to measure attitudes toward various subjects. The common phrasing if these questions is following: “*How much do you trust each of the following, or haven’t you heard enough about them to say: The President?*”. Answers are given on a four points ascending scale with 0 for “*Not at all*”, 1 for “*A little bit*”, 2 for “*A lot*”, and 3 for “*A very great deal*”. In addition to the question about trust in the president, we use question related to “*the opposition party*”, “*the ruling*

6. GRUMP, Center for International Earth Science Information Network.

party”, “the army”, “the electoral commission”, “the parliament”, “the local government”, and “traditonal leaders”. On top of that we use a question capturing the extent to which a respondent defines itself as being a member of the national community rather than of a “local” group. It is measured on a five points scale using answers to the following question of the Afrobarometer: “*Let us suppose that you had to choose between being a [respondent’s nationality] and being a [respondent’s ethnic group]. Which of the following best expresses your feelings?*”.⁷ Answers are given on a five points scale. The lowest item is “*I feel only [respondent’s ethnic group]*”, the third item is “*I feel equally [respondent’s nationality] and [respondent’s ethnic group]*”, whereas the highest highest item is “*I feel only [respondent’s nationality]*”. In what follows, we refer to this question as “national feeling”.

Table 6.6 in appendix presents average answers to the questions described earlier and gives a flavor of the main point of this paper: trust in the president or in the ruling party is higher in place without past social conflicts or in places with no social conflicts during the past month.

6.2.2 Estimation strategy

Our objective is to identify the effect of social conflicts on a set of subjective opinions regarding leaders or institutions. To achieve this, we take advantage of the structure of the data presented above and rely on the comparison of individuals within regions.

The match between respondents and conflicts offers room for variations in the exposure to conflicts within the same region. Two individuals living in the same region may be affected by different events if they do not leave exactly in the same place. Formally, the baseline model we estimate using ordinary least squares is following:

$$y_{ijtr} = \alpha + \beta \mathbb{C}_{jt} + \sum_{k=1}^n \gamma_k x_i^k + \sum_{k=1}^m \phi_k X_j^k + \mathbb{I}_r + \varepsilon_{ijtr}, \quad (6.1)$$

7. This phrasing is the phrasing of the fourth round of Afrobarometer. In the third round of the survey, the second part of the question is “*Which of these two groups do you feel most strongly attached to?*”

where individual i lives in place j inside region r and is interviewed at date t . Variable y denotes the answer to one of the questions presented above. \mathbb{C}_{jt} is the number of social conflicts in a 20 kilometers radius around place j during the month immediately preceding the interview conducted at date t . Vector x is a set of observable characteristics of individual i . Vector X is a set of observable characteristics of place j , e.g. past conflicts, distance to the coast. \mathbb{I}_r is a region fixed effect for region r . Finally, ε is the error term. In this equation, parameter β captures how attitudes evolve following recent social conflicts.

6.3 Empirical evidence

This section provides stylized facts on beliefs in cooperation at the national level in the aftermath of social conflicts. We first focus on the direct effect of conflicts on beliefs in leaders in power, institutions which monitor the leader and alternatives to the state. Then, we investigate how this reaction may differ depending on the “type” of each agent. We focus particularly on the respondent’s political power induced by the size of its ethnic group.

6.3.1 Direct effect of civil conflicts on beliefs in national cooperation

Using information about recent local social conflicts, this sub-section shows that respondents heavily revise their beliefs regarding trust or their subjective membership of the national community following violent events. In what follows, the estimated model is given by equation (6.1). We only present estimated coefficients associated with the explanatory variables of interest, i.e. with recent social conflicts and recent social conflicts repressed by the government. Table 6.7 in appendix presents the estimated relationships between all covariates and our nine dependent variables when the variables of interest, i.e. social conflicts, are not included in the regression.

Stylized fact 1: Trust in leaders strongly deteriorates in the aftermath of a social conflict.

Panel A of table 6.1 depicts beliefs and trust in the actual and potential leaders in charge, i.e. the the president, the ruling party and the opposition party. In the first three columns of the table, we use the local number of social conflicts during the past month as variable of interest. Local conflicts in the month before the interview are associated with lower responses for trust in actual leaders and higher trust for competitors. Focusing on events repressed by the government (in the right part of the table), the penalty imposed on the president and the ruling party is around twice larger.

Stylized fact 2: Trust in institutions with a monitoring power over leaders also plunges.

Panel B of table 6.1 focuses on institutions exerting a monitoring power on the leaders, i.e. the army, the electoral commission, and the parliament.⁸ There is a strong negative effect on trust in the electoral commission. As we focus on riots or protests repressed by the government, the relationship between trust in the army becomes strongly and significantly negative. The army is indeed likely to be one of the actors of the repression. Trust in the parliament however does not seem to suffer in the aftermath of the riots. Overall, the trust in these monitoring institutions decreases together with trust in the president. This results questions the capacity of these institutions to guarantee national coordination.

Stylized fact 3: The sentiment to be part of a nation decreases as well.

Panel C of table 6.1 captures the trust in alternatives to the state and the beliefs in national coordination. To achieve this, we use trust in the local government and in traditional leaders as proxies for the former, and the subjective membership of national community for the latter. First, alternatives to the state do not end up being privileged more in absolute terms. Social conflicts reduce trust in the local government and leaves trust in traditional leaders unchanged. Institutional alternatives to the state do not end up being stronger in absolute terms. In relative terms however, people are more likely to define themselves as belonging to a local or ethnic group as belonging to the national community. This is especially true for riots or protests that have

8. In many African countries, these institutions are considered by a large part of the population as tools for the leaders to lean on without any real monitoring power.

Table 6.1: Effect of recent social conflicts on trust in leaders and institutions.

Dependent variables in columns' heads.			
Panel A: Trust in leaders			
	(1) Trust in Opposition party	(2) Trust in President	(3) Trust in Ruling party
Social conflicts	0.038*** (0.011)	-0.065*** (0.011)	-0.036*** (0.012)
Social conflicts repressed by the gov.	0.071 (0.046)	-0.157*** (0.047)	-0.073 (0.048)
Observations	37,769	39,470	38,800
Panel B: Trust in institutions			
	(1) Trust in Army	(2) Trust in Electoral Commission	(3) Trust in Parliament
Social conflicts	0.003 (0.014)	-0.040*** (0.011)	-0.014 (0.011)
Social conflicts repressed by the gov.	-0.221** (0.095)	-0.090* (0.047)	-0.056 (0.045)
Observations	17,973	37,049	38,242
Panel C: Feeling to be part of a nation			
	(1) Trust in Local gov.	(2) Trust in Traditional leaders	(3) National Feeling
Social conflicts	-0.011 (0.010)	0.029 (0.024)	-0.007 (0.013)
Social conflicts repressed by the gov.	-0.070 (0.043)	0.139* (0.078)	-0.148** (0.063)
Observations	38,086	19,744	38,586

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses. OLS regressions. Each cell presents the estimated coefficient of the variable of interest from a distinct regression. All regressions include region \times round fixed effects and a constant term. The following covariates are also included: age gender, a dummy equal to 1 if the respondent is household head, dummies for race and religion, a dummy equal to 1 if housing is rural, dummies for education level and employment status, dummies equal to 1 if the respondent belong to the main or the second ethnic group in country or region, past battles and social conflicts in a 20 kilometers radius, the (log of) the distance to the coast, and the (log of) population in a 20 kilometers radius. *Social conflicts* is the number of social conflicts in a 20 kilometers radius over the month immediately preceding the interview. *Social conflicts repressed by the government* include only events repressed by the government. See the text for the definition of dependent variables.

been repressed by the government.

To summarize, one more social conflict during the month preceding the interview reduces trust in the president by the equivalent of 15% of a standard deviation of average trust computed across space. On the opposite, trust in the opposition party or in traditional leaders increases by about 10% of a standard deviation following such an event. Similarly, the subjective membership of the national community is reduced by about 15% of standard deviation if there is one more social conflict repressed by the government around the place during the past month. Such effects are very important. Another way to see it is to remark that the response of trust in the president would bridge the gap of trust between rural and urban areas. Similarly, the subjective membership of the national community decreases as much as to bridge the gap between post-secondary educated respondents and respondents without formal education.⁹ These rough comparisons suggest that the immediate effects of social conflicts on most of the dependent variables we used is sizeable.

These findings also highlight a high volatility of trust toward nationwide institutions, as well as the quick evolution of the sentiment to be part of one nation rather than one group. Beliefs, and trust in particular, are heavily rooted in culture, but national cohesion is also frequently updated and strongly affected by sudden signals. In other words, such beliefs are not only static, they also have a substantial dynamic component.

6.3.2 Placebo test and the geographic impact

Following the previous analysis, we may want to analyze the social conflict as a signal sent on the quality of a leader or the manifestation of a recent discovery that leaders may not implement the public project as expected. A concern might be that part of the impulse response that we observe one month after the conflict was already present before and that the riot was a mere illustration of this obnoxious environment.

Stylized fact 4: Social conflicts can be interpreted as localized signals,

9. Coefficients of covariates are presented in table 6.7 in appendix.

revealing some information on the environment. (a) Social conflicts are not preceded by changes in trust regarding leaders, and social coordination. (b) The response to social conflicts is stronger close to the focal point.

Given the strong auto-correlation of conflicts across space and time, it may be argued that our core result – trust decreases in the aftermath of social conflicts – is a by-product of a deleterious environment, which both generate conflicts and distrust. This issue is tackled in table 6.2. We run the same regressions as above, but replace the number of conflicts that occurred during the month immediately preceding the interview by conflicts that occur during the month immediately following the interview. We hardly find any evidence to support the hypothesis. Table 6.2 reproduces the main results presented in table 6.1 and captures trust as a function of conflicts occurring the month after the interview. No systematic pattern appears in the signs of the different coefficients. In addition, most of them are not statistically significant. The only exceptions are estimated coefficients of conflicts in columns 3 and 12 where the dependent variable is trust in the ruling party. Here, estimated coefficient are statistically significant, but positive (while the baseline displayed negative coefficients). Conflicts do not seem to be preceded by an obnoxious climate.

In tables 6.8, 6.9, and 6.10 presented in appendix, we change the radius (5, 10, and 40 kilometers) used to match Afrobarometer’s respondents and conflicts and estimate the amplitude of the response for those different radius. Interestingly, the effects fade with the distance without disappearing. For example, the effect of social conflicts on trust in the president is equal to 0.080 for the 5 kilometers radius (table 6.8), to 0.075 for the 10 kilometers radius (table 6.9), to 0.070 for the 20 kilometers radius (table 6.1), and to 0.065 for the 40 kilometers radius (table 6.10). Two interpretations may arise. First, the access to information may restrict the reach of a signal which should be of interest of every citizens in the country – national grief, local reach. Second, the information is spread across the country but only concerns a certain region (inhabitants of a district learn that no new hospitals will be constructed in this region but will in other parts of the country) – local grief, national reach.

Table 6.2: Effect of future social conflicts on trust in leaders and institutions.

Dependent variables in columns' heads.		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Social conflicts	Trust in	Trust in	Trust in	Trust in	Trust in	Trust in	Trust in	Trust in	Trust in	National
	Opp. party	President	Ruling party	Army	Electoral comm.	Parliament	Local gov.	Traditional leaders	Feeling	
	-0.020 (0.014)	0.013 (0.014)	0.031** (0.014)	-0.018 (0.023)	-0.002 (0.014)	-0.000 (0.013)	-0.002 (0.013)	0.014 (0.027)	0.022 (0.015)	
Observations	37,769	39,470	38,800	17,973	37,049	38,242	38,086	19,744	38,586	
R-squared	0.116	0.271	0.253	0.305	0.250	0.208	0.198	0.175	0.188	
Social conflicts repressed by the gov.	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
	Trust in Opp. party	Trust in President	Trust in Ruling party	Trust in Army	Trust in Electoral comm.	Trust in Parliament	Trust in Local gov.	Trust in Traditional leaders	National Feeling	
	-0.033 (0.039)	0.060 (0.039)	0.082** (0.038)	0.087 (0.075)	0.035 (0.039)	0.016 (0.039)	0.053 (0.038)	0.066 (0.061)	-0.001 (0.047)	
Observations	37,769	39,470	38,800	17,973	37,049	38,242	38,086	19,744	38,586	
R-squared	0.116	0.271	0.253	0.305	0.250	0.208	0.198	0.175	0.188	

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. OLS regressions. All regressions include region \times round fixed effects and a constant term. The following covariates are also included: age gender, a dummy equal to 1 if the respondent is household head, dummies for race and religion, a dummy equal to 1 if housing is rural, dummies for education level and employment status, dummies equal to 1 if the respondent belong to the main or the second ethnic group in country or region, past battles and social conflicts in a 20 kilometers radius, the (log of) the distance to the coast, and the (log of) population in a 20 kilometers radius. *Social conflicts* is the number of social conflicts in a 20 kilometers radius over the month immediately following the interview. *Social conflicts repressed by the government* include only events repressed by the government. See the text for the definition of dependent variables.

6.3.3 Heterogeneous reactions

A natural extension of the previous results is to analyze how the response might differ across the type of respondents. We would expect losers and winners to respond differently to the observation at the origin of the social conflict.

Stylized fact 5: Distrust in leaders, institutions and the national coordination is similar across the different ethnic group (main vs others), and the response is larger for individuals living in an environment with low public expenditures.

As access to public goods is documented by the interviewer, both the ethnic groups and this measure of local public expenditures are objective characteristics.

In table 6.3, we split the sample of Afrobarometer's respondents between those who belong to the main ethnic group (panel A) **in the country** and those who do not (panel B). Despite some differences, both groups change their subjective membership of the national community in very similar ways when social conflicts occur. In table 6.11, presented in appendix, we consider the main ethnic group **in the region** (panel A) against the others (panel B). Heterogeneity in responses is even less clear then.

In the Afrobarometer, interviewers are asked to fill some questions about the existence of some facilities in the primary sample area. We construct an individual index of access to public goods that ranges from 0 to 5. It increases by 1 when any of the following facility is present in the primary sample unit: clinic, electricity, school, police, or water.¹⁰ We then computed the average of this index by country and wave. In table 6.4, we split the sample between individuals whose access to public goods is above or below the average access to public goods in the country. Panel A (respectively, panel B) includes respondents with relatively more (less) access to public goods. Recent social conflicts have a larger effect among those who have relatively less access to public goods (see table 6.4). This result applies to trust in the

10. In our sample of Afrobarometer's respondents, the average value of this index equals 2.57 and the standard deviations is equal to 1.52.

Table 6.3: Effect of recent social conflicts on trust in leaders and institutions, depending on being member of the main ethnic group in country.

Depent variables in columns' heads.

Panel A: Individuals in the main ethnic group in country

	(1) Trust in Opp. party	(2) Trust in President	(3) Trust in Ruling party	(4) Trust in Army	(5) Trust in Electoral comm.	(6) Trust in Parliament	(7) Trust in Local gov.	(8) Trust in Traditional leaders	(9) National Feeling
Social conflicts	0.009 (0.023)	-0.122*** (0.021)	-0.089*** (0.022)	0.011 (0.046)	-0.078*** (0.021)	-0.056*** (0.021)	-0.060*** (0.021)	0.023 (0.052)	-0.041 (0.026)
Social conflicts repressed by the gov.	-0.015 (0.090)	-0.356*** (0.086)	-0.286*** (0.090)	0.129 (0.321)	-0.164* (0.089)	-0.144* (0.081)	-0.260*** (0.087)	0.098 (0.123)	-0.247** (0.101)

Panel B: Individuals not in the main ethnic group in country

	(1) Trust in Opp. party	(2) Trust in President	(3) Trust in Ruling party	(4) Trust in Army	(5) Trust in Electoral comm.	(6) Trust in Parliament	(7) Trust in Local gov.	(8) Trust in Traditional leaders	(9) National Feeling
Social conflicts	0.045*** (0.012)	-0.060*** (0.013)	-0.033** (0.014)	0.003 (0.015)	-0.035*** (0.013)	0.001 (0.013)	-0.002 (0.012)	0.029 (0.026)	-0.019 (0.014)
Social conflicts repressed by the gov.	0.092 (0.057)	-0.164*** (0.061)	-0.067 (0.060)	-0.232** (0.108)	-0.132** (0.059)	-0.035 (0.059)	-0.053 (0.054)	0.138 (0.099)	-0.267*** (0.081)

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. OLS regressions. Each cell presents the coefficient of recent conflicts from a single regression. All regressions include region \times round fixed effects and a constant term. The following covariates are also included: age gender, a dummy equal to 1 if the respondent is household head, dummies for race and religion, a dummy equal to 1 if housing is rural, dummies for education level and employment status, past battles and social conflicts in a 20 kilometers radius, the (log of) the distance to the coast, and the (log of) population in a 20 kilometers radius. *Social conflicts* is the number of social conflicts in a 20 kilometers radius over the month immediately preceding the interview. *Social conflicts repressed by the government* include only events repressed by the government. See the text for the definition of dependent variables. Panel A includes only respondents who belong to the main ethnic group in the country. Panel B includes only respondents who do not belong to the main ethnic group in the country.

president, trust in the ruling party, trust in the electoral commission, trust in the parliament, trust in the local government, and trust in the traditional leaders. Note that those who have relatively more access to public goods seems to react more to repression when looking at subjective membership of the national community, maybe because they anticipate the reaction of their disadvantaged peers.

Overall, these results point to social conflicts as arising from clear misbehaviors of leaders, that are recognized by all ethnic groups. This observation would limit the extent to which these social conflicts reflect ethnic disagreements with leaders favoring one of the party. Individuals do not interpret very differently the signal on the environment in which they live.

Finally, we look at differences in reaction along differences in local ethnic polarization. For each place, we computed a fractionalization index following Alesina et al. (2003) and split the sample with respect to the median value.¹¹ As shown by estimated coefficients presented in table 6.12, presented in appendix, most reactions following social conflict take place in less fractionalized places. Interestingly, individuals living in more fractionalized places only revise their priors regarding the president and their subjective member of the national community. This can be interpreted as reflecting the fact that it is more convenient for leaders to cheat on isolated individuals, i.e. on individuals that live in fractionalized places. As a reaction, they do not revise their trust toward monitoring institutions as the latter represent their only protection against a potentially misbehaving leader.

6.4 Theoretical interpretation

From the empirical analysis, we identified strong revisions of beliefs on national institutions accompanying social unrest. Agents not only revise their beliefs on the leader in charge but on the quality of monitoring institutions

11. Unlike polarization index *à la* Montalvo and Reynal-Querol (2005), this fractionalization index increases as the number of small groups in the population increases. It is minimum when the population is formed by a single group. It is maximum when the population is formed by an infinite number of small groups.

Table 6.4: Effect of recent social conflicts on trust in leaders and institutions, depending on access to public goods.

Depent variables in columns' heads.

Panel A: Access to public goods above average access in country

	(1) Trust in Opp. party	(2) Trust in President	(3) Trust in Ruling party	(4) Trust in Army	(5) Trust in Electoral comm.	(6) Trust in Parliament	(7) Trust in Local gov.	(8) Trust in Traditional leaders	(9) National Feeling
Social conflicts	0.032** (0.014)	-0.054*** (0.015)	-0.029* (0.015)	-0.018 (0.017)	-0.033** (0.014)	0.002 (0.014)	0.006 (0.014)	-0.067* (0.039)	-0.021 (0.017)
Social conflicts repressed by the gov.	0.045 (0.055)	-0.093* (0.056)	-0.011 (0.055)	-0.230** (0.113)	-0.032 (0.054)	-0.005 (0.052)	-0.001 (0.049)	-0.038 (0.115)	-0.289*** (0.078)

Panel B: Access to public goods below average access in country

	(1) Trust in Opp. party	(2) Trust in President	(3) Trust in Ruling party	(4) Trust in Army	(5) Trust in Electoral comm.	(6) Trust in Parliament	(7) Trust in Local gov.	(8) Trust in Traditional leaders	(9) National Feeling
Social conflicts	0.023 (0.020)	-0.089*** (0.022)	-0.061*** (0.023)	0.031 (0.030)	-0.061*** (0.022)	-0.035 (0.022)	-0.054*** (0.021)	0.070*** (0.025)	-0.009 (0.023)
Social conflicts repressed by the gov.	-0.055 (0.099)	-0.291*** (0.106)	-0.194* (0.110)	-0.067 (0.199)	-0.299*** (0.108)	-0.208** (0.104)	-0.347*** (0.101)	0.321*** (0.096)	-0.124 (0.111)

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. OLS regressions. Each cell presents the coefficient of recent conflicts from a single regression. All regressions include region \times round fixed effects and a constant term. The following covariates are also included: age gender, a dummy equal to 1 if the respondent is household head, dummies for race and religion, a dummy equal to 1 if housing is rural, dummies for education level and employment status, dummies equal to 1 if the respondent belong to the main or the second ethnic group in country or region, past battles and social conflicts in a 20 kilometers radius, the (log of) the distance to the coast, and the (log of) population in a 20 kilometers radius. *Social conflicts* is the number of social conflicts in a 20 kilometers radius over the month immediately preceding the interview. *Social conflicts repressed by the government* include only events repressed by the government. See the text for the definition of dependent variables. Panel A includes only respondents whose access to public good is above average access to publics goods in country. Panel B includes only respondents whose access to public good is below average access to publics goods in country. Individual access to public good ranges from 0 to 5. It increases by 1 when any of the following facility is present in the primary sample unit: clinic, electricity, school, police, or water.

as well and ultimately on the possibility of social coordination.

We rationalize these intuitions in a simple model where agents transfer control rights over the use of taxes to a leader. Both the honesty of this leader and the monitoring capacity allowed by the institutional environment are imperfectly observed.

A social conflict act as a signal which reveals an action taken by the leader, e.g. extract private rents, renege on an electoral promise. This observation induces people to revise their beliefs on the nature of the leader, but more importantly on the capacity of monitoring institutions to avoid such predatory behaviors. As such, actions of leaders may durably affect the way agents invest in taxes and participate in state building: groups will be reluctant to invest knowing that future leaders may extract private benefits from their investment.

Interestingly, in this model, as leaders need to break the coalition of agents, they will be obliged to bribe one of the two agents if they try to extract private benefits. As such, all agents will be unhappy ex-ante of having poor institutions, but one agent may profit ex-post from the expropriation of the other one. Remark here that leaders are not group-oriented as suggested by the empirical analysis. However, as the president needs to bribe one of the group, there might be some ex-post heterogeneity between groups.

6.4.1 Background and hypotheses

Consider a simple static model with two risk-neutral agents (say that they are homogeneous groups, each representing half of the country) indexed by $i = 1, 2$. These agents can voluntarily contribute to a public project by providing $t_1, t_2 \in \{0, 1\}$ (taxes are here pure voluntary contributions). Each agent receive half of the total welfare returns $R(t_1 + t_2)^\rho$ of the indivisible project if implemented, or may participate in a renegotiation with the leader otherwise. This renegotiation process will be described in a few lines. In this economy, there is a unit mass of potential leaders with unobserved honesty φ uniformly distributed over $[0, 1]$. φ is the weight attributed by these leaders to the welfare of the agents (the weight on private gains is $1 - \varphi$). Once the

leader is elected and tax are collected, the leader can decide to implement the indivisible project which generates welfare for citizen but no private benefits. In the case where the project is not implemented, tax revenues are left unchanged and part of it can be extracted by the leader for private use. Finally, there is a monitor (or a monitoring process), standing for courts, army and electoral commission. We denote $\alpha \in \{0, 1\}$ the quality of the monitoring process and assume that it is also unobserved.

Timing is as follows: (i) a new leader is randomly drawn from the pool of potential leaders; (ii) voluntary contributions are made and collected by tax authorities; (iii) the leader decides whether to extract private rents or to create the public project; (iv) agents perfectly observe the action of the leader (implementation/extraction); (v) if extraction is chosen, one agent is randomly (with probability $1/2$) given the right to renegotiate with the leader over the repartition of tax revenues.

In order to keep the framework simple, we impose very stylized assumptions on the post-extraction/renegotiation process. After extraction, renegotiation occurs between the leader and a randomly drawn agent. The reason is that the involved agent can threaten the leader to join forces with the other agent, in which case a share α of tax revenues can be seized from the hands of the leader. The monitoring process intervenes here as the share of tax revenue that can be retrieved by citizens if they decide to overthrow the leader. Empirically, it can be captured by the control capacity of institutions over the actions of a leader, i.e. the neutrality and power of electoral commission or courts. Incidentally, this framework is very close to the literature on financial contracting. Agents lend their taxes to a leader with control rights over the tax revenue. If the leader defaults and refuses to implement the project, the agents can collude and start the process of retrieving tax revenues (liquidate). As in the classical debt contract, we authorize for renegotiation in order to account for the fact that liquidation is “inefficient” from the viewpoint of negotiators. These two actors can ensure that the third party (the agent outside of the negotiation) does not capture part of liquidation proceeds. Accordingly, the leader and the negotiating agent create a surplus among themselves by reaching an agreement. Denote β the

bargaining power of the leader in this Nash bargaining.

6.4.2 Static equilibrium

First, let us detail the outcomes of the renegotiation. Assume that $t_1 + t_2$ have been invested by agents and privately diverted by the leader. An agent is given the right to negotiate with the leader, say agent 1. Negotiation will occur because a surplus $[\alpha(t_1 + t_2)] / 2$ is captured by agent 2 if an agreement is not found and the leader overthrown. Following Nash bargaining, $t_1 + t_2$ is shared such that the leader keeps

$$\left[1 - \alpha \left(1 - \frac{\beta}{2}\right)\right] (t_1 + t_2),$$

and agent 1 secures

$$\left(1 - \frac{\beta}{2}\right) \alpha(t_1 + t_2).$$

In reality, one might think that such bargaining occurs in case of a group-specific state investment, e.g. local public goods, distortionary politics. Remark that α intervenes as a boost on the bargaining power of citizens. It is important however to keep both as α might be interpreted as the part of this bargaining power for which there exists some uncertainty, e.g. the quality of institutions.

Consider a leader with a certain honesty φ . Her decision to implement the indivisible project depends on the maximization of the following program:

$$\max_{a=I,D} \varphi P_a + (1 - \varphi) W_a,$$

where P_a (resp. W_a) is the private benefit (resp. aggregate agents' welfare) under action a . I denotes the implementation of the project, and D stands for "default". Given the hypotheses and the outcome of a default (followed by a renegotiation), the private benefit and the agent's welfare under the two actions can be written as:

$$\begin{cases} P_I = 0 \\ W_I = R(t_1 + t_2)^\rho \end{cases} \quad \text{and} \quad \begin{cases} P_D = (1 - \alpha + \beta\alpha/2)(t_1 + t_2) \\ W_D = (\alpha - \beta\alpha/2)(t_1 + t_2) \end{cases}$$

For simplicity, let us define $\chi = \alpha \left(1 - \frac{\beta}{2}\right)$. The leader is indifferent between implementing the project with tax revenues $T = t_1 + t_2$ if $\tilde{\varphi}$ is such that:

$$\tilde{\varphi}(t_1, t_2) = \frac{RT^{\rho-1} - \chi}{1 + RT^{\rho-1} - 2\chi}$$

Leaders with $\varphi > \tilde{\varphi}(T)$ will default while the others will implement the project. $\varphi > \tilde{\varphi}(T)$ is thus the measure of extraction conditional on a certain monitoring process α . Naturally, the lower the bargaining power (as a whole) of leaders, the less likely a private extraction. In addition, the higher the tax revenues and the less likely an extraction as implementing the project becomes really attractive. Two components determine the ex-post balance of power (captured by χ) of leaders, the state of institutions α and the Nash bargaining power β .

Let us determine the voluntary contributions of agents. With probability $\tilde{\varphi}$, agents receive half of the welfare created by the indivisible project, and with probability $(1 - \tilde{\varphi})/2$, agents receive a group-specific bribe $\chi(t_1 + t_2)$.

Note that agents can not contract here among themselves to ensure that the other party is investing. Had they been able to coordinate and fix both contributions together, the condition for investment would have been $R2^{\rho-1}\tilde{\varphi}(2) + (1 - \tilde{\varphi}(2))\chi > 1$. As in the hold-up problem, agents do not take into account the benefits of their investment on others and the condition for investing will be more stringent.

The Nash equilibria of this game are as follows. We assume that $\tilde{\varphi}(1)R + (1 - \tilde{\varphi}(1))(\alpha - \beta\alpha/2)/2 > 1$, which ensures that $(0, 0)$ is always a Nash equilibrium.¹² From the point of view of agent 1, if agent 2 invests in taxes, the condition under which $(1, 1)$ is an equilibrium is that the profit under investment, $\Pi(1)$, is larger than $\Pi(0)$, the profit where taxes are kept for private consumption, i.e.:

$$\frac{1}{2}[R2^{\rho}\tilde{\varphi}(2) + 2(1 - \tilde{\varphi}(2))\chi] - 1 > \frac{1}{2}[R\tilde{\varphi}(1) + (1 - \tilde{\varphi}(1))\chi],$$

12. This condition is also such that asymmetric contributions $(1, 0)$ and $(0, 1)$ are not Nash equilibria.

with

$$\Delta\Pi = \frac{1}{2}[R(2^p\tilde{\varphi}(2) - \tilde{\varphi}(1)) - (2\tilde{\varphi}(2) - \tilde{\varphi}(1))\chi] - 1 > 0.$$

Let us assume that agents converge on the good equilibrium when the condition described above is met.¹³ This condition differs from the first-best essentially because individuals do not internalize the repercussions of their efforts on others. In addition, the incentives of the leaders to expropriate differ with the size of the overall cake. The larger the collected tax revenues and the less likely an expropriation.

It is straightforward to see that this term is increasing in the final bargaining power of citizens, e.g. $\chi = \alpha(1 - \frac{\beta}{2})$. The higher the formal (resp. informal) bargaining power α (resp. $1 - \beta$) of citizens, the higher the threat on the leader in case of extraction and the more secure the investment.

6.4.3 Priors on the monitoring institutions

Assume that the condition $\Delta\Pi > 0$ does not hold for $\alpha = 0$ and holds for $\alpha = 1$, i.e. poor institutions can not sustain a good equilibrium while good institutions are sufficient to protect the investors. Let us define the probability $p \in [0, 1]$ such that:

$$p\Delta\Pi_{\alpha=0} + (1 - p)\Delta\Pi_{\alpha=1} = 0$$

When agents' priors on the probability that $\alpha = 0$ is lower than p , they will not contribute to tax revenues.

What are those priors? Suppose that the sequence of actions starts with the observation of actions undertaken by the previous leader (e.g. social unrest) just before her mandate ends. Agents may update their beliefs on the monitoring process. The probability of having a leader defaulting given a certain level of α is $1 - \tilde{\varphi}(\alpha)$. The Bayesian update process implies that:

$$P(\alpha = \tilde{\alpha} | a = D) = \frac{1 - \tilde{\varphi}_{\tilde{\alpha}}(2)}{\sum(1 - \tilde{\varphi}_{\tilde{\alpha}}(2))}.$$

13. Even though the low equilibrium still exists.

Consequently:

$$P(\alpha = 0|a = D) = \frac{1}{1 + \frac{\beta/2(1+R2^{\rho-1})}{1+R2^{\rho-1}-2(1-\beta/2)}}.$$

As implied by the conditional expectation on monitoring capacity, when agents have no priors on α , an extraction from leaders can lead to state disband if the revision induces a prior on $\alpha = 0$ lower than p .

6.4.4 Discussion

Remark that part of the mechanisms would hold with only one agent. The hold-up problem before investment would disappear then, leaving only a classic principal-agent framework. However, we consider as a strong point of the model the capacity to generate ex-post heterogeneity in the society. Another attractive feature of having several agents is that it implies that one group may benefit from poor institutions as it allows him to expropriate the other agent. Finally, the possibility implied by the presence of two agents offers two natural extensions of this model: (i) break the symmetry between groups, (ii) allow for more than two groups to exist.

With more groups, two main effects would reduce the probability to see an investment. First, the externalities between agents ex-ante would be even stronger: each group collects a smaller and smaller part of their own effort as the number of groups increases. Second, the bargaining power of agents may shrink in second period as the presence of other groups reduces the threat of a coup: the outside option of a small group is very low in the negotiation as only a small fraction of the proceeds will end up in their hands had they agreed on a coup.

The effect of having unequal groups (say in terms of size) on the overall capacity of the economy to invest is unambiguous. Keeping the same assumptions on renegotiation (but introducing the possibility for the leader to choose his negotiation partner), the renegotiation after extraction would be easier for the leader as he would need to bribe only a small fraction of the population. As a consequence, this would transfer part of the investment

from the bigger group to the smaller one and alter the investment of the majority. Intuitively, it is not desirable to affect the ex-ante incentives of the most important investor.

In the previous framework, agents have undefined initial priors on the capacity for leaders to be monitored. A dynamic extension of this model would be interesting as it would match more closely the empirical framework. Consider a simple extension where both leaders and citizens are short-lived, the former are renewed every period and new generations of citizens with the same group features are born every period. The updating process is slightly different than before as knowledge keeps piling. After having observed N periods and k expropriations, the beliefs of the agent are:

$$\begin{aligned}\rho_{N,k} &= P(\alpha = 0|N, k) \\ &= \frac{1}{1 + \left(\frac{1+R}{1+R-2(1-\beta/2)}\right)^N (1-(1-\beta/2))^k (1-(1-\beta/2)/R)^{N-k}}.\end{aligned}$$

If agents can not observe the action of the leader when they do not invest (there is no action), there might exist inefficient state disband: no investment on the long-term with $\alpha = 1$. Such a regime is fragile as small errors from agents (random investments) would help revealing the quality of institutions, but the cost of discovering the type of the leaders might be quite high (especially because groups can not coordinate to make the test really fruitful if the project is actually implemented).

6.5 Conclusion

This paper identifies a very volatile component of beliefs in addition to its well-known persistence. Those findings support the existence of different regimes in social coordination with very sudden switches and explain unexpected overthrows. A very interesting feature is that misbehaviors of leaders seem to be the sparkle which drags down beliefs in institutions and national cooperation as well. Accordingly, even though leaders might change, the shock may have driven down expectations in coordination for quite a while.

An interesting feature of our empirical framework is that it relies on very

localized responses and small time windows. It is a strong point as it allows a cleaner identification than a macro-analysis. It would be however very interesting to capture the propagation of distrust over time and regions. The implication of our paper would be quite different if the effect was amplified nation-wide or confined to a city or a district.

In the theoretical framework, taxes are voluntary contributions and agents can refuse to provide any tax revenue to a corrupted state. This trait accounts for the possibility to invest more or less in the state effort. Another extension would be to relate those anticipated behaviors to real economic counterparts, i.e. the size of tax revenues.

6.6 Appendix

Geo-location of Afrobarometer’s respondents

This section presents procedures used to geo-locate respondents interviewed in rounds 3 and 4 of the Afrobarometer.

Rounds 3 and 4 of the Afrobarometer survey give names of the country and the region in which respondents are living, but also the name of the “district”.¹⁴ The precise definition of the latter information varies across countries and do not always match with official administrative areas.

All in all, the two rounds of the Afrobarometer list 2,377 different places where 53,110 respondents live. They are disseminated in 20 different countries. The procedures presented below allow to locate all places and respondents.

Following Nunn and Wantchekon (2011), we use the website *GeoNames.org*¹⁵ to find geographical coordinates of places listed in the Afrobarometer. This website allows to send precise requests using names of places, but makes also publicly available background data. These data contains the latitude and the longitude of a tremendous number of places around the world. Documentation attached to each place also include variations of its name. We first used an algorithm to search for Afrobarometer’s places that can be located using names or variations of names proposed in data from *GeoNames.org*. We then changed the name of some places registered with evident accents errors or typos in the Afrobarometer and ran the same process as above.¹⁶ This first step allowed to get the geographical coordinates of more than 80% of places.

The second method we used for not already located places is simply made of individual hand requests to retrieve information on *GeoNames.org* taken over from *Wikipedia.org*.¹⁷ Still un-matched places were located using other

14. Respondents interviewed in Lesotho during round 4 represent an exception. Only the name of the region is available for these observations.

15. <http://www.geonames.org>

16. For example, “Abeĩbara” in Mali does not match with data from *GeoNames.org* whereas “Abeibara” does. Similarly, the suffixes “urban” or “municipal” are added to the name of some cities.

17. <http://www.wikipedia.org>

websites: *MapAtlas.org*, *iTouchMap.com*, and *Fallingrain.com*.¹⁸ Among places located using one of the latter websites, around one third were located using the centroid of the region as we were not able to determine the location of the district within the administrative region.

Finally, we used a geographic information system to look for potential mismatches. We found out that the longitude and the latitude of 16 places located them in wrong countries. This was mostly the case for places very close to a boundary. We manually change geographical coordinates of these places using the same websites as above.

Table 6.13 summarizes the number of places located using one of the above described matching procedures. Table 6.14 presents the associated frequency of individual observations in rounds 3 and 4 of the Afrobarometer. Table 6.15 decomposes table 6.13 by country. Finally, figure 6.2 represents the points where interviewed individuals are located.

18. <http://en.mapatlas.org>, <http://itouchmap.com>, and <http://www.fallingrain.com>.

Table 6.5: Descriptive statistics: average observable characteristics of respondents.

	Full sample	Recent social conflicts		Past social conflicts	
		> 0	= 0	> 0	= 0
Age	35.922	32.486	36.179	34.612	36.929
Male	0.504	0.502	0.504	0.503	0.504
Household head	0.485	0.435	0.488	0.483	0.486
White	0.005	0.004	0.005	0.004	0.005
Mixed	0.007	0.017	0.006	0.007	0.006
Other	0.003	0.003	0.003	0.003	0.004
Islam	0.253	0.2	0.257	0.2	0.293
Catholic / Protestant	0.687	0.768	0.681	0.75	0.639
Traditional religion	0.02	0.007	0.021	0.014	0.025
Other	0.012	0.004	0.012	0.012	0.012
Rural housing	0.657	0.237	0.689	0.532	0.753
Primary school	0.353	0.221	0.363	0.315	0.382
Secondary school	0.333	0.484	0.322	0.4	0.281
Post-secondary education	0.1	0.211	0.091	0.144	0.066
Unemployed	0.315	0.344	0.312	0.302	0.324
Par time	0.15	0.168	0.149	0.156	0.146
Full time	0.196	0.223	0.194	0.21	0.185
Main ethnic group in region	0.494	0.544	0.49	0.471	0.512
Main ethnic group in country	0.279	0.292	0.278	0.25	0.3
Second ethnic group in region	0.141	0.14	0.141	0.147	0.137
Second ethnic group in region	0.171	0.112	0.175	0.17	0.171
Past battles	0.001	0.005	0.001	0.003	0
Past social conflicts	0.005	0.041	0.002	0.011	0
Past social conf. rep. by the gov.	0.001	0.009	0	0.002	0
Distance to the coast	5.52	5.207	5.544	5.318	5.675
Local population	9.72	13.278	9.454	11.398	8.43
Observations	40,713	2,832	37,881	17,696	23,017

Except *age*, *past battles*, *past social conflicts*, *past social conflicts repressed by the government*, *distance to the coast*, and *local population*, all variables are dummy variables. The reference category for *white*, *mixed*, and *other* is “black”. The reference category for education’s levels is “no formal education”. The reference category for employment status is “inactive”. Variables *distance to the coast*, and *local population* are used in logarithm. Out of the 40,713 respondents, 18,637 have been interviewed in round 3 of the Afrobarometer and 22,076 in round 4.

Table 6.6: Descriptive statistics: average answers of respondents.

Unit of observation: respondent						
	Full sample		Recent social conflicts		Past social conflicts	
			> 0	= 0	> 0	= 0
Trust in opposition party	1.22	(1.07)	1.25	1.22	1.23	1.21
Trust in president	1.92	(1.12)	1.34	1.96	1.73	2.06
Trust in ruling party	1.66	(1.15)	1.13	1.70	1.46	1.81
Trust in army	1.95	(1.11)	1.49	1.99	1.84	2.05
Trust in electoral commission	1.61	(1.13)	1.14	1.65	1.40	1.78
Trust in parliament	1.71	(1.08)	1.37	1.74	1.55	1.84
Trust in local government	1.64	(1.10)	1.32	1.66	1.49	1.76
Trust in traditional leaders	1.97	(1.08)	1.82	1.98	1.83	2.07
National feeling	3.47	(1.20)	3.36	3.47	3.45	3.48

Unit of observation: place						
	Full sample		Recent social conflicts		Past social conflicts	
			> 0	= 0	> 0	= 0
Trust in opposition party	1.23	(0.51)	1.10	1.24	1.18	1.26
Trust in president	1.92	(0.69)	1.28	1.94	1.68	2.04
Trust in ruling party	1.65	(0.68)	1.08	1.67	1.41	1.77
Trust in army	1.86	(0.76)	1.27	1.89	1.66	1.97
Trust in electoral commission	1.61	(0.68)	1.11	1.63	1.35	1.74
Trust in parliament	1.72	(0.63)	1.25	1.74	1.51	1.83
Trust in local government	1.63	(0.62)	1.15	1.65	1.42	1.75
Trust in traditional leaders	1.95	(0.58)	1.66	1.96	1.77	2.04
National feeling	3.45	(0.66)	3.29	3.45	3.41	3.46

See the text for the definitions of the different variables. Standard deviations in parentheses. In the upper part of the table, statistics are computed using respondents as observation's units. In the bottom part of the table, individual observations have been averaged by place before the computations of statistics.

Table 6.7: Estimates of the relationships between covariates and trust in leaders and institutions.

	Dependent variables in columns' heads.								
	(1) Trust in Opp. party	(2) Trust in President	(3) Trust in Ruling party	(4) Trust in Army	(5) Trust in Elec. comm.	(6) Trust in Parliament	(7) Trust in Local gov.	(8) Trust in Trad. leaders	(9) National Feeling
Age	-0.000 (0.000)	0.004*** (0.000)	0.003*** (0.000)	0.002*** (0.001)	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	0.003*** (0.001)	0.000 (0.000)
Male	0.086*** (0.011)	-0.021* (0.011)	-0.036*** (0.011)	0.080*** (0.015)	-0.018 (0.011)	-0.006 (0.011)	-0.018 (0.011)	-0.018 (0.016)	0.066*** (0.012)
Household head	-0.000 (0.013)	0.011 (0.012)	-0.002 (0.013)	0.006 (0.018)	-0.005 (0.013)	-0.011 (0.013)	-0.012 (0.013)	-0.009 (0.018)	0.004 (0.014)
White	-0.042 (0.094)	-0.069 (0.092)	-0.296*** (0.097)	-0.157 (0.118)	-0.129 (0.094)	-0.099 (0.092)	-0.211** (0.094)	-0.211 (0.152)	0.151* (0.090)
Mixed	0.154** (0.065)	0.010 (0.069)	-0.161** (0.074)	0.044 (0.095)	-0.089 (0.069)	-0.020 (0.069)	-0.046 (0.065)	-0.355*** (0.103)	-0.012 (0.077)
Other	0.037 (0.103)	-0.116 (0.093)	-0.014 (0.092)	-0.090 (0.154)	-0.096 (0.088)	0.081 (0.085)	0.062 (0.094)	-0.157 (0.133)	-0.099 (0.109)
Islam	0.094** (0.038)	0.000 (0.035)	0.044 (0.038)	0.119** (0.051)	0.063* (0.038)	0.089** (0.037)	0.080** (0.037)	-0.065 (0.053)	0.154*** (0.043)
Catholic / Protestant	0.017 (0.034)	0.072** (0.032)	0.080** (0.034)	0.092** (0.047)	0.097*** (0.034)	0.111*** (0.033)	0.058* (0.034)	-0.127*** (0.048)	0.176*** (0.039)
Traditional religion	0.062 (0.052)	0.020 (0.049)	0.020 (0.052)	-0.024 (0.072)	0.033 (0.053)	0.092* (0.051)	0.036 (0.051)	0.004 (0.070)	0.090 (0.061)
Other	0.001 (0.062)	0.027 (0.060)	0.071 (0.063)	0.066 (0.110)	0.098 (0.065)	0.072 (0.063)	0.051 (0.064)	0.040 (0.075)	0.210*** (0.068)
Rural housing	-0.027** (0.014)	0.109*** (0.013)	0.127*** (0.013)	0.061*** (0.018)	0.105*** (0.014)	0.075*** (0.013)	0.115*** (0.013)	0.139*** (0.020)	-0.057*** (0.014)
Primary school	-0.057*** (0.017)	0.023 (0.016)	0.012 (0.017)	0.036 (0.022)	-0.017 (0.017)	-0.034** (0.017)	-0.034** (0.017)	-0.083*** (0.022)	0.140*** (0.018)
Secondary school	-0.072*** (0.019)	-0.060*** (0.017)	-0.119*** (0.018)	-0.009 (0.025)	-0.106*** (0.018)	-0.134*** (0.018)	-0.164*** (0.018)	-0.239*** (0.024)	0.199*** (0.020)
Post-secondary educ.	-0.050** (0.023)	-0.164*** (0.022)	-0.202*** (0.023)	-0.062* (0.032)	-0.182*** (0.023)	-0.199*** (0.023)	-0.237*** (0.023)	-0.335*** (0.033)	0.205*** (0.025)

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(continued)

	(1) Trust in Opp. party	(2) Trust in President	(3) Trust in Ruling party	(4) Trust in Army	(5) Trust in Elec. comm.	(6) Trust in Parliament	(7) Trust in Local gov.	(8) Trust in Trad. leaders	(9) National Feeling
Unemployed	-0.028** (0.014)	-0.046*** (0.013)	-0.026* (0.014)	-0.008 (0.019)	-0.045*** (0.014)	-0.044*** (0.014)	-0.035** (0.014)	-0.002 (0.019)	-0.004 (0.015)
Par time	0.002 (0.017)	-0.032** (0.016)	-0.020 (0.016)	0.022 (0.023)	-0.025 (0.017)	-0.025 (0.016)	-0.005 (0.023)	0.001 (0.023)	0.034* (0.018)
Full time	0.012 (0.017)	0.022 (0.015)	0.023 (0.016)	0.039* (0.021)	0.015 (0.016)	0.019 (0.016)	0.038** (0.016)	0.011 (0.024)	0.090*** (0.017)
Main ethnic group in region	0.026 (0.016)	-0.036** (0.015)	-0.030* (0.016)	0.002 (0.023)	-0.012 (0.016)	0.000 (0.016)	0.009 (0.016)	0.054** (0.021)	-0.080*** (0.017)
Main ethnic group in country	-0.041** (0.020)	0.042** (0.018)	0.013 (0.019)	-0.012 (0.026)	-0.002 (0.019)	-0.008 (0.019)	-0.027 (0.019)	-0.011 (0.025)	0.085*** (0.020)
Second ethnic group in country	-0.040* (0.022)	0.051** (0.020)	0.070*** (0.021)	-0.002 (0.030)	0.082*** (0.022)	0.038* (0.021)	0.057*** (0.021)	-0.095*** (0.031)	0.093*** (0.023)
Second ethnic group in region	0.016 (0.018)	-0.027 (0.017)	-0.002 (0.017)	-0.015 (0.025)	0.005 (0.018)	0.007 (0.017)	0.001 (0.017)	0.032 (0.023)	-0.046** (0.019)
Past battles	-3.343** (1.698)	-5.043*** (1.662)	-1.924 (1.650)	0.405 (2.766)	-0.152 (1.644)	-3.795** (1.588)	-3.329** (1.619)	-0.907 (2.105)	-5.711*** (1.954)
Past social conflicts	3.984** (1.955)	-4.936** (1.933)	-5.271*** (1.912)	-10.405*** (3.067)	-4.474** (1.930)	0.336 (1.816)	1.169 (2.539)	0.351 (2.279)	0.351 (2.260)
Past social conflicts repressed by the gov.	-16.518** (7.657)	21.821*** (7.622)	18.616** (7.509)	44.026*** (12.431)	16.077** (7.653)	-0.745 (7.172)	10.502 (7.365)	0.953 (9.743)	2.260 (8.189)
Distance to the coast	0.001 (0.009)	0.034*** (0.008)	0.021** (0.008)	0.027** (0.012)	0.017** (0.009)	0.023*** (0.008)	0.033*** (0.008)	-0.001 (0.012)	0.003 (0.010)
Local population	0.001 (0.002)	0.002 (0.001)	0.002 (0.002)	0.002 (0.002)	0.003* (0.002)	0.004** (0.001)	0.002 (0.002)	-0.004* (0.002)	-0.001 (0.002)
Observations	37,769	39,470	38,800	17,973	37,049	38,242	38,086	19,744	38,586
R-squared	0.116	0.271	0.253	0.305	0.250	0.208	0.198	0.175	0.188

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. OLS regressions. All regressions include region \times round fixed effects and a constant term. Except *age*, *past battles*, *past social conflicts*, *past social conflicts* repressed by the government, *distance to the coast*, and *local population*, all variables are dummy variables. The reference category for *white*, *mixed*, and *other* is "black". The reference category for education's levels is "no formal education". The reference category for employment status is "inactive". Variables *distance to the coast*, and *local population* are used in logarithm.

Table 6.8: Effect of recent social conflicts on trust in leaders and institutions, 5 kilometers radius.

Depent variables in columns' heads.									
	(1) Trust in Opp. party	(2) Trust in President	(3) Trust in Ruling party	(4) Trust in Army	(5) Trust in Electoral comm.	(6) Trust in Parliament	(7) Trust in Local gov.	(8) Trust in Trad. leaders	(9) National Feeling
Social conflicts	0.038*** (0.012)	-0.080*** (0.012)	-0.051*** (0.012)	-0.015 (0.015)	-0.048*** (0.012)	-0.009 (0.012)	-0.017 (0.011)	0.011 (0.025)	-0.017 (0.014)
Observations	37,769	39,470	38,800	17,973	37,049	38,242	38,086	19,744	38,586
R-squared	0.116	0.272	0.253	0.305	0.250	0.208	0.198	0.175	0.188
	(10) Trust in Opp. party	(11) Trust in President	(12) Trust in Ruling party	(13) Trust in Army	(14) Trust in Electoral comm.	(15) Trust in Parliament	(16) Trust in Local gov.	(17) Trust in Trad. leaders	(18) National Feeling
Social conflicts repressed by the gov.	0.128** (0.059)	-0.242*** (0.064)	-0.116* (0.065)	-0.320*** (0.105)	-0.184*** (0.064)	-0.061 (0.062)	-0.102* (0.057)	0.085 (0.104)	-0.171** (0.079)
Observations	37,769	39,470	38,800	17,973	37,049	38,242	38,086	19,744	38,586
R-squared	0.116	0.271	0.253	0.306	0.250	0.208	0.198	0.175	0.188

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. All regressions include region \times round fixed effects and a constant term. The following covariates are also included: age gender, a dummy equal to 1 if the respondent is household head, dummies for race and religion, a dummy equal to 1 if housing is rural, dummies for education level and employment status, dummies equal to 1 if the respondent belong to the main or the second ethnic group in country or region, past battles and social conflicts in a 5 kilometers radius, the (log of) the distance to the coast, and the (log of) population in a 5 kilometers radius. *Social conflicts* is the number of social conflicts in a 5 kilometers radius over the month immediately preceding the interview. *Social conflicts repressed by the government* include only events repressed by the government. See the text for the definition of dependent variables.

Table 6.9: Effect of recent social conflicts on trust in leaders and institutions, 10 kilometers radius.

Depent variables in columns' heads.									
	(1) Trust in Opp. party	(2) Trust in President	(3) Trust in Ruling party	(4) Trust in Army	(5) Trust in Electoral comm.	(6) Trust in Parliament	(7) Trust in Local gov.	(8) Trust in Trad. leaders	(9) National Feeling
Social conflicts	0.034*** (0.011)	-0.075*** (0.011)	-0.043*** (0.012)	-0.020 (0.014)	-0.044*** (0.011)	-0.010 (0.011)	-0.017 (0.011)	0.014 (0.024)	-0.016 (0.013)
Observations	37,769	39,470	38,800	17,973	37,049	38,242	38,086	19,744	38,586
R-squared	0.116	0.272	0.253	0.305	0.250	0.208	0.198	0.175	0.188
	(10) Trust in Opp. party	(11) Trust in President	(12) Trust in Ruling party	(13) Trust in Army	(14) Trust in Electoral comm.	(15) Trust in Parliament	(16) Trust in Local gov.	(17) Trust in Trad. leaders	(18) National Feeling
Social conflicts repressed by the gov.	0.090* (0.051)	-0.160*** (0.054)	-0.050 (0.055)	-0.271*** (0.093)	-0.125** (0.053)	-0.016 (0.051)	-0.082* (0.048)	0.092 (0.095)	-0.160*** (0.071)
Observations	37,769	39,470	38,800	17,973	37,049	38,242	38,086	19,744	38,586
R-squared	0.116	0.271	0.253	0.306	0.250	0.208	0.198	0.175	0.188

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. OLS regressions. All regressions include region \times round fixed effects and a constant term. The following covariates are also included: age gender, a dummy equal to 1 if the respondent is household head, dummies for race and religion, a dummy equal to 1 if housing is rural, dummies for education level and employment status, dummies equal to 1 if the respondent belong to the main or the second ethnic group in country or region, past battles and social conflicts in a 10 kilometers radius, the (log of) the distance to the coast, and the (log of) population in a 10 kilometers radius. *Social conflicts* is the number of social conflicts in a 10 kilometers radius over the month immediately preceding the interview. *Social conflicts repressed by the government* include only events repressed by the government. See the text for the definition of dependent variables.

Table 6.10: Effect of recent social conflicts on trust in leaders and institutions, 40 kilometers radius.

Dependent variables in columns' heads.									
	(1) Trust in Opp. party	(2) Trust in President	(3) Trust in Ruling party	(4) Trust in Army	(5) Trust in Electoral comm.	(6) Trust in Parliament	(7) Trust in Local gov.	(8) Trust in Trad. leaders	(9) Trust in National Feeling
Social conflicts	0.036*** (0.009)	-0.065*** (0.009)	-0.045*** (0.009)	-0.007 (0.011)	-0.052*** (0.009)	-0.028*** (0.009)	-0.019** (0.009)	-0.002 (0.019)	-0.000 (0.010)
Observations	37,769	39,470	38,800	17,973	37,049	38,242	38,086	19,744	38,586
R-squared	0.116	0.272	0.254	0.305	0.251	0.208	0.198	0.174	0.188
	(10) Trust in Opp. party	(11) Trust in President	(12) Trust in Ruling party	(13) Trust in Army	(14) Trust in Electoral comm.	(15) Trust in Parliament	(16) Trust in Local gov.	(17) Trust in Trad. leaders	(18) Trust in National Feeling
Social conflicts repressed by the gov.	0.058* (0.033)	-0.172*** (0.034)	-0.136*** (0.034)	-0.123*** (0.042)	-0.155*** (0.032)	-0.121*** (0.031)	-0.093*** (0.031)	0.065 (0.057)	-0.098** (0.046)
Observations	37,769	39,470	38,800	17,973	37,049	38,242	38,086	19,744	38,586
R-squared	0.116	0.272	0.254	0.305	0.250	0.208	0.198	0.175	0.188

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. All regressions include region \times round fixed effects and a constant term. The following covariates are also included: age gender, a dummy equal to 1 if the respondent is household head, dummies for race and religion, a dummy equal to 1 if housing is rural, dummies for education level and employment status, dummies equal to 1 if the respondent belong to the main or the second ethnic group in country or region, past battles and social conflicts in a 40 kilometers radius, the (log of) the distance to the coast, and the (log of) population in a 40 kilometers radius. *Social conflicts* is the number of social conflicts in a 40 kilometers radius over the month immediately preceding the interview. *Social conflicts repressed by the government* include only events repressed by the government. See the text for the definition of dependent variables.

Table 6.11: Effect of recent social conflicts on trust in leaders and institutions, depending on being member of the main ethnic group in region.

Depent variables in columns' heads.

Panel A: Individuals in the main ethnic group in region

	(1) Trust in Opp. party	(2) Trust in President	(3) Trust in Ruling party	(4) Trust in Army	(5) Trust in Electoral comm.	(6) Trust in Parliament	(7) Trust in Local gov.	(8) Trust in Trad. leaders	(9) National Feeling
Social conflicts	0.021 (0.015)	-0.059*** (0.016)	-0.028 (0.017)	0.008 (0.022)	-0.047*** (0.016)	-0.006 (0.016)	-0.010 (0.015)	0.027 (0.030)	-0.020 (0.017)
Social conflicts repressed by the gov.	0.020 (0.069)	-0.248*** (0.072)	-0.153*** (0.078)	-0.149 (0.142)	-0.171** (0.073)	-0.038 (0.069)	-0.126* (0.070)	0.104 (0.091)	-0.151** (0.076)

Panel B: Individuals not in the main ethnic group in region

	(1) Trust in Opp. party	(2) Trust in President	(3) Trust in Ruling party	(4) Trust in Army	(5) Trust in Electoral comm.	(6) Trust in Parliament	(7) Trust in Local gov.	(8) Trust in Trad. leaders	(9) National Feeling
Social conflicts	0.042*** (0.015)	-0.065*** (0.015)	-0.049*** (0.015)	-0.007 (0.018)	-0.051*** (0.015)	-0.018 (0.015)	-0.018 (0.015)	-0.003 (0.039)	-0.020 (0.019)
Social conflicts repressed by the gov.	0.129** (0.066)	-0.147** (0.070)	-0.096 (0.065)	-0.280** (0.121)	-0.148** (0.065)	-0.060 (0.063)	-0.067 (0.061)	0.044 (0.150)	-0.266** (0.111)

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. OLS regressions. Each cell presents the coefficient of recent conflicts from a single regression. All regressions include region \times round fixed effects and a constant term. The following covariates are also included: age gender, a dummy equal to 1 if the respondent is household head, dummies for race and religion, a dummy equal to 1 if housing is rural, dummies for education level and employment status, past battles and social conflicts in a 20 kilometers radius, the (log of) the distance to the coast, and the (log of) population in a 20 kilometers radius. *Social conflicts* is the number of social conflicts in a 20 kilometers radius over the month immediately preceding the interview. *Social conflicts repressed by the government* include only events repressed by the government. See the text for the definition of dependent variables. Panel A includes only respondents who belong to the main ethnic group in the region. Panel B includes only respondents who do not belong to the main ethnic group in the region.

Table 6.12: Effect of recent social conflicts on trust in leaders and institutions, depending on local ethnic fractionalization.

Dependent variables in columns' heads.									
Panel A: More fractionalized places									
	(1) Trust in Opp. party	(2) Trust in President	(3) Trust in Ruling party	(4) Trust in Army	(5) Trust in Electoral comm.	(6) Trust in Parliament	(7) Trust in Local gov.	(8) Trust in Trad. leaders	(9) National Feeling
Social conflicts	0.028** (0.014)	-0.076*** (0.015)	-0.040*** (0.016)	0.039** (0.019)	-0.016 (0.015)	-0.008 (0.015)	0.001 (0.014)	0.011 (0.025)	-0.032* (0.017)
Social conflicts repressed by the gov.	0.051 (0.058)	-0.078 (0.060)	0.007 (0.060)	-0.091 (0.130)	0.009 (0.059)	0.030 (0.056)	-0.012 (0.054)	0.073 (0.104)	-0.286*** (0.097)
Panel B: Less fractionalized places									
	(1) Trust in Oppo. party	(2) Trust in President	(3) Trust in Ruling party	(4) Trust in Army	(5) Trust in Electoral comm.	(6) Trust in Parliament	(7) Trust in Local gov.	(8) Trust in Trad. leaders	(9) National Feeling
Social conflicts	0.035** (0.017)	-0.058*** (0.017)	-0.036** (0.018)	-0.013 (0.023)	-0.078*** (0.017)	-0.021 (0.017)	-0.031* (0.017)	0.167*** (0.060)	-0.014 (0.020)
Social conflicts repressed by the gov.	0.061 (0.082)	-0.278*** (0.079)	-0.214** (0.084)	-0.273* (0.142)	-0.319*** (0.083)	-0.172** (0.079)	-0.189** (0.081)	0.271** (0.126)	-0.157* (0.094)

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Robust standard errors in parentheses. OLS regressions. Each cell presents the coefficient of recent conflicts from a single regression. All regressions include region \times round fixed effects and a constant term. The following covariates are also included: age gender, a dummy equal to 1 if the respondent is household head, dummies for race and religion, a dummy equal to 1 if housing is rural, dummies for education level and employment status, dummies equal to 1 if the respondent belong to the main or the second ethnic group in country or region, past battles and social conflicts in a 20 kilometers radius, the (log of) the distance to the coast, and the (log of) population in a 20 kilometers radius. *Social conflicts* is the number of social conflicts in a 20 kilometers radius over the month immediately preceding the interview. *Social conflicts repressed by the government* include only events repressed by the government. See the text for the definition of dependent variables. Panel **A** includes only respondents who live in a place that is characterized by a fractionalization index above the median. Panel **B** includes only respondents who live in a place that is characterized by a fractionalization index below the median. For each place, the fractionalization index is constructed following Alesina et al. (2003).

Table 6.13: Distribution of successful matching processes at the place level.

	Places	Percentage
Geonames.org	1,615	67.94
Geonames.org (2)	467	19.65
Hand requests on Geonames.org	87	3.66
Hand requests on different websites	126	5.30
Hand requests on different websites (2)	66	2.78
Hand corrections	16	0.67
Total	2,377	100.00

Geonames.org refers to places located using data from *Geonames.org*. **Geonames.org (2)** refers to places located using data from *Geonames.org* after names corrections. **Hand requests on Geonames.org** refers to places located using information on *GeoNames.org* taken over from *Wikipedia.org*. **Hand requests on different websites** refers to places located using *MapAtlas.org*, *iTouchMap.com*, and *Fallingrain.com*. **Hand requests on different websites (2)** refers to places located at the region level using the latter method. **Hand corrections** refers to places whose location was corrected because of proximity from countries' boundaries. See the text for more details.

Table 6.14: Distribution of successful matching processes at the respondent level.

	Respondents	Percentage
Geonames.org	40,962	77.13
Geonames.org (2)	8,837	16.64
Hand requests on Geonames.org	892	1.68
Hand requests on different websites	1,558	2.93
Hand requests on different websites (2)	561	1.06
Hand corrections	300	0.56
Total	53,110	100.00

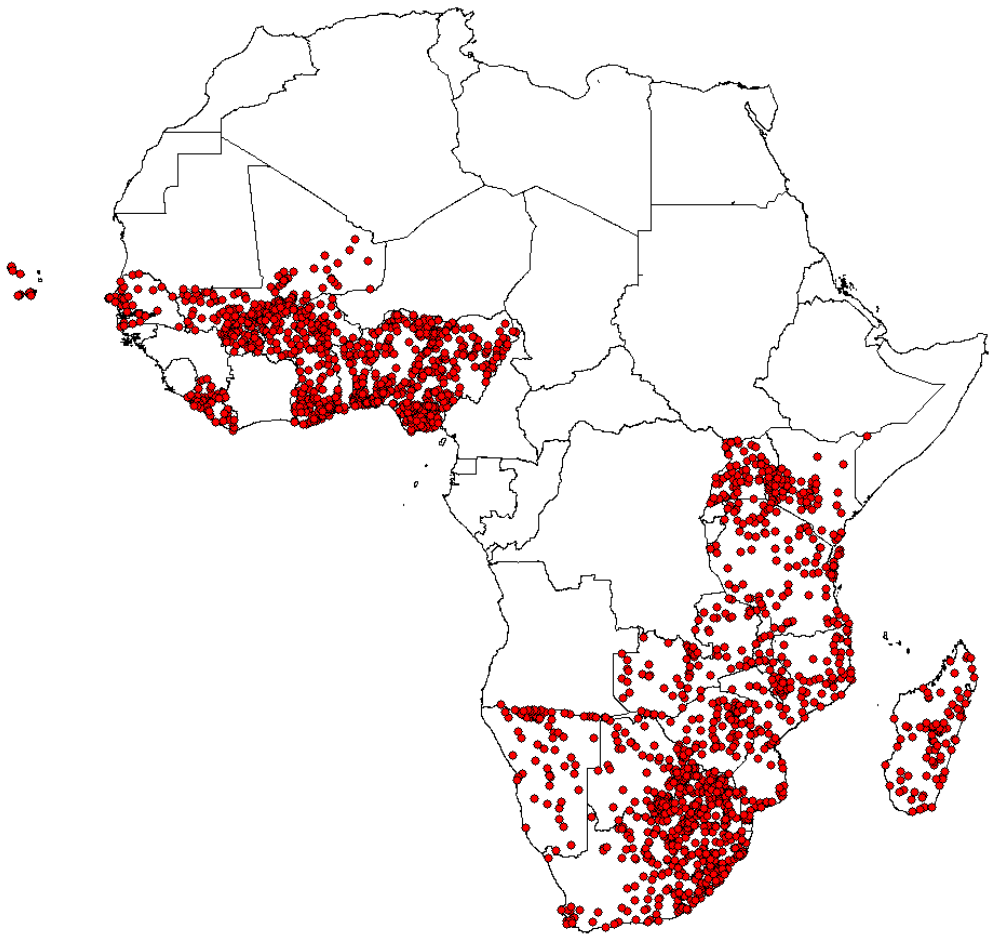
See footnote of table 6.13.

Table 6.15: Distribution of successful matching processes at the place level, by country.

	Geonames.org	Geonames.org (2)	Hand requests on Geonames.org	Hand requests on different websites	Hand requests on different websites (2)	Hand corrections	Total by country
Benin	76	5	2				83
Botswana	73	27	10	19	9	2	140
Burkina Faso	61	9		3			73
Cape Verde	18	9					27
Ghana	65	63		2			130
Kenya	62	6				3	71
Lesotho	12			1			13
Liberia	23	16	2	11	2		54
Madagascar	76	21					97
Malawi	27			1			28
Mali	119	57	33	7	17	1	234
Mozambique	91	25		2	1		119
Namibia	68	28	1	6	2	3	108
Nigeria	273	85	4	21	22	1	406
Senegal	35	8				1	44
South Africa	288	52	34	42	11	3	430
Tanzania	73	31		8	2		114
Uganda	58	1					59
Zambia	73	1		1		1	76
Zimbabwe	44	23	1	2		1	71

See footnote of table 6.13.

Figure 6.2: Location of respondents interviewed in rounds 3 and 4 of the Afrobarometer.



Chapter 7

General conclusion

As emphasized in the introduction, the interest for the cultural hypothesis has been flourishing over the recent years in economics. The different traits shared by populations may explain differences in economic performance. Recent advances uncovered the cultural roots of trust and of the support for redistribution. Both sets of values appear to have heavy consequences on the choices of economic organization and the efficiency of economic systems. The chapters of this thesis intended to contribute to this literature by giving additional answers to its two fundamental questions. First, what are the consequences of differences in values on economic performance? Second, where do these (specific) values come from?

In chapter 2 of this thesis, I depart from the standard approach emphasizing the correlation between economic development and norms of trust by investigating how trust may mitigate macroeconomic volatility. I show that there is a strong negative and causal relationship running from trust to macroeconomic volatility. As expected, this relationship seems to transit through private investment. Investment is indeed an economic situation in which trust is very likely to kick in as it involves uncertainty over time and over actions taken by partners. Credence to this approach is given by chapter 3 where I generalize the already documented positive relationship between trust and financial development. I extend this finding to within-country time-varying measure of trust and financial development. A joint interpretation of

results presented in these two chapter is thus that trust may stabilize investment by entering into the microeconomic transactions, but also by making financial resources more easily available.

The question of the impact of trust and civic norms on institutional organization is explicitly tackled in chapter 4. Any social insurance system necessitates tax compliance to be financed. The model and empirical results presented in this chapter rationalize the scope and the generosity of the welfare state as a function of trust and civiness of citizens. We uncover two mechanisms that explain the support for the welfare state. The first one is grounded on trust. People who trust others are less likely to think that they will unduly use the system. Thus, they agree on a large and generous welfare state. The second one is grounded on civiness, i.e. on opportunistic behavior regarding social benefits and taxes. People who are uncivic are more likely to support the welfare state as they benefit from it more frequently and contribute less to the system's funding. Here again, trust kicks in when people accept to pay a cost without having the full control over the behavior of other members of the society.

A distant look at these three first chapters allow to sketch the question of the interplay between institutions and social capital in economics. Although some academic papers have come near this question, it has not yet been tackled directly and frontally by the literature. Lots of papers provide empirical and theoretical evidence that norms (e.g. trust) act on top of institutions, others highlight that different norms of cooperation allow societies to set up different institutions. Nevertheless, the question of whether norms can overcome problems created by the absence of the partial inefficiency of institutions remains central. This thesis does not propose any answer to this question. Yet, I would interpret the results presented here as suggesting that trust acts both through institutions' building and on top of them. To be precise, I do not consider that norms such as trust might fully compensate the absence of organized institutions. For example, it is hardly believable that even the highest possible level of trust may facilitate financial transactions as much as an organized market and codified property rights. I would rather consider that trust acts in two conceptually distinct steps in economic activ-

ity. First, it allows to build institutions that will frame everyone's behavior. But, as such institutions may only arise through a collective agreement on a specific issue, they may lead to some compromises. This is where trust steps again in economic activity. Once the society has agreed on formal institutions, there is still room for trust to facilitate relations between individuals. Using again the example of financial development, trust might still play a role between individual players conditional on a given set of formal institutions. This room is in fact created by the very nature of formal collective agreements that by essence incomplete. This being said, the question of whether norms of cooperation and institutions are substitutable or complementary factors still deserves further investigation.

Chapter 5 contributes to the literature investigating the persistence of values across time. Using both differences across space and time in mineral resources discoveries in the United States, this chapter shows that values oriented toward individual self-responsibility and opposition to public intervention in the economy are more likely to show up in states characterized by large mineral resources abundance. These findings illustrate how values linked to the myth of early mining have been transmitted over time within the population and still shape attitudes toward social organization. This illustrates the important weight that culture imposes on social orientations.

Finally, a slightly different approach is adopted in chapter 6. This chapter departs from others by focusing on short-term variations of trust in leaders and institutions following social conflicts. A careful analysis of geo-localized African data reveals that trust in leaders and institutions is highly sensitive to signals represented by recent riots or protests. In other words, beliefs in cooperation at the national level are found to be very fragile, what may explain auto-correlation pattern of social conflicts that what is often observed or claimed.

In my opinion, these two chapters call for urgent systematic investigation of the determinants of cultural norms such as trust, civicness, and the inclination toward collective responsibility. Even if it was desirable, it is hardly believable that it would be possible to definitely show that norms are inherited or created by the current environment given the interplay between them

and the social environment. However, lots remains to be done to analyze evidence of a large number of studies and try to assess the question that is finally central: what is the adjustment speed of norms and beliefs? Answering to this question would also lead to ask whether it is possible to shape economically relevant norms and beliefs through education against current norms? If yes, would these new norms been durable? Positive answers to these questions would convey an optimistic message: even if norms are partially inherited, inadequate norms and beliefs may be oriented toward the direction that favors economic development. On the opposite, negative answers would imply that societies that inherited inadequate norms would have to deal with it during a fairly long time.

Points stressed in this conclusion finally point back to the core questions presented in the introduction of the thesis about the fundamental causes of economic performance. I modestly hope that works presented in this thesis will contribute to understand further how cultural norms and beliefs act in economics, and that this conclusion allow the reader to get insight into future directions of this literature.

Chapitre 7

Conclusion générale

Comme je l'ai souligné en introduction, l'intérêt pour l'hypothèse culturelle en économie s'est accru au cours des dernières années. Elle repose sur l'idée que les différents traits partagés au sein de différentes populations peuvent expliquer les différences observées en matière de performance économique. De récents travaux ont mis en lumière les racines culturelles de la confiance et de la demande de redistribution. Il a été par ailleurs montré que ces deux ensembles de valeurs pèsent fortement sur les choix en matière d'organisation sociale et déterminent en partie l'efficacité des différents systèmes économiques. Les chapitres de cette thèse ont tenté de contribuer à cette littérature en apportant de nouvelles réponses aux deux questions fondamentales qu'elle se pose. Tout d'abord, quelles sont les conséquences des valeurs sur l'activité économique ? Ensuite, d'où ces valeurs proviennent-elles ?

Le chapitre 2 de cette thèse se distingue de l'approche la plus répandue, qui a essentiellement étudié la relation entre confiance et développement économique, et s'intéresse au lien entre confiance et volatilité économique. L'analyse montre qu'il existe une forte relation causale et négative entre ces deux grandeurs. Comme on pouvait s'y attendre, cette relation semble passer par l'investissement privé. Les activités d'investissement constituent en effet des situations dans lesquelles la confiance est fortement susceptible de jouer un rôle car elles portent en elles des incertitudes concernant l'avenir et les actions entreprises par les partenaires. Cette interprétation est dans une large

mesure renforcée par les résultats présentés dans le chapitre 3. J'y généralise la relation déjà connue entre confiance et développement financier. Plus précisément, mes résultats permettent d'étendre cette relation à des mesures de la confiance et du développement financier qui varient au cours du temps au sein d'un même pays. La conclusion de ces deux chapitres est donc que la confiance peut stabiliser l'investissement non seulement en intervenant dans les relations entre individus, mais aussi en rendant l'accès aux ressources financières plus aisé.

La question de l'effet de la confiance sur l'organisation institutionnelle est explicitement abordée dans le chapitre 4. Tout système d'assurance sociale nécessite un certain degré d'acceptation de l'impôt pour assurer son financement. Le modèle et les résultats empiriques présentés dans ce chapitre permettent de rationaliser l'étendue et la générosité de l'état-providence et d'en faire une fonction de la confiance et du civisme des citoyens. Nous mettons en lumière deux mécanismes qui expliquent le soutien accordé à l'état-providence. Le premier repose sur la confiance. Les gens qui font confiance aux autres sont moins susceptibles de penser que ceux-ci vont utiliser le système de façon indue. Ils sont donc enclins à soutenir un état-providence étendu et généreux. Le second mécanisme est fondé sur le civisme, i.e. sur les comportements opportunistes face aux prestations sociales et aux impôts. Les gens qui ne sont pas civiques sont davantage susceptibles de soutenir l'état-providence car ils bénéficient plus fréquemment des prestations sociales et contribuent moins au financement du système. Dans ce cadre conceptuel, la confiance joue à nouveau un rôle lorsque les individus acceptent de supporter un coût sans pour autant contrôler totalement le comportement des autres membres de la société.

Derrière les éléments présentés dans ces trois premiers chapitres s'esquisse la question des interactions entre institutions et capital social en économie. De nombreux travaux se sont intéressés à cette question sous une forme ou une autre, mais elle n'a pas encore été abordée de façon frontale et directe par la littérature. Nombreux sont les travaux empiriques et théoriques montrant que les normes de coopération (comme la confiance par exemple) ont un effet sur l'activité économique en sus de celui des institutions. D'autres insistent

sur l'idée que différentes normes permettent aux sociétés de mettre en place différentes organisations institutionnelles. Néanmoins, la question de savoir si les normes de coopération peuvent suffire à surmonter les problèmes induits par l'absence ou l'inadéquation d'institutions formelles reste entière. Cette thèse ne propose pas de réponse à cette question. J'interprète cependant les éléments qui y sont présentés comme suggérant que la confiance agit à la fois au travers de la mise en place des institutions et indépendamment de celles-ci. Plus précisément, je ne pense pas que les normes de coopération telles que la confiance peuvent complètement compenser l'absence d'institutions formelles. Par exemple, il est peu crédible que la confiance, aussi forte soit-elle, puisse faciliter les transactions financières autant que le fait un marché organisé et un ensemble codifié de droits de propriété. Je suis bien davantage enclin à penser que la confiance joue sur l'activité économique de deux façons conceptuellement distinctes. Elle permet tout d'abord de construire des institutions qui vont encadrer les actions des différents membres de la société. Mais de telles institutions sont par essence le produit d'un accord collectif, il est donc probable qu'elles prennent la forme d'un compromis. C'est ici que la confiance se manifeste à nouveau dans l'activité économique. Une fois que la société s'est mise d'accord sur un ensemble d'institutions formelles, il reste un espace dans lequel la confiance peut faciliter les relations entre individus. Pour reprendre à nouveau l'exemple du développement financier, la confiance peut toujours jouer un rôle entre deux acteurs qui évoluent dans un cadre formel fixé. Cet espace résulte en fait de la nature même des accords collectifs formels qui sont intrinsèquement incomplets. Cela étant dit, la question de savoir si les normes de coopération et les institutions sont, du point de vue "technologique", des facteurs substituables ou complémentaires mérite une étude plus approfondie.

Le chapitre 5 contribue quant à lui à la littérature s'intéressant à la persistance des valeurs au cours du temps. L'utilisation de la distribution des découvertes en ressources minérales au cours du temps et dans l'espace aux États-Unis permet de montrer que les valeurs favorables à la responsabilité individuelle et défavorables à l'intervention publique dans l'activité économique sont plus répandues dans les états généreusement dotés en minerais.

Ces résultats illustrent la façon dont les valeurs associées aux mythes environnant les premiers pas de l'activité minière aux États-Unis se sont transmises au cours du temps au sein de la population et continuent à modeler les opinions concernant l'organisation de la société. C'est le poids important que la culture fait peser sur l'organisation sociale qui est ici mis une nouvelle fois en lumière.

Pour finir, le chapitre 6 adopte une approche radicalement différente. Ce chapitre se distingue des autres dans la mesure où il s'intéresse aux variations de court terme de la confiance envers les dirigeants et les institutions à la suite de conflits sociaux. L'analyse y est faite à l'aide de données géographiques très précises. Elle montre que la confiance envers les dirigeants et les institutions est très sensible aux signaux que représentent les manifestations et les émeutes. En d'autres termes, les croyances en la coopération au niveau national sont très fragiles. Ceci peut notamment expliquer la structure auto-corrélée des conflits sociaux qui est souvent observée ou postulée.

Les différents points abordés par ces deux chapitres mettent en exergue le besoin pressant d'études systématiques et ambitieuses des déterminants des normes culturelles telles que la confiance, le civisme ou la demande d'intervention publique dans l'économie. Il est cependant important de noter que même si cela était désirable, il est peu vraisemblable qu'il soit possible de trancher définitivement en faveur de normes héritées ou modelées par l'environnement immédiat dans lequel les individus évoluent. Ceci en raison de l'interdépendance consubstantielle entre normes et environnement qui se façonnent mutuellement. Néanmoins, de nombreux progrès peuvent encore être faits dans notre compréhension de ces normes en analysant les nombreux faits observables et en essayant de répondre à la question qui est finalement centrale : quelle est la vitesse d'évolution des normes et des croyances ? Répondre à cette question revient également à se demander s'il est possible d'influencer les normes qui ont une utilité économique au travers de l'éducation et en regard des normes en vigueur. Si oui, ces nouvelles normes sont-elles durables ? Des réponses positives à ces questions seraient porteuses d'un message optimiste : même si les normes sont en partie héritées du passé, des croyances inadéquates peuvent être changées de manière à favoriser l'activité écono-

mique. À l'inverse, des réponses négatives impliqueraient que les sociétés ayant hérité de normes inadéquates doivent composer avec elles durant des périodes extrêmement longues.

Les différents points sur lesquels cette conclusion a mis l'accent pointent au final en direction de la question initiale évoquée en introduction de cette thèse : quelles sont les causes fondamentales de la performance économique ? J'espère modestement que les différents travaux présentés dans cette thèse aideront à mieux comprendre comment les normes et les croyances jouent sur l'activité économique, et que cette conclusion aura permis au lecteur de saisir les orientations futures de cette littérature.

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Summary

Social capital is made from all values that push individuals to cooperate, to act with reciprocity or empathy in the absence of any formal control mechanism. Social capital manifests itself through trust, but also through opinions toward collective rather than individual responsibility in economic activity. This thesis contributes to the economic literature interested in the role of norms by giving additional answers to its two fundamental questions. First, what are the consequences of differences in values on economic performance? Second, where do these values come from? The first two chapters document the relationship between trust on the one hand, and macroeconomic volatility and financial development on the other hand. It is shown that higher trust reduces macroeconomic volatility and fosters financial development across space – i.e. between countries – and time – i.e. over time within the same country. The third chapter rationalizes and documents a non-monotonic relationship between norms of cooperation and the generosity of the welfare state. It is shown that large and generous welfare states can be sustained both with high or low levels of trust, provided that a low level of trust is compensated with a large share of uncivic individuals who unduly use the social system. The question of the formation of values is tackled in the two last chapters. The fourth one documents the long-term persistence of values associated with the funding myths of mining activity in the United States: individual self-responsibility and opposition to public intervention in the economy. The last chapter focuses on short term changes of trust in institutions among Africans in the aftermath of riots or protests. Trust in leaders and institutions is found to be very downward sensitive.

KEYWORDS: Social capital, trust, redistribution, civism, volatility, welfare state, mineral resources, conflicts.

Résumé

Le capital social est l'ensemble des valeurs qui poussent les individus à coopérer et à agir les uns envers les autres avec réciprocité et empathie en l'absence de tout mécanisme de contrôle formel. La présence de capital social peut se manifester au travers de la confiance, mais aussi par le biais d'opinions favorables à la responsabilité collective plutôt qu'individuelle en ce qui concerne la sécurité économique. Cette thèse contribue à la littérature s'intéressant au rôle de telles normes en économie en amenant de nouvelles réponses aux deux questions fondamentales qu'elle se pose. Tout d'abord, quelles sont les conséquences des différences en matière de valeurs sur l'activité économique ? Ensuite, qu'est-ce qui détermine l'existence ou l'absence de telles valeurs ? Les deux premiers chapitres s'intéressent à la relation entre la confiance d'une part, et la volatilité macroéconomique et le développement financier d'autre part. L'analyse conduite montre que la confiance réduit la volatilité économique et favorise le développement financier tant dans l'espace – c'est-à-dire entre pays – que dans le temps – c'est-à-dire au sein d'un même pays au cours du temps. Le troisième chapitre rationalise et documente une relation non-monotone entre normes de coopération et générosité de l'état-providence. Des états-providence généreux peuvent exister à la fois dans des pays dotés d'un fort niveau de confiance et dans des pays où la confiance est plus faible si les citoyens de ces derniers sont nombreux à ne pas être civiques et à vouloir profiter indûment du système d'assurance sociale. La question de l'origine des valeurs est abordée dans les deux derniers chapitres. Le quatrième s'intéresse à la persistance des valeurs étroitement liées au mythe des débuts de l'industrie minière aux États-Unis : la responsabilité individuelle et l'opposition à l'intervention publique. Le dernier chapitre se penche sur les changements de court terme de la confiance envers les institutions en Afrique à la suite d'émeutes ou de manifestations. La confiance envers les dirigeants et les institutions apparaît très fragile.

MOTS-CLÉS : Capital social, confiance, redistribution, civisme, volatilité, état-providence, ressources minérales, conflits.