# Minimum wage: the price of distrust

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**Abstract**

Our paper documents that minimum wage is higher and union density is lower in countries where individuals distrust each other. We first provide theoretical foundations for these correlations by arguing that minimum wage regulation is used when attitudes towards social cooperation are too weak to sustain powerful labor unions that may improve efficiency through collective bargaining. From this point of view, minimum wage is the price of distrust. Then, we develop an original empirical approach to show that cross-country differences in attitudes cause, at least in the short run, differences in union membership, minimum wage and labor market performance in OECD countries over the period 1975-2002.

KEYWORDS**:** Minimum wage, labor union, trust.

JEL CODES: J52, J53, J80, Z13.

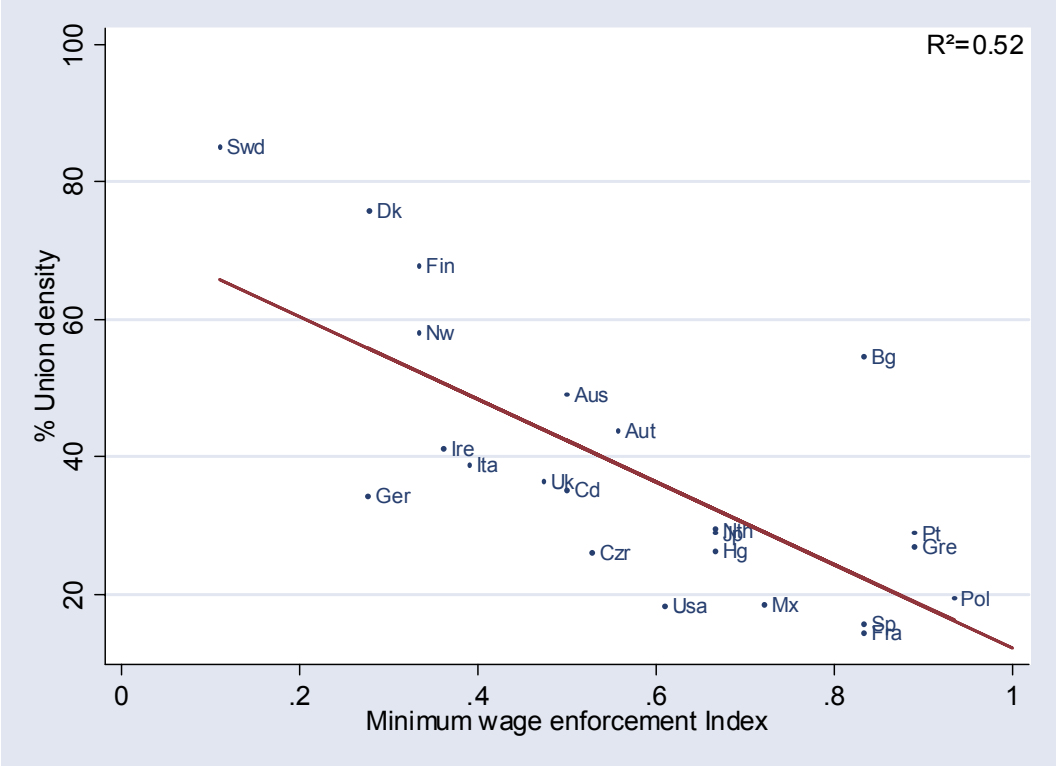


Figure 1: Union density and the degree of enforcement of the minimum wage. Period 1980-2000. Source: OECD and ILO (see appendix).

# 1 Introduction

Why union density and minimum wage legislation are so different across OCDE countries? Why is union density low in countries in which the degree of enforcement of the minimum wage is high as shown by Figure 1?[1] Although an overwhelming literature has stressed the key role played by these wage-setting institutions on labor market performance, little effort has been devoted so far to the documentation and the explanation of the stylized facts displayed in Figure 1. Our paper aims at filling this gap.

Regarding minimum wage legislation first, the political economic literature has so far mainly stressed the political power of incumbent employees to document the observed negative correlation between right-wing governments and the growth rate of the minimum wage.[2] But this prediction is of little help for understanding the cross-country heterogeneity of minimum wage

[1] The indicator for minimum wage enforcement is a composite index measuring the extent to which the legislation is binding. It includes the existence of a legal statutory minimum wage, the dispersion of wage floors across the country, and the provision of sub-minimum wages. See the appendix A.2 for a more detailed description.

[2] See Sobel (1999), Saint-Paul (2001), Bacache-Beauvalet and Lehmann (2005).

legislation because the political influence of incumbent employees has been so far hardly comparable in an international perspective. Moreover most of this analysis is only based on the level of the minimum wage and leaves unexplained why some countries rely on bargained wage floor between unions instead of implementing statutory minimum wage.[3]

The explanation of the observed cross country variation in union membership raises the same concerns. In particular, it is difficult to understand why union density has declined by at least ten percentage points since 1970 in some countries like France, while it has remained constant or even increased in other countries such as Nordic ones (see Blanchflower, 2006). The empirical literature has so far stressed the influence of large trends in unemployment rates, demography, product market competition or in the composition of employment which shifted from highly unionized to traditionally non-union sectors and workers (Boeri et al., 2001, Pencavel, 2005, Blanchflower, 2006). But these variables can be thought as much as consequences as causes of the evolution of union membership. Moreover, the literature is mute regarding the observed cross-country trade-off between union membership and minimum wage legislation.

Our paper sheds light on this issue: we argue that the negative international correlation between minimum wage legislation and union density is rooted in the cross-country heterogeneity of attitudes towards social cooperation. Our benchmark explanation is straightforward: as stressed by Akerlof (1980) and many others,[4] labor unions can counteract the potential monopsony power of employers more easily in societies where trust and civic cooperation are strong enough to insure involvement in collective action. Conversely, the political demand for a statutory minimum wage is expected to be higher when attitudes towards social cooperation[5] do not allow workers to sustain powerful trade unions. At first sight, empirical evidence suggests that this explanation is relevant. Figure 2 shows that minimum wage legislation is less stringent in countries in which individuals reply more frequently that "most people can be trusted". Figure 3 also shows that this attitude is positively correlated with union density.

The paper provides an explanation to these correlations and explores potential causality going from attitudes towards social cooperation to labor market institutions by proceeding in two steps.

The first step analyzes the theoretical channel through which attitudes towards social cooperation on one hand and wage setting institutions on the other hand could interact. For that

[3] Epstein and Nitzan (1999) provide some theoretical ideas on this issue.

[4] In particular, Booth (1985), Booth and Chatterji (1993), Naylor (1989, 1990), Naylor and Cripps (1993), Corneo (1995, 1997).

[5] Attitudes towards social cooperation are closely related to the concept of "social capital" put forward by Putnam (1993, 2000) and Coleman (1990) among many others. For instance, Coleman (1990, p 300) argues that "authority relations, relations of trusts and consensual allocations of rights which establish norms" can be viewed as resources that help individuals to adopt cooperative behavior.

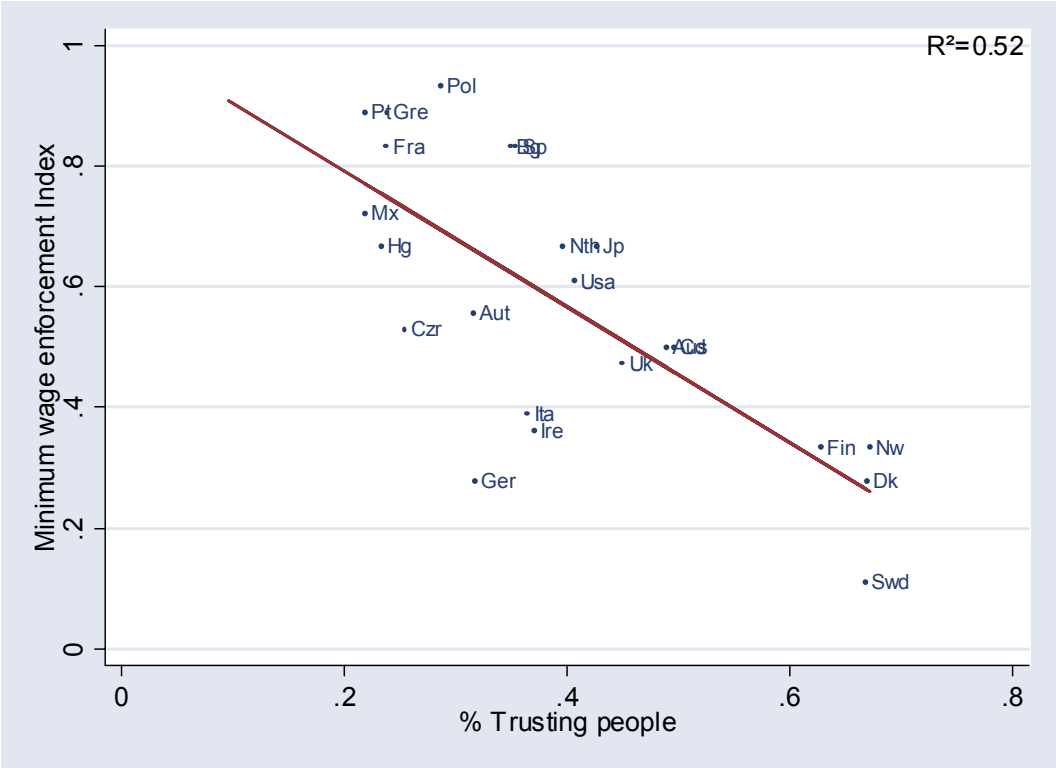


Figure 2: Trust and minimum wage enforcement 1980-2000. Source: World Value Survey and ILO.

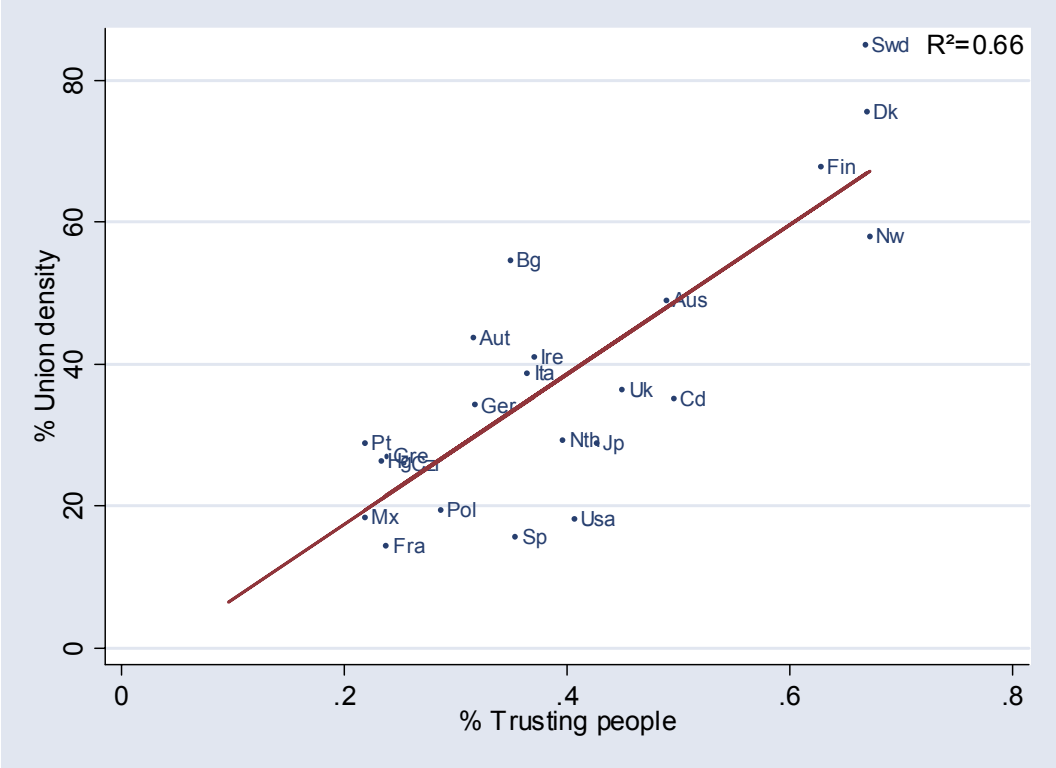


Figure 3: Trust and union density 1980-2000. Source: World Value Survey and OECD.

purpose we lay down a simple political economy model in which a government which can implement a minimum wage is elected and where trade union membership is endogenous. Employers are assumed to have some monopsony power so that both the minimum wage and unionization can be used as a means to counteract the power of the employers on the labor market. Yet union membership is assumed to be more efficient than the minimum wage in lines with the mechanisms put forward by Freeman and Medoff (1984). The efficiency of a union lies in the fact that it favors the choice of a strategy of "voice" instead of "exit", by transmitting complaints, grievances, and demands, with the aim of correcting and improving labor relationships.[6] In this context, minimum wage entails social costs by reducing the incentives to join trade unions and then reduces the possibility to generate gains through collective bargaining. Therefore, it turns out that elections lead to higher minimum wage and lower union density when attitudes towards social cooperations are weak. The theoretical model also sheds some light on the dynamic interactions between social attitudes, minimum wage and union density providing new insights on the dynamics of social attitudes. It shows that if social attitudes act as constraints on the choice of wage-setting institutions in the short run, the former ones are conversely partly shaped by wage-setting institutions in the long-run. For instance, a contemporaneous increase in the statutory minimum wage would reduce incentives to join labor unions and weaken attitudes towards social cooperation in the long run.[7]

The second part of the paper aims at testing the hypothesis and the predictions of the theoretical model.

We stress, by using international individual surveys over the period 1975-2002, that individuals who tend to distrust the fairness of others are more likely to support stringent minimum wage legislations and are conversely less likely to be unionized. These individual attitudes are strongly correlated with country fixed effects, even after controlling for individual socioeconomic characteristics, suggesting that the correlation between social cooperation and preferences over wage-setting institutions is largely driven by national specific feature.

Next, we examine the extent to which attitudes towards social cooperation affect the current wage-setting environment and labor market performances of OECD countries. By analyzing 22 OECD countries over the period 1975-2002, it first turns out that social attitudes are strongly positively correlated with union density and negatively correlated with the stringency of minimum wage legislations. Obviously, the correlation between social attitudes and the design of labor market institutions does not mean that the causal relation goes from social attitudes to

[6] See the survey by Addison and Belfield (2004).

[7] See Benabou and Tirole (2006) for a complementary analysis on the interactions between incentives and prosocial behavior.

labor market institutions. We thus push further the analysis by providing some evidence of such a causal relationship. We show that people who face the same economic environment, by living in the same country, namely the US, have attitudes that are correlated with the country of origin of their ancestors.[8] This correlation allows us to identify the attitudes that are inherited independently of the economic environment. In this context, the correlation between current inherited attitudes of people living in the US and current labor market institutions in the country of origin of their ancestors can be interpreted, with some further restrictions, as a causal relation going from current inherited social attitudes to labor market institutions within each country.[9] This approach allows us to provide evidence that cross-country differences in union membership and minimum wage are shaped, at least in the short run, by differences in attitudes towards social cooperation that change slowly over time. We next extend this identification strategy to show that the cross-country heterogeneity in unemployment rates is significantly influenced by the heterogeneity in inherited national attitudes towards social cooperation.

More broadly, this paper suggests that indicators based on individual attitudes towards social cooperation might provide a better understanding of labor market outcomes than the quantitative indicators of labor market institutions currently used by the literature (Nickell et al., 2005). As stressed recently by Blanchard (2005), aggregate indicators are doing a poor job in explaining the evolution of the employment patterns in OECD countries. By contrast, observed individual attitudes towards social cooperation provide a more comprehensive picture of the ability of a country to reach good outcomes in terms of employment or unemployment (see Blanchard and Philippon, 2004, for a similar analysis applied to strikes). Moreover, the current literature explaining employment patterns by labor market institutions is fraught with a clear endogeneity bias since these institutions have also changed in reaction to the evolution of employment patterns. In contrast, our strategy helps us to get rid of this endogeneity bias by identifying the cultural traits in social cooperation which are not directly affected by contemporaneous institutions and economic environment. Eventually, this line of research offers new perspective for understanding the possibility of labor market reforms. It suggests that in-

[8] The influence of the country of origin on Americans' attitudes towards social cooperation was first stressed in the political science litterature by Rice and Feldman (1997).

[9] To that regard our approach shows that social attitudes are not overdetermined by current institutions. As illustrated by our theoretical model, dynamic interactions between social attitudes and institutions imply that countries can experience very different histories. Some countries can start with good initial attitudes towards social cooperation that depreciate over time, leading ultimately to a decline in union membership compensated by more stringent minimum wage regulations. Conversely some countries can start from bad attitudes towards social cooperation but then converge to a situation with good social attitudes, high union density and no legal minimum wage. This result casts some doubt on current estimation strategies which use initial historical institutions as an instrument for current social attitudes (Tabellini, 2005) or contemporaneous institutions (Acemoglu et al., 2006).

stitutions often blamed to induce poor labor market performance in Continental European and Mediterranean countries are much more the symptoms of the lack of prosocial attitudes rather than the cause of unemployment. This finding calls for a new research agenda on policies which help to forster prosocial behavior.

(It suggests that the lack of social cooperation in Continental European and Mediterranean countries is a constraint which prevents the implementation of institutions that improve labor market performance.)

## 2 Theory

We consider a discrete time economy with infinite horizon in which non-overlapping generations of risk neutral workers live one period and offer one unit of labor. The measure of workers is normalized to one. There are two non storable goods: a numeraire good and labor. Within each period, the sequence of decisions is the following:

1. Individuals vote to elect a government that offers to set a minimum wage $\bar{w} \geq 0$.
2. The government sets the minimum wage.
3. Once the minimum wage is set, workers can decide to join trade unions.
4. Wages are set by employers for non unionized workers and by wage negotiation for unionized workers.

The model is solved backward. We thus start by describing the outcome of wage setting and the decisions to unionize before moving to the choice of the minimum wage

Let us first start with the wage setting process between employers and employees (step 4). Employers benefit from monopsony power that allows them to make take-it-or-leave offers to non unionized workers. The indirect utility of non unionized workers amounts to their wage if they work and to zero otherwise. In this context, employers offer them the minimum wage $\bar{w} \geq 0$, set by the government.

Workers who decide to join trade unions bear some costs denoted by $c \geq 0$. These subjective costs of collective action and adhesion to collective organization are assumed to be heterogeneous across workers. The cumulative distribution function of $c$ is denoted by $F$. Following an idea formulated by Akerlof (1980), and further developed by Booth (1985), Booth and Chatterji (1993), Naylor (1989, 1990), Naylor and Cripps (1993), Corneo (1995, 1997), we assume that union members enjoy some social benefits from complying with a social custom that invokes

workers to express mutual solidarity by joining collective actions. In order to account for such effects, it is assumed that the non-wage gains from joining a union are influenced by social norms. The benefits from becoming an union member increase with the strength of the attitudes towards social cooperation, denoted by $S \geq 0$. In this framework, the indirect utility of type-$c$ individuals who get a wage $w$ amounts to

$$\begin{cases} w - c + S & \text{if unionized} \\ w & \text{otherwise.} \end{cases}$$

The wage set by trade unions is a share $\beta \in [0, 1]$ of the individual production[10] of unionized workers, denoted by $y(S)$, $y'(S) \geq 0$, $y(0) = \bar{y}$, where $\bar{y}$ denotes the individual production of non unionized workers. In other words, the productivity of unionized workers is assumed to be an increasing function of the social benefits derived from unionization, with a lower bound $\bar{y}$ equal to the productivity of the non unionized workers. This assumption captures the idea that bargaining with labor unions is more efficient when individuals exhibit more inclination for social cooperation (Freeman and Medof, 1984, Luchak, 2003, Addison and Belfield, 2004). $\beta$ is a measure of the bargaining power of trade unions, which is considered as an exogenous variable.

Depending on the wage setting outcome, workers decide to join unions (step 3) if and only if the utility derived from union membership, equals to $w - c + S$, is larger than the utility obtained without union membership, equal to the minimum wage $\bar{w}$. Therefore, union density, denoted by $D$, amounts to

$$D = F(\tilde{c}), \tilde{c} = \beta y(S) - \bar{w} + S. \tag{1}$$

It turns out that union density increases with $\beta$, the bargaining power of trade unions, and with $S$, the strength of attitudes towards social cooperation. In contrast, minimum wage rises decrease union membership.

Let now turn to the minimum wage set by the government (step 2). The election process is represented by the probabilistic voting model which implies, under some assumptions assumed to be fulfilled, that the elected government maximizes the sum of the utility of the voters.[11] Accordingly, the government chooses the minimum wage $\bar{w} \geq 0$ that maximizes

$$W = \int_0^{\tilde{c}} [y(S) - c + S] \, dF(s) + \int_{\tilde{c}}^{+\infty} \bar{y} dF(s). \tag{2}$$

[10] Production is interpreted in a wide sense, including production net of utility costs associated with waged work.

[11] This outcome can be derived from the simple case in which each group of individuals of type-$c$ is heterogeneous with respect to ideological biases towards the two candidates. Then, following Persson and Tabellini (2000) it turns out that the outcome of the elections maximizes the utilitarian criterion if the ideological bias is represented by an additive term in the utility function and is distributed with a uniform distribution that is the same for all type-$c$ individuals.

The optimal minimum wage satisfies the first-order condition[12] which can be written as

$$\bar{w} = \max\left\{\beta y(S) + [\bar{y} - y(S)], 0\right\}. \tag{3}$$

This expression of the minimum wage together with the equilibrium level of trade union density (1) yields the following properties for the statutory minimum wage:

**Result 1:** The optimal minimum wage decreases when attitudes towards social cooperation are stronger.

This result simply obtains by deriving the expression of $\bar{w}$ given equation (3) which implies, when $\bar{w} > 0$, that

$$\frac{d\bar{w}}{dS} = -(1-\beta)y'(S) \leq 0.$$

Result 1 can be understood as follows. For any type-$c$ individual, the private gains from joining a trade union correspond to the difference between the indirect utility derived from unionization, $\beta y(S) - c + S$, and the indirect utility derived without unionization, $\bar{w}$. The net social gains of the involvement of type-$c$ individuals in trade unions amount to the difference between the social gains derived form unionization, $y(S) - c + S$, and social gains in case of non unionization, $y$. Social and private gains are equal if the minimum wage satisfies condition (3). Private and social gains are generally not equal because non union members are paid below their productivity $\bar{y}$. In this context, the minimum wage is used to induce the efficient level of union density. The minimum wage has to be strictly positive only if the bargaining power of trade unions, $\beta$, is above the threshold value $[y(S) - \bar{y}]/y(S)$, which raises with the level of attitudes towards social cooperation. In that case, private incentives to join unions are too strong in the absence of minimum wage. Therefore, increasing the minimum wage is a means to reduce the costs associated with union wage setting when labor unions do not give rise to enough increase in productivity. When attitudes towards social cooperation improve, the optimal minimum wage level is lower since the rise in productivity induced by trade unions are also higher.

**Result 2:** The equilibrium trade union density increases with the strength of attitudes towards social cooperation.

This result is obtained by computing the derivative of union density $D$ defined in equation (1) for the optimal value of the minimum wage given by equation (3). In that situation, one gets

$$D = \begin{cases} F\left(S + y(S) - \bar{y}\right) \text{ if } S < \tilde{S} \\ F(\beta y(S) + S) \text{ otherwise.} \end{cases} \tag{4}$$

[12] It can easily be checked that second-order conditons are fulfilled. Moreover, $\tilde{c} > 0$ is always satisfied at the optimum.

where $\tilde{S}$, which satisfies $\beta y(\tilde{S}) + \left[\bar{y} - y(\tilde{S})\right] = 0$, is the threshold value of the strength of attitudes towards social cooperation above which the minimum wage amounts to zero.

*Welfare and employment*

The influence of attitudes towards social cooperation on welfare and employment can be summarized by the two following results:

**Result 3:** Aggregate welfare increases with the strength of attitudes towards social cooperation.

It can easily be checked that improvements in attitudes towards social cooperation increase welfare by computing the derivative of the objective of the government (equation (2)) with respect to $S$ for the equilibrium values of union density and minimum wage. One gets

$$\frac{dW}{dS} = D\left[1 + y'(S)\right] > 0.$$

This equation shows that attitudes towards social cooperation improve welfare for two reasons. First, they increase the benefits that individuals get from collective action. Second, they help to improve productivity.

The positive effect of attitudes towards social cooperation on welfare might also affect the employment patterns when one assumes that labor market participation is endogenous. The most natural way to introduce endogenous labor supply in this context is to consider a distribution of indirect utilities outside the labor market, whose cumulative distribution function, denoted by $H$, is continuous over its support. For the sake of simplicity, we assume that the distribution $H$ is independent of the distribution $F$ over the costs of unionization $c$. Moreover, it is assumed that individuals who enter into the labor market and get no job (because they refuse the take-it of leave-it offer of the employer when they are not unionized) get zero gains, and then reach an indirect utility level equals to zero. In such a framework, employers offer the minimum wage and the equilibrium values of the union density and the minimum wage are the same as those derived when labor market participation is exogenous. Assuming, for the sake of simplicity, that the subjective costs of union membership are known by individuals only after they have decided to enter into the labor market, one can claim that

**Result 4:** Employment increases with the strength of attitudes towards social cooperation.

This results holds because labor supply, equal to employment at the equilibrium, amounts to $H(W)$, where $W$ denotes the optimum value of the objective of the government which increases with social attitudes $S$.

*The dynamics of social attitudes*

So far, the analysis was devoted to the short run equilibrium, in which the set of attitudes towards social cooperation is a predetermined variable. However, attitudes towards social cooperation can evolve over time. Following Akerlof (1980), Corneo (1995, 1997) and Lindbeck et al. (1999) it is assumed that the values responsible for the compliance to social custom are less likely to be passed on from one generation to the next one when disobedience is greater.

Accordingly, attitudes towards social cooperation follow the law of motion

$$S_{t+1} = S_t + g(X + D_t - S_t), \tag{5}$$

where $g$ is a continuous and increasing function that satisfies $g(0) = 0$; $X \in \mathbb{R}$ is a parameter that represents the potential influence of structural factors other than trade union density on the evolution of social attitudes. Substituting the equilibrium union density in period $t$, defined in equation (4) into equation (5), one gets the equation

$$S_{t+1} = S_t + \begin{cases} g(X + F\left(S_t + y(S_t) - \bar{y}\right) - S_t) \text{ if } S < \tilde{S} \\ g(X + F(\beta y(S_t) + S_t) - S_t) \text{ otherwise,} \end{cases}$$

where $\tilde{S}$ satisfies $\beta y(\tilde{S}) + \left[y(\tilde{S}) - \bar{y}\right] = 0$. This equation determines the dynamics of social attitudes on the equilibrium path. The dynamic properties hinge on the properties of the functions $F$ and $g$. Previous assumptions imply that there always exists a steady state equilibrium with $S = 0$, which corresponds to the minimum level of attitudes towards social cooperation, with zero union density and a positive minimum wage equals to $\beta\bar{y}$. However, this equilibrium is not necessarily stable.

Figure 4 displays a situation in which the equilibrium with the minimum level of attitudes towards social cooperation is stable at low value of $X$ but becomes instable as $X$ takes on higher values. When the equilibrium with $S = 0$ is unstable, there exists another stable steady state equilibrium in which both the minimum wage and union density are strictly positive. This representation of the dynamics of social attitudes suggests that countries can exhibit very different dynamics. Some countries, whose value of $X$ is low, can start with strong attitudes towards social cooperation and then face continuous decreases in attitudes towards social cooperation, accompanied by union density drops and minimum wage increases. Other countries, whose value of $X$ is large, can start from weak attitudes towards social cooperation but will eventually converge towards high social cooperation and union density.

# 3 Empirical results

Let us now analyze the empirical relevance of the model by estimating the link between attitudes towards social cooperation and wage-setting institutions in OECD countries since the early

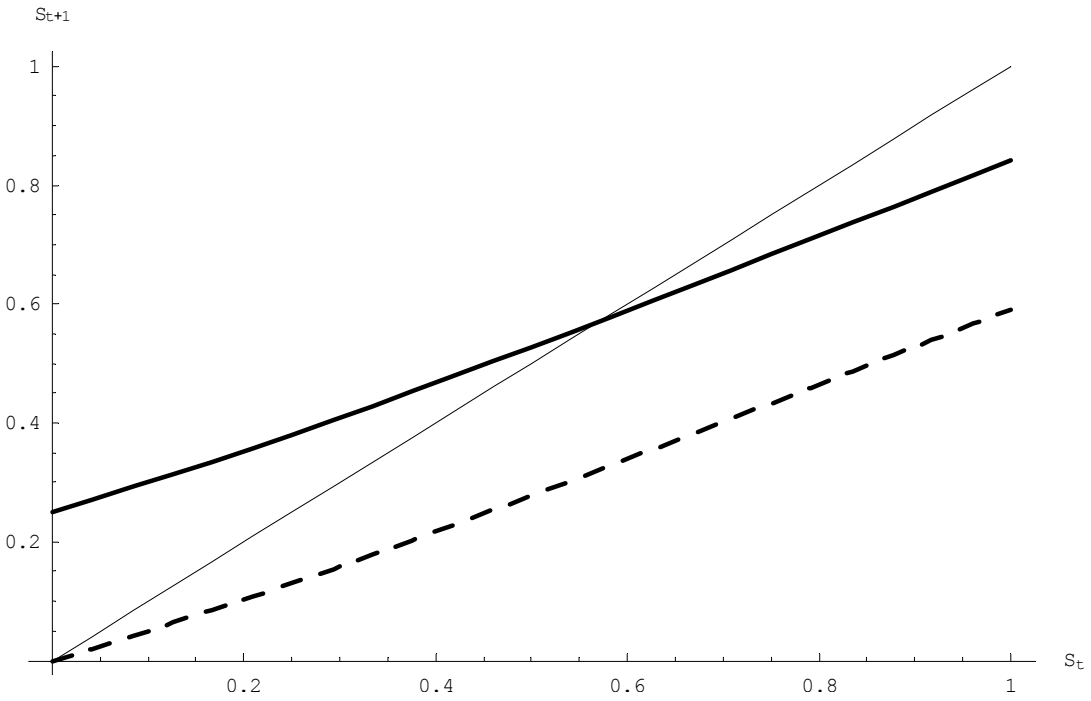


Figure 4: The dynamics of social attitudes $S_t$ when, $\bar{y} = 1, y(S) = \bar{y} + 0.1 \cdot S$, $\beta = 0.5, g(x) = x/2$, and $F$ is Log Normal with mean and variance equal to one. The thick dotted line corresponds to the case where $X = 0$. The thick continuous line corresponds to the case where $X = 0.3$ and the thin continous line is the $45°$ line. In both cases, the equilibrium minimum wage is strictly positive if $S_t$ is smaller than 10.

1970s. Our empirical strategy consists first in documenting the wide cross-country differences in attitudes towards social cooperation which can be a potential source of heterogeneity in labor market institutions. Second, we document the empirical relevance of our assumption according to which attitudes towards social cooperation are not instantaneously overdetermined by the economic and institutional features of countries in which people are living. Instead, attitudes towards social cooperation turn out to be partly ingrained in national features with long-lasting effects transmitted across generations even when individuals no longer live in the country of origin. Third, we draw upon this result to show that attitudes towards social cooperation significantly affect contemporaneous national wage-setting institutions and labor market performance by controlling for potential reverse-causality effect.

## 3.1 Attitudes towards social cooperation and attitudes towards labor market institutions

In this section, we document the cross-country heterogeneity in attitudes towards social cooperation. We assess the extent to which this cross-country heterogeneity in consistently correlated with variation in preferences towards different wage-setting institutions. We then examine the underlying forces which drive this cross-country correlation by stressing the overwhelming role of the national context in shaping individual attitudes.

### 3.1.1 Data

The cross-country measures of the correlation between attitudes towards social cooperation and attitudes towards labor market institutions come from the *World Value Survey* database (WVS) and the *International Social Survey Programme* database (ISSP). These studies sampled the attitudes of publics in all OECD countries at least over the eighties and nineties. The WVS database covers three main waves (1981, 1990, 1999-2001) while the ISSP study conducted surveys on specific topics at each wave.

The first obvious feature of attitudes towards social cooperation which matters in the realm of collective action and adhesion to organizations is the level of trust in others. In bargaining, interactions between trusting individuals or organizations might lead to efficient outcome, whereas lack of trust might require interventions from an outside person to overcome inefficient equilibrium. To tap this sense of social cooperation among citizens, we use the question on the trustfulness of people provided by the WVS database: "*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*". Our indicator *trust* is the percentage of respondents in each country replying "Most people can be trusted" instead of "One must be careful" (after deleting the answers "do not know").

A second key ingredient of attitudes towards social cooperation which is likely to affect cooperation on the labor market and the political support for minimum wage is the feeling of exploitation or fairness. The fairness item is assessed by the question: "*Do you think most people try to take advantage of you if they got a chance or would they try to be fair?*". This fairness indicator is given by the percentage of respondents who answer "People try to be fair" rather than "People would take advantage if they got a chance". The WVS database reports this question for the wave 1999-2001 and for most OECD countries. We fill the missing countries by using the ISSP database of 1998 in which the respondents were asked: "*How often do you think that people would try to take advantage of you if they got a chance and how often they would try to be fair?*". The answers are given on a scale of 1 to 4, which correspond to "Try to take advantage almost all the time", "Try to take advantage most of the time", "Try to be fair most of the time" and "Try to be fair almost all of the time". To ease the comparison of the results with the WVS database, we group the answers together to represent individuals who tend to believe in fairness. Hence we create a dummy variable which takes on the value 1 if the respondent answers "Try to be fair most of the time" or "Try to be fair almost all of the time", and 0 otherwise.

Concerning attitudes towards labor market institutions, we are primarily interested in measuring to what extent people are implied in collective action rather than relying on the government to regulate the labor market and wages in particular. For that purpose, we first assess the level of confidence or cooperation in collective action by directly measuring union membership. The unionization item is given by the question "*To which voluntary organizations or activities do you belong? Labor union*". This question is provided for all waves in the WVS and ISSP databases. We construct an indicator of *union membership* which is equal 1 if the respondent is an active or inactive union member, and 0 otherwise.

To assess the degree of preference for wage regulation by the government, we use the question: "*Here are some things the government might do for the economy. Please show which actions you are in favor of and which you are against of. Government should control wages by law?*". This question is provided by two special ISSP databases on the role of government in 1991 and 1996. The answers are given on an ordered scale from 1 to 5, corresponding to "Strongly agree", "In favor of", "Neither in favor of nor against", "Against", "Strongly against". Our measure of state intervention to settle down wages is given by the percentage of respondents who answered "Strongly agree" or "In favor of" (after deleting the "neither agree nor disagree" answers).

Our empirical investigation on the cross-country correlation between attitudes towards social cooperation and attitudes towards labor market institutions is based on the working age population and includes 22 OECD countries: Australia, Austria, Belgium, Canada, Czech Republic,

Denmark, France, Germany, Hungary, Ireland, Italy, Japan, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Spain, Sweden, UK and USA. By grouping the different countries and different waves together, this selection leaves us with a sample of 60,607 working aged individuals in the *WVS* database and 25,280 working aged individuals in the *ISSP* database. The summary statistics for the number of observations by country and the individual characteristics are reported in Table 6 and Table 7 in Appendix.

### 3.1.2 Cross-country correlations between attitudes towards social cooperation and towards labor market institutions

We first investigate to what extent trust and fairness, the two components of attitudes towards social cooperation that we account for, are correlated with the two attitudes towards labor market institutions we are interested in: individual union membership and individual support for wage-setting by law. To get a synthetic measure of attitudes towards social cooperation, we define a single social cooperation value for each nation by taking the means of the individual reply over the two questions about trust and fairness. The decomposition by indicators reports the same cross-country correlation pattern as shown in Appendix.

Figure 5 shows the cross-country correlation between the composite indicator of attitudes towards social cooperation and attitudes on labor market regulation.

First, the x-axis of Figure 5 shows the fairly high level of cross-country heterogeneity in the mean level of attitudes towards social cooperation. On average, about 70 percent of the population in Norway, Finland, Sweden, Denmark and Netherlands have strong attitudes towards social cooperation. By contrast, Southern European countries are characterized by fairly low social attitudes. They are in general less than one third of the population to think that people can either be trusted or are fair in countries like France, Spain ,Italy, not to say Mexico and Turkey. To a large extent, respondents living in Eastern European countries share the same low level of social attitudes as their Southern European counterparts. Eventually, Anglo-Saxon countries such as the United States and United Kingdom, and European Continental countries such as Austria and Germany, stand at an intermediate position. For instance, about 69 percent of German people and 65 percent of American people believe that people would try to be fair instead rather than exploiting others even if they have a chance to do it.

Second, the y-axis of Figure 5 shows that this heterogeneity in attitudes towards social cooperation is highly correlated with the same cross-country heterogeneity in attitudes towards labor market institutions. The y-axis on the left panel reports the percentage of respondents who belong to a labor union. This percentage is much higher in Nordic countries, reaching more than 50 percent in Denmark and Sweden, to be compared with less than 10 percent of

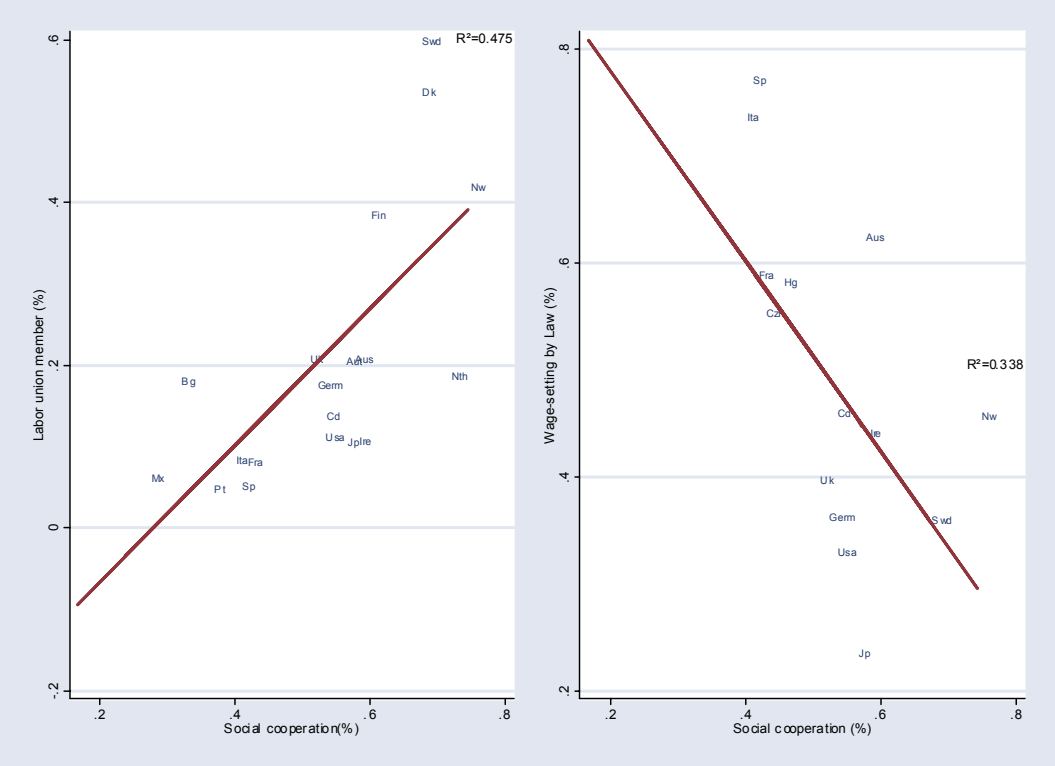


Figure 5: Correlation between social attitudes and labor market attitudes. Source: WVS 1980-2000, ISSP 1996, 1998.

union membership in Southern countries. Moreover, the correlation is quite high between union membership and attitudes towards social cooperation ($R^2 = 0.475$). The same cross-country heterogeneity holds regarding the mean national level of respondents who consider that wages should be directly set by laws. In general Anglo-Saxon and Scandinavian countries strongly opposed such a legislation whereas Southern countries such as Italy and Spain strongly back this policy. Significantly, opinions in favor of a state regulation of wages is negatively correlated ($R^2 = 0.338$) with our composite indicator of attitudes towards social cooperation.

Third, Figure 5 suggests a strong negative correlation between unionization and advocating for wage-setting by government. This correlation seems to reflect the fact that people engaged in a labor union seem to believe more in collective and cooperative action to regulate the labor market and wages rather than relying on the intervention of the government to set wages by law.

### 3.1.3 The role of national features

Next, we explore the underlying features driving the correlation between attitudes towards social cooperation and attitudes towards labor market institutions. Is such a correlation linked to specific individual characteristics or to national features? We address this issue by running probit estimates on the different indicators for attitudes towards social cooperation and attitudes towards labor market institutions. The role of specific national features is measured by using country-fixed effects. We also control for individual characteristics including gender, age and age squared, the number of years of education, employment status, income category, union membership, political orientation and religious affiliation.

Table 1 reports the results of the probit estimates for the attitudes towards social cooperation indicators (*trust, fairness*). The left-hand side variables of the regressions are dummies equal 1 if the respondent agrees with our main statement of interest regarding social cooperation and labor market attitudes. In all regressions, we take Sweden as the reference country. The latter one has the advantage to provide a benchmark country with one of the highest level of attitudes towards social cooperation and to be represented for all the indicators we are interested in.

Strikingly, all the country dummies are jointly highly significant as reported in Table 1. Figure 6 illustrates this result by looking at the marginal coefficients of each country relatively to Sweden. To get a comprehensive indicator on attitudes towards social cooperation, we still use a composite indicator as the means of the marginal effects estimated for the two original indicator *trust* and *fairness.* The first striking result is the quantitative importance of the estimated country fixed effects. Figure 6 shows that the fact to live in a Mediterranean countries like France or Italy reduces the level of attitudes towards social cooperation by 24 percent and 26 percent by comparison with an individual sharing the same characteristics but living in Sweden. By contrast, living in another Nordic countries might increase the level of social cooperation by 4 percent in the Netherlands or 8 percent in Norway. Anglo-Saxon and European continental countries lie in between. Living in Germany or the United States decreases the level of attitudes towards social cooperation by 13.8 percent and 14.2 percent relatively to someone living in Sweden. The same opposition pattern holds regarding attitudes on labor market regulation. Living in a Mediterranean country like Spain reduces the probability of belonging to a union by 23 percent relatively to people with the same characteristics in Sweden while it increases the probability to back wage-setting by law by 39 percent relatively to Sweden.

The natural outcome of these regressions is that the whole bulk of the cross-country correlation between social cooperation and labor market attitudes is driven by national specific features. Figure 6 shows that the correlation between the estimated country fixed effects is fairly identical

Table 1: Social attitudes in OECD countries

| Dependent variable | Trust in other=1 | | People try to be fair=1 | |
|---|---|---|---|---|
| | Coeff | Std Error | Coeff | Std Error |
| Country dummies | | | Yes*** | |
| Male | .013 | (.014) | -.183*** | (.055) |
| Age | .009*** | (.002) | .063*** | (.019) |
| Age2 | -.000*** | (.000) | -.000*** | (.000) |
| Education | .076*** | (.028) | .039*** | (.008) |
| Employed | | | Reference | |
| Unemployed | -.090 | (.076) | -.140 | (.139) |
| Inactive | -.012 | (.020) | .107 | (.070) |
| Income: mid | | | Reference | |
| Low | -.071*** | (.018) | -.148** | (.060) |
| High | .110*** | (.018) | .200** | (.096) |
| Political orientation: Center | | | Reference | |
| Left | .125*** | (.017) | -.034 | (.067) |
| Right | .015 | (.016) | -.065 | (.076) |
| Religious affiliation: No_religion | | | Reference | |
| Catholic | -.064*** | (.023) | .022 | (.077) |
| Protestant | .070** | (.029) | .084 | (.090) |
| Buddhist | -.047 | (.067) | -.101 | (.342) |
| Muslim | -.128 | (.105) | | |
| Jews | .337*** | (.115) | | |
| Other_religion | .018 | (.053) | .086 | (.162) |
| Pseudo-$R^2$ | .078 | | .1476 | |
| Observations | 35943 | | 15910 | |
| ***:1%, **: 5%, *: 10% | WVS 1981, 1990, 2000 | | ISSP 1998 | |

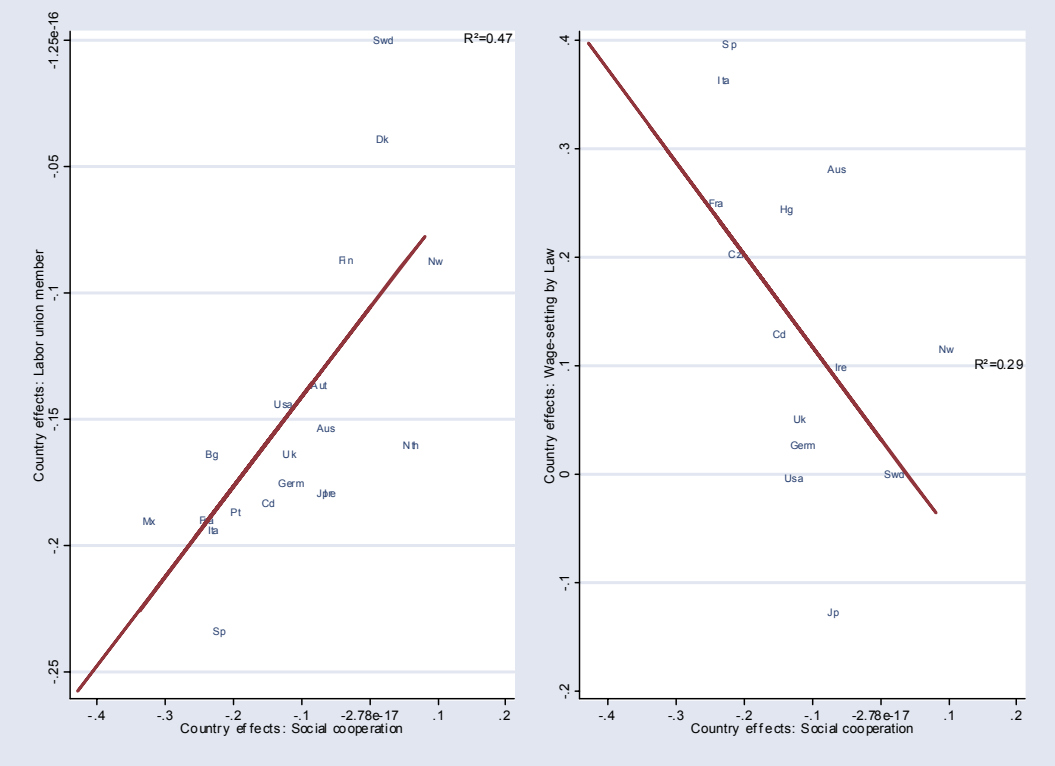


Figure 6: Country fixed effects in social attitudes and labor market attitudes. Source: WVS 1980-2000, ISSP 1996-1998

to that displayed by the mean reply in Figure 5. Moreover, the variance in the cross-country correlation is almost entirely accounted for by the country fixed effects, the R-squared remaining fairly unchanged when one excludes individual characteristics from the correlation pattern.

## 3.2 Social cooperation and Labor market outcomes

### 3.2.1 Estimation strategy

How do attitudes towards social cooperation relate to wage-setting institutions? And do they explain cross-country differences in labor market performance? Our goal is to answer this question by looking at the issues raised by the estimation of the following linear equation based on the predictions of the theoretical model:

$$I_{ct} = \alpha_0 + \alpha_1 S_{ct} + \alpha_2 X_{ct} + \alpha_3 F_c + \alpha_4 T_t + \varepsilon_{ct} \tag{6}$$

where $I_{ct}$ stands for the wage-setting institutions represented either by union density or by minimum wage legislation in country $c$ at period $t$, $S_{ct}$ measures country average of attitudes towards social cooperation, $X_{ct}$ denotes a vector of average characteristics of the population and

of the economy, $F_c$ stands for country dummies capturing all other specific features such as the legal origins or past institutions with long-lasting effects, $T_t$ stand for period dummies; $\varepsilon_{ct}$ is an error term.

The problem with equation (6) is that contemporaneous attitudes towards social cooperation are likely to be influenced by current institutions. As suggested by the model, individuals living in an environment with a high level of union density might be more prone to cooperate with others. Or people living in a country with very weak minimum wage legislation and weak labor unions might have a greater feeling of exploitation and have low expectations regarding the fairness of other people. We are thus looking for variables that influence social attitudes but which are exogenous as regards current institutions and labor market performance. In other words, we are looking for the inherited part of national social attitudes which is ingrained in individuals independently of the contemporaneous national institutions.

In order to find such a variable, we focus on individuals currently living in the United-States, but who differ by the country of origin of their ancestors. We then measure the impact of the country of origin of their forebears on their current attitudes towards social cooperation, controlling for their other individual characteristics and the economic environment. This strategy leads us to estimate the equation

$$s_t^{US} = \beta_0^{US} + \beta_{ct}^{US} c_t^{US} + \beta_2^{US} x_t^{US} + \beta_3^{US} T_t^{US} + \eta_t^{US}, \tag{7}$$

where $s_t^{US}$ stands for the individual attitudes of people living in the US in period $t$, $c_t^{US}$ is a dummy variable indicating their ancestor's country of origin, $x_t^{US}$ is a vector of individual characteristics, $T_t^{US}$ stands for period dummies, and $\eta_t^{US}$ is an error term.

In this context, the variable $S_{ct}$ which shows up in equation (6) and which denotes average attitudes towards social cooperation in country $c$ at time $t$ can be decomposed into two terms. First, a term which accounts for the attitudes inherited from previous generations independently of the current social and economic environment, which corresponds to the coefficient[13] $\beta_{ct}^{US}$ in equation (7). Second, a residual term, denoted by $R_{ct}$, which accounts for all other elements which influence social attitudes. Accordingly, one can write

$$S_{ct} = \beta_{ct}^{US} + R_{ct}. \tag{8}$$

Then, using this expression for $S_{ct}$, we estimate the equation

$$I_{ct} = \gamma_0 + \gamma_1 \beta_{ct}^{US} + \gamma_2 X_{ct} + \gamma_3 F_c + \gamma_4 T_t + \nu_{ct}, \tag{9}$$

[13] More formally, $\beta_{ct}^{US}$ is equal to the difference $\mathbb{E}\left(s_t^{US} | c_t \neq rc, x_t^{US}, T_t^{US}\right) - \mathbb{E}\left(s_t^{US} | c_t = rc, x_t^{US}, T_t^{US}\right)$ where $\mathbb{E}$ denotes the expectation operator and $rc$ stands for the country of origin chosen as the reference country.

where the coefficient $\gamma_1$ measures the impact of the attitudes inherited from previous generations on current institutions.

The implementation of this strategy is described in the next section. But before turning to this point, it is worthwhile to stress what we can expect from such an identification strategy. Since we are able to identify the attitudes inherited from previous generations, we no longer have to worry about a potential endogeneity bias stemming from the fact that current cultural attitudes are endogenous to contemporaneous institutions and employment patterns. But have we identified a causal effect going from inherited current attitudes to current institutions? The answer might not be a qualified yes. Attitudes towards social cooperation of earlier generations who immigrated to the United States in the wake of the 20th century could still capture an omitted historical variable which would explain both attitudes of earlier generations and contemporaneous labor market institutions. Even by focusing on Americans whose forebears immigrated in the late 19th century at a time when unions and minimum wage legislation were not formally implemented, it might still be the case that earlier laws on guilds and cooperation, or any other country specific feature, could have influenced both forbears' social capital and contemporaneous national wage-setting institutions. The introduction of country fixed effects in equation (9) is precisely meant to control for such omitted variables.

### 3.2.2 Inherited attitudes

*Data*

We estimate the national cultural traits of earlier generations by using the General social Survey. This database consists of an individual surveys on the United States over the period 1972-2004. The first attraction of the GSS data is that they contain questions and ordered scale answers on social attitudes which are exactly identical to those asked in the WVS and ISSP data. We are thus able to construct two similar indicators on trust and fairness in the United States. The question on the trustfulness of people reads: "*Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?*". The answers are given on a scale from 1 to 3, which correspond to "Most people can be trusted", "Can't be too careful", "Depends". In lines with our cross-country comparison, the trust indicator *trust_usa* is a dummy variable equal to one if the respondent answers that people can be trusted and 0 if she answers that one should be careful. Regarding fairness, the question reads: "*Do you think most people would try to take advantage of you if they got a chance, or would they try to be fair?*". The answer also ranges from 1 to 3 corresponding to "Would take advantage of you", "Would try to be fair" and "Depends". Our indicator *fairness_usa* is measured as the

percentage of respondents who answer that "People would try to be fair" instead of "Would take advantage of you". As the prior analysis, we focus on a comprehensive *social attitudes_usa* indicator measured as the average of *trust_usa* and *fairness_usa* indicators.

To sort out the role of earlier generations on cultural traits, we use informations on the country of origins of the respondent's forbears. The GSS ethnic variable reads as follows: "*From what countries or part of the world did your ancestors come from?.* Respondents are also asked if they are born in the United States and how many of their parents and grand-parents were born in the country. The question on parents birthplace is scaled 0 if both parents are born in the USA, 1 if only the mother is born in the US, and 2 if only the respondent's father is born in the country. The answer on grand-parents birthplace is scaled from 0 to 4 indicating the number of grandparents born in the US. This information allows us to a certain extent to control for the transmission durability of cultural features by identifying the wave of immigration of the forbears. Yet it is important to stress that it is still an approximate measure of ethnic heritage since the GSS asks respondents to name only a single country from which their forbears immigrated. But many Americans of course have ancestral ties to more than one country. Yet another key attraction of the GSS data is the sample size of the ethnic variable. Most European ethnies are represented including 6108 observations for respondents with German origins, 5754 observations for Anglo-Saxon origins, 1836 observations for Italian origins, 722 observations for French origins and 669 observations for Norvegian origins. Additionally, the GSS database makes it possible to control for the main other socioeconomic characteristics as those defined in the WVS and ISSP data including age, gender, employment status, religious affiliation, political orientation. Significantly, the GSS data also asks respondents the level of education of their parents. This information might be crucial since potential correlation between social attitudes and ethnic heritage might transit through parents characteristics such as human capital rather than culture per se.

In lines with our previous cross-country analysis, our main sample consists of working age people who are 16-65 years old. To control for the cultural part of social attitudes inherited from parents independently from contemporaneous national institutions, we only select people who are born in the United States. Since respondents were asked about their birthplace only since 1977, our sample covers the period 1977-2002. We only focus on respondents whose ancestors came from OECD countries including Austria, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Mexico, Netherlands, Norway, Poland, Portugal, Spain, Sweden, and the United Kingdom. Our main sample combining informations on the country of ancestry and the level of social capital consists of 20,354 observations. Detailed descriptions of the countries of ancestry and the summary statistics for individual characteristics

are reported in Tables 6, 7 in Appendix.

*Results*

In lines with the cross-country analysis, we run probit estimates on the two indicators *trust_usa* and *fairness_usa* by controlling for the same set of individual characteristics, including gender, age, employment status, income, social class, political orientation and religious affiliation. We also control for the education of parents which could matter in cultural transmission and year dummies to control for specific temporal shocks.

Tables 2 and 3 report the probit estimates of equation (7) identifying the impact of the attitudes of previous generations, proxied by the country of origin, on current attitudes towards social cooperation. Americans with Norvegian ancestors are taken as the reference group since they display the highest average level of trust. Table 3 first shows that having ancestors coming from Mediterranean countries such as France, Italy or Spain steadily decrease the probability to trust others and believe in their fairness. This relationship is statistically significant at the 1 percent level. Americans with Anglo-Saxon, German, Dutch and Austrian ancestors are also less likely to be trusting than individuals with Norvegian forbears, but the magnitude of the coefficients is smaller. Eventually, Table 3 suggests that there is no statistical significant differences across Americans whose ancestors came from Nordic countries.

Figure 7 provides an alternative picture by looking at a composite social cooperation indicator defined as the mean of the estimated coefficients for each question. It reports the correlation between the marginal estimated fixed effects associated with the country of origins of Americans and the marginal estimated fixed effects associated with people currently living in these countries. Figure 7 displays a tight upward-sloping linear relation between the country fixed effects. This result suggests that national traits of earlier generations have been transplanted in the United Stated and transmitted fairly unchanged through generations regardless of the new institutional environment. The R-squared shows that almost 60 percent of the variance in our indicator of attitudes towards social cooperation in OECD countries is accounted for by inherited traits, proxied by the influence of the country of origin of ancestors of people born in the US.

Yet this result does not mean that Americans have exactly the same social attitudes as their immigrant ancestors. Actually Figure 7 suggests that living in the United States has had a homogenizing effect since the range for estimated marginal effects of the contemporaneous country of residency is wider compared to that of the coefficients associated with the country of ancestry of Americans. This means that overtime social attitudes of Americans with different country of ancestry has tended to converge as individuals were exposed to the same national environment.

Table 2: Attitudes towards social cooperation in the US

| Dependent variable | *Trust_usa* | | *Fair_usa* | |
|---|---|---|---|---|
| | Coeff | Std Error | Coeff | Std Error |
| Country dummies | Yes*** | | | |
| Male | .084*** | (.025) | -.105*** | (.029) |
| Age | .034*** | (.006) | .035*** | (.007) |
| Age2 | -.000*** | (.000) | -.000*** | (.000) |
| Education | .098*** | (.005) | .075*** | (.006) |
| Mother's education | .022*** | (.005) | .030*** | (.007) |
| Father's education | -.006 | (.004) | -.007 | (.005) |
| Employed | Reference | | | |
| Unemployed | -.088 | (.071) | -.133 | (.084) |
| Inactive | -.016 | (.030) | -.019 | (.036) |
| Income: mid | Reference | | | |
| Low | -.209*** | (.026) | -.235*** | (.030) |
| High | .055 | (.073) | .084 | (.090) |
| Political orientation Center | Reference | | | |
| Democrat | .059** | (.029) | .032 | (.034) |
| Republican | -.000 | (.030) | .043 | (.035) |
| Religious affiliation: No religion | Reference | | | |
| Catholic | .033 | (.046) | .139*** | (.052) |
| Protestant | .020 | (.043) | .077 | (.048) |
| Buddhist | -.109 | (.384) | | |
| Jews | -.048 | (.124) | .065 | .150 |
| Pseudo-$R^2$ | .0543 | | .0559 | |
| Observations | 10693 | | 13309 | |

General Social Survey: ***:1%, **: 5%, *: 10%

Table 3: Coefficients associated with the country of origin of Americans- Whole sample

| Country of | Trust in other=1 | | People try to be fair=1 | |
|---|---|---|---|---|
| origins of ancestors | Coeff | Std Error | Coeff | Std Error |
| Austria | -.345** | (.166) | .325 | (.305) |
| Canada | -.413*** | (.106) | -.384** | (.115) |
| Czeck Republic | -.197 | (.120) | -.277** | (.130) |
| Denmark | -.006 | (.136) | -.129 | (.193) |
| Finland | .096 | (.106) | .632* | (.330) |
| France | -.320*** | (.103) | -.392*** | (.136) |
| Germany | -.347*** | (.079) | -.310*** | (.103) |
| Greece | -.244*** | (.244) | -.740*** | (.260) |
| Hungary | -.375*** | (.144) | -.305 | (.238) |
| Ireland | -.289*** | (.079) | -.335*** | (.106) |
| Italy | -.525*** | (.089) | -.536*** | (.120) |
| Japan | -.232 | (.284) | -.322 | (.553) |
| Mexico | -.511*** | (.112) | -.575*** | (.163) |
| Netherlands | -.226* | (.100) | -.065 | (.147) |
| Norway | Reference | | | |
| Poland | -.455*** | (.099) | -.328** | (.132) |
| Portugal | -.200 | (.252) | -.086 | (.402) |
| Spain | -.468*** | (.148) | -.688*** | (.216) |
| Sweden | -.220* | (.145) | -.256* | (.143) |
| United Kingdom | -.271*** | (077) | -.288*** | (.104) |
| Pseudo-$R^2$ | .0543 | | .0600 | |
| Observations | 10673 | | 10329 | |

General Social Survey: ***:1%, **: 5%, *: 10%

### 3.2.3 Social cooperation, institutions and labor market performance

Next, we estimate the role of attitudes towards social cooperation on wage-setting institutions and its implied impact on labor market performance. According to our empirical strategy, we estimate equation (9) in which the main explanatory variable is the inherited part of social attitudes which is not affected by the contemporaneous national environment.

*Data*

We start by explaining the data used to measure the two wage-setting institutions of interest, namely the minimum wage legislation and the labor union density. Regarding the minimum wage legislation first, we want to capture the extent to which wages are regulated by law rather than being bargained over. This line of inquiry requires to take into account not only the level of minimum wages but also the nature of the regulation. Our measure of wage regulation covers

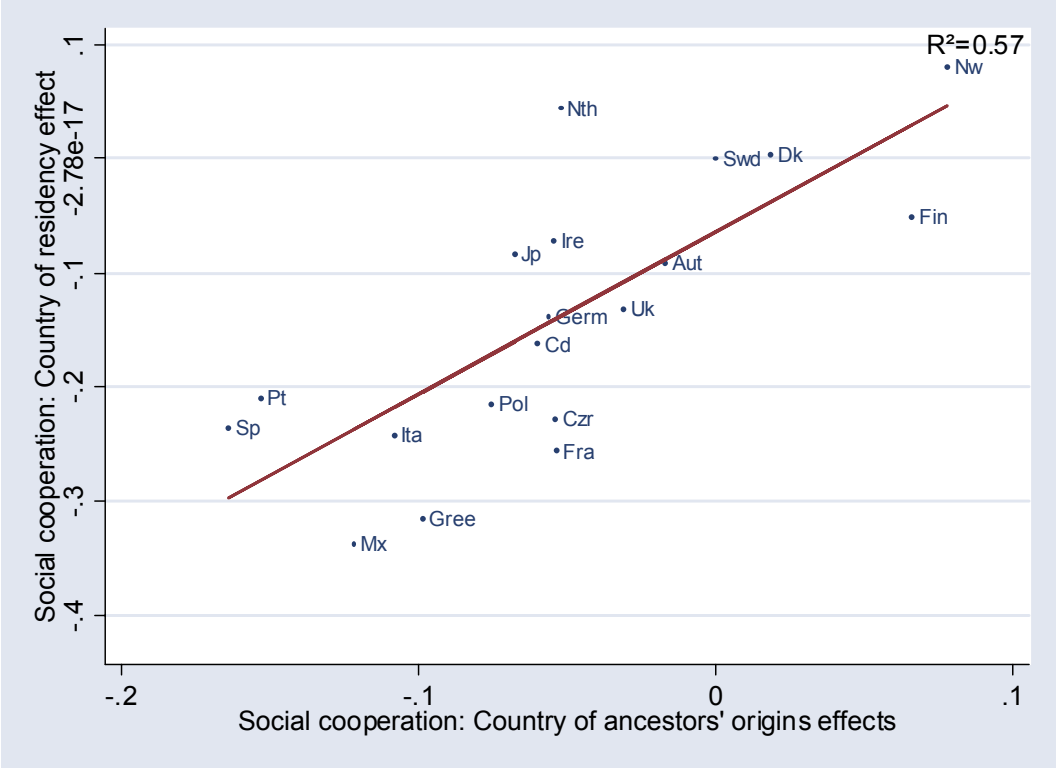


Figure 7: Correlation between the inherited and the current attitudes towards social cooperation.

three main criteria: i) the existence of a statutory minimum wage instead of a bargained wage, ii) the extent to which the minimum wage varies across ages, regions, skills or occupations, iii) the extent to which there are specific provisions for sub-minimum wages. These broad criteria are at the core of a sub-index on *wage_ enforcement*. These data come from the International Labor Organization which provides a detailed historical description of the minimum wage legislation. We also take into account the level of the minimum wage by constructing a sub-index *wage_ level* measuring the ratio of the minimum wage over the median wage. The data are provided by the OECD since 1960 but only for countries with a statutory minimum wages. For other countries, we rely on the data collected by Neumark and Wascher (2003) over the same period. The global indicator *minwage* is defined as the composite of the two enforcement and level indicators. All sub-indexes and indicators are constructed so that higher values correspond to more stringent legislation or higher level of minimum wages. We describe these data and we test different specifications in appendix A.2. Regarding union density, the data are more common and we directly draw upon the OECD database which reports the cross-country evolution of union memberships since 1960. Eventually, we measure the labor market performance by using the unemployment rate since this is where the current literature has mainly put the emphasis on. But estimations on the employment rates, which would be more in line with the model, yield the same kind of results. Consistently with the current literature, we explain the cross-country heterogeneity in the level and evolution of labor market outcomes by focusing on sub-periods, defined here as ten years average over the periods 1975-84, 1985-94, and 1995-2002.

The main explanatory variable of interest is the inherited part of social attitudes which are exogenous to contemporaneous national institutions. In lines with our identification strategy, we use for that purpose the inherited component of social attitudes by ethny of origins of Americans estimated on the GSS. To gather as much observations as possible, we reestimate these components on three sub-periods 1977-84, 1985-1994 and 1995-2004. There are two kinds of information in cross-sectional time-series data: the cross-sectional information reflected in the differences between countries, and the time-series or within-country information reflected in the changes within country over time. To exploit the within information, we need to focus on the evolution attitudes which are transmitted to successive generations. Ideally, one could get such a measure by estimating over each sub-period the social attitudes by country of origins of Americans who were born in the US but whose parents came from abroad. This strategy would yield a good proxy for social attitudes prevailing in the country one generation ahead, as long as people who immigrated and people who decided to stay in the country are not that different along this dimension. Unfortunately, there are not enough observations by sub-periods to implement this strategy since the main part of immigration in the US, in particular from

European countries, took place in the wake of the 20th century. Thus instead of focusing on people whose parents were not born in the US, we estimate the level of social cooperation by sub-periods on all the sample at different dates and check whether changes in inherited attitudes over time of people living in the US are correlated with changes of attitudes of people currently living in the country of origins of their ancestors. Figure 8 in appendix A.3 shows that changes in inherited attitudes of people living in the US are indeed positively correlated with those of people currently living in the country of origins of their ancestors. This suggests that the within-country information does make sense.

Naturally, there is already an overwhelming list of variables proposed by the empirical literature to explain the determinants of institutions and labor market performance. Following Blanchflower recent synthesis (2006) on labor unions, we include the evolution of the working age population by age, skills (measured by Barro and Lee index on the average years of education) and gender (measured by the share of women in the labor force participation), the political environment represented by the percentage of seats controlled by leftists in the government[14], the economic environment represented by the degree of openness of the country and the lagged value of the unemployment rate which could depress labor union affiliation. The same set of explanatory variables is used regarding the minimum wage indicators.

Regarding the unemployment rate, we take account of the long list of labor market institutions, additionally to the wage-setting process, by drawing on Nickell et al. (2005) and Blanchard and Wolfers (2001) data. The list includes the replacement rate and duration of unemployment benefit, employment protection, and taxes. Eventually we take into account the business cycles environment captured by the growth rate of GDP taken in US 1995 dollars. Naturally, a lot of other explanatory variables might be relevant for explaining the level of employment protection, unemployment benefits and labor force participations but are not available for an extensive set of countries. We thus control for country fixed effects to capture other specific national features. We also introduce time period dummies to control for aggregate shocks. The data for the dependent variable and the other controls are taken as a ten years average over the period 1975-85, 1986-1995 and 1996-2002.

*Results*

Table 4 reports the basic results of the effect of attitudes towards social cooperation on minimum wage legislation and union density. The first specification reports the regressions using the contemporaneous attitudes towards social cooperation. This naive measure of social attitudes is based on national average of our trust and fairness indicators calculated during the

[14]The data are provided by Duane Swank http://www.marquette.edu/polisci/Swank.htm

three waves of the World Value Survey in 1981, 1990 and 1999-2001. As discussed earlier, this regression is likely to be fraught with endogeneity bias between institutions and attitudes. Thus, the second regression reports the result using the asocial cooperation attitudes of Americans whose forbearers immigrated from the corresponding OECD countries. This specification allows us to get rid of endogeneity bias between contemporaneous national institutions and attitudes towards social cooperation, yielding more consistent estimates, if inherited social attitudes of people living in the US and contemporaneous institutions in their country of origin of their ancestor are not co-determined by a common country specific variable. The third specification includes country dummies (and period dummies) to control for the influence of such country specific effects. Note that in this case, we only focus on social attitudes of Americans whose grand-parents were born abroad and immigrated from the reported country of origins, yielding a slightly lower number of observations.

Whatever the specification, Table 4 shows that attitudes towards social cooperation have a strong negative effect on the minimum wage legislation and a strong positive effect on union density. The effects are statistically significant at the 1 percent level whatever the specification for social attitudes. The regressions using national social cooperation,reported in Columns (1) and (4) of Table 4, indicate that a one percentage point higher level of national social attitudes is associated with an increase in union density by 0.85 percentage and a decrease in the stringency of the minimum wage legislation by 0.64 percent. The magnitude of the coefficients is lower when one uses the inherited component of social attitudes estimated on the US rather than contemporaneous national attitudes, but remains still significant at the 1 percent level. Standard checks for outliers, robust errors estimates or for the indicator trust or fairness used for social cooperation have been run and suggest a clear and significant causal relationship from social attitudes to contemporaneous wage-setting institutions.

A natural question at this point is to look at the implied relationship between social attitudes and labor market performance. Henceforth, we always focus on the inherited component of social attitudes estimated on the GSS database in order to explain potential causal effects going attitudes to labor market performance. In order to compare our approach with that of the current literature, we focus on the unemployment rate since this is where the debate has been lured in.

As a starting point, we estimate the direct impact of attitudes towards social cooperation on the unemployment rate and look at its explanatory power by comparison with traditional institutions. Table 5 - Col. (1) reports traditional estimates of the role of institutions including replacement rate, benefit duration, union density, union coverage, the tax wedge and employment protection. As expected (see Blanchard, 2005) none of these institutions are statistically

Table 4: Social attitudes and labor market institutions. Period: 1975-2002

| Dependent variable | Minimum Wage | | | Union density | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Social cooperation | -.647*** | | | .853*** | | |
| | (.133) | | | (.325) | | |
| Inherited attitudes towards | | -.344*** | -.285*** | | .785*** | .298** |
| social cooperation | | (.164) | (.163) | | (.296) | (.128) |
| Education | -.021* | -.046*** | -.041** | -.019 | .016 | -.719 |
| | (.009) | (.009) | (.020) | (.029) | (.018) | (2.184) |
| GDP growth | -.022** | -.030*** | -.025 | .053* | .035* | .019 |
| | (.008) | (.010) | (.010) | (.029) | (.019) | (.105) |
| Unemployment rate (-1) | | | | .104 | .673 | .134 |
| | | | | (.880) | (.786) | (.613) |
| Women labor share | | | | .905 | .646** | -.041 |
| | | | | (.417) | (.310) | (.457) |
| Share of leftist seats | .058 | .006 | .003*** | .294 | .337* | -.177 |
| in government | (.084) | (.011) | (.001) | (.229) | (.198) | (.158) |
| Fixed Effects | No | No | Yes*** | No | No | Yes*** |
| Period effects | No | No | Yes*** | No | No | Yes*** |
| $R^2$ | .641 | .607 | .975 | .588 | .473 | .987 |
| Observations | 45 | 45 | 45 | 45 | 45 | 45 |

significant in explaining neither the cross-country heterogeneity in labor market performances (Col. (1) without country fixed effects) nor the within evolution of employment patterns when country fixed effects are taken into account (not reported). The fit is really poor, the adjusted R-squared reaching merely 0.05. Moreover, these institutions are likely to be endogenous as regards the evolution of employment pattern.

This picture changes dramatically when one takes into account social attitudes. As shown in Table 5 - Col. (2), inherited attitudes in favor of social cooperation have a strong and statistically significant negative impact on the unemployment rate. These attitudes explain a large share of the cross-country heterogeneity in unemployment rates, the adjusted R-squared being four time as high as the one found when this feature is neglected.

Moreover, Table 5 - Col. (3) shows that the wage-setting ratio between union density and the minimum wage legislation becomes highly significant in explaining cross-country unemployment rate variation when instrumented by inherited social attitudes. This result suggests that the current aggregate indicators used by the literature miss an important point in genuinely capturing the wage-setting process.

Eventually Table 5 - Col. (4) shows that the same picture holds when one looks at the within evolution of labor market performance by including country fixed effects.

Table 5: Social attitudes and unemployment rates. Period: 1975-2002

| Dep. var.: Unemployment rate | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Inherited attitudes towards | | -.060*** | | -.075** |
| social cooperation | | (.020) | | (.030) |
| Union density (0-1) | -.035 | .005 | | -.004 |
| | (.028) | (.035) | | (.002) |
| Minimum wage index (0-1) | .068 | .082 | | .084 |
| | (.046) | (.052) | | (.100) |
| Ration Union density / Minimum wage | | | -.073** | |
| IV: Inherited attitudes | | | (.031) | |
| Employment protection | -.003 | -.009 | -.014 | .220 |
| | (.009) | (.011) | (.015) | (.119) |
| Replacement rate | .035 | .037 | .052 | -.191 |
| | (.028) | (.028) | (.039) | (.123) |
| Benefit duration | .008 | .014 | -.004 | .403 |
| | (.017) | (.020) | (.026) | (.135) |
| Tax wedge | .013 | -.036 | .177 | .203 |
| | (.050) | (.055) | (.110) | (.174) |
| Fixed Effects | No | No | No | Yes*** |
| Period effects | No | No | No | Yes*** |
| $R^2$ | .178 | .312 | .323 | .985 |
| Observations | 45 | 45 | 45 | 45 |

# 4 Conclusion

Our paper suggests that cross country differences in labor market institutions and performance are rooted in cross country differences in social attitudes. Although social attitudes exhibit a strong inertia because they are passed on, to a large extent, from generations to generations, social attitudes are themselves influenced, in the long run, by institutions and economic performance.

These findings are not only important to understand cross country differences in labor market institutions and performance. They are also very important to think about labor market reforms. For instance, stringent minimum wage legislations found in some countries, which are often criticized as a source of labor market rigidity, might merely be the consequence of the lack of prosocial behavior. In this context, reforms that reduce the minimum wage might worsen labor market efficiency, at least in the short run, if social attitudes exhibit important inertia. On the other hand, such reforms might have positive long run effects once their impact on social attitudes is accounted for. We still know very little on these issues. Our paper shows that it is worth knowing more, because social attitudes do seem to exert a significant influence on labor market performance. Accordingly, labor market reforms should be thought in a broad framework

that accounts for interactions between labor market institutions, labor market performance and social attitudes.

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# A Appendix

## A.1 Descriptive statistics

Table 6: Country and Ethny summary statistics

| Country of residency / Ethny of origins in US | Obs. by country WVS | Obs. by country ISSP | Obs. by ethny of origins GSS |
|---|---|---|---|
| Australia | 3652 | 916 | |
| Austria | 2452 | 812 | 203 |
| Belgium | 3577 | | 53 |
| Canada | 3710 | 889 | 660 |
| Czech Republic | 847 | 1025 | 442 |
| Denmark | 2236 | 870 | 268 |
| Finland | 2173 | | 174 |
| France | 2836 | 949 | 722 |
| Germany | 3347 | 812 | 6108 |
| Greece | 1013 | | 116 |
| Hungary | 833 | 733 | 201 |
| Ireland | 1967 | 817 | 4076 |
| Italy | 3867 | 848 | 1836 |
| Japan | 3592 | 1134 | 52 |
| Mexico | 5098 | 1421 | 769 |
| Netherlands | 2086 | 1750 | 569 |
| Norway | 3809 | 1335 | 669 |
| Poland | 1718 | 926 | 1022 |
| Portugal | 1706 | 986 | 75 |
| Spain | 7236 | 2047 | 486 |
| Sweden | 3061 | 1029 | 580 |
| Turkey | 6151 | | |
| United Kingdom | 2160 | 630 | 5754 |
| United States | 5046 | 1083 | Reference |

Table 7: Summary statistics for individual characteristics

| Variables | WVS | | ISSP | | GSS | |
|---|---|---|---|---|---|---|
| | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. |
| Men | .48 | .49 | .46 | .49 | .44 | .49 |
| Age | 38.42 | 13.28 | 39.64 | 13.25 | 39.56 | 12.78 |
| Age education | 18.25 | 4.08 | 12.64 | 4.08 | 12.90 | 2.89 |
| Low-income | .47 | .49 | .47 | .49 | .53 | .49 |
| Mid-income | .28 | .44 | .43 | .49 | .43 | .49 |
| Up-income | .25 | 43 | .09 | .29 | .03 | .17 |
| Employed | .66 | .45 | .68 | .49 | .68 | .46 |
| Unemployed | .08 | .27 | .05 | .20 | .04 | .18 |
| Inactive | .28 | .45 | .27 | .47 | .25 | .43 |
| Left | .45 | .49 | .40 | .49 | | |
| Catholics | .44 | .49 | .41 | .49 | .25 | .43 |
| Protestants | .24 | .43 | .25 | .43 | .59 | .49 |
| Muslims | .08 | .27 | .01 | .04 | .00 | .03 |
| Jews | .01 | .06 | .01 | .04 | .02 | .13 |
| Buddhists | .02 | .14 | .01 | .13 | .00 | .04 |
| Others | .05 | .16 | .03 | .17 | | |
| No religion | .14 | .35 | .27 | .44 | .10 | .29 |

## A.2 Minimum wage regulations

The data on minimum wages come from the OECD database and the International Labor Organization (ILO). The OECD database provides information on the different relative levels of minimum wages, while the ILO provides detailed description of the procedures through which minimum wages are implemented. We want to measure the extent to which the minimum wage is a constraint that binds on decentralized wage bargaining. For that purpose, we construct indicators of the degree of enforcement of the minimum wage which are based on three criteria.

1. The extent to which minimum wages are directly set by law or by collectively agreed minimum wages negotiated between social partners. Column 2 of tables 8 and 9 indicates whether wage floors are set by statutory rules defined by the law or by collective negotiation. Column 3 of tables 8 and 9 indicates the coverage of the minimum wage. This coverage is equal to one when the minimum wage is set by law. However, it can be smaller than one when there are no statutory minimum wages. In some countries the wage floor negotiated at the sectorial level only applies to unionized workers, but it is automatically extended to all workers in the other countries. As a matter of fact, the coverage rates of collectively agreed minimum wage reach 70 percent in Norway, 80 percent in Sweden 81 percent in Denmark while they are equal to 99 percent in Austria and

Italy. Eventually, almost all Anglo-Saxon countries have a statutory minimum wage. The United States recognized a statutory wage floor in 1938 by the Fair Act while United Kingdom established a national minimum wage in 1999 after having abolished the system of Wage Councils in 1993.

Table 8: Statutory and negotiated minimum wage systems in OECD countries. Source: ILO.

| | Determination | Coverage |
|---|---|---|
| Australia | Statutory<br>Provincial level | 1 |
| Austria | Negotiation<br>National extension | 0.99 |
| Belgium | Negotiation<br>National level | 1 |
| Canada | Statutory<br>Federal and<br>provincial levels | 1 |
| Czr | Statutory<br>National level | 1 |
| Denmark | Negotiation<br>Industry level | 0.8-0.9 |
| Finland | Negotiation<br>Industry level | 0.9 |
| France | Statutory<br>National level | 1 |
| Germany | Negotiation<br>National extension | 0.7 |
| Greece | Statutory<br>National level | 1 |
| Hg | Statutory<br>National level | 1 |
| Italy | Negotiation<br>National extension | 1 |

2. The level of the wage setting and the dispersion across regions, sectors or occupations. The second column of tables 10 and 11 indicates whether the minimum wage is set at the national level. It shows that most countries with a statutory minimum wage opt to set a single wage at the national level. Exceptions are Canada and the United States which set minimum wages at both the federal and the regional level. In the United States, seven states set minimum wages above the Federal State. Some States, mainly in the South, do not implement the Federal law. In Canada, each province set its own minimum wage, leading to a wide gap in statutory minimum wage. In Japan, the minimum wage is set at the prefecture level, with some different wages for different industries

Table 9: Statutory and negotiated minimum wage systems in OECD countries at the end of the 90's. Source: ILO.

| | Determination | Coverage |
|---|---|---|
| Japan | Statutory<br>Prefectures | 1 |
| Mexico | Statutory<br>National, 3 States | 1 |
| Netherlands | Statutory<br>National | 1 |
| Norway | Negotiation<br>Industry level | 0.7 |
| Poland | Statutory<br>National | 1 |
| Portugal | Statutory<br>National | 1 |
| Spain | Statutory<br>National | 1 |
| Sweden | Negotiation<br>Industry level | 1 |
| Turkey | Statutory<br>National | 1 |
| Uk | Negotiation, industries<br>Statutory, 1999 | 1 |
| Usa | Statutory<br>Federal, States | 1 |

in a given prefecture. Mexico lies in between, the minimum wage being set at the regional level, but with only three broad regions and a quite narrow gap between different regional levels.

Table 10: The level of the wage setting and the exisitence of subminimum by age at the end of the 90's. Source: ILO.

| | Variations by: | Subminimum |
|---|---|---|
| Australia | Industries,Regions Occupation, Age | |
| Austria | Industries Occupation, Age | No |
| Belgium | Age | 20:94%, 19: 88%, 18: 82% 17: 76%, <17: 70% |
| Canada | Industries, regions occupations | No |
| Czr | Occupation | No |
| Denmark | Industry, Age | <18: 40% |
| Finland | Industries, Age, Occupations | No |
| France | Age | 17: 90%, <17: 80% |
| Germany | Region, Age, Qualifications | Trainees |
| Greece | Age, Marital status Qualifications | No |
| Hg | No | No |
| Italy | Industry, Age | Trainees |

3. The existence of sub-minimum rates for young workers and trainees reported in tables 10 and 11. Such sub-minimum rates are quite common in OECD countries since they concern around half of them. Countries which exclude such provision are: Czech Republic, Greece, Hungary, Japan and Mexico. But significant differences exist among countries authorizing sub-minimum wage provisions. The first difference lies in the range of ages covered by the provision. Basically provisions would extend until 24 years old in Sweden or 22 years in Netherlands while such reductions are permitted only for worker younger than 17 years in France and 18 years in Ireland. The second difference is the extent of reductions. United-Kingdom stands as a polar case with no minimum wage for people younger than 21 years. The Netherlands accepts a reduction up to 40 percent of standard minimum wage at 17 years old while the wage floor is set at 80 percent of the standard minim wage in France or Spain for this age.

Table 11: The level of the wage setting and the dispersion across regions, sectors or occupations at the end of the 90's. Source: ILO.

| | Variations by: | Subminimum |
|---|---|---|
| Japan | Industry, Age Occupation | No |
| Mexico | No | No |
| Netherlands | Age | 22: 85%, 21: 72,5%, 20: 61,5%, 19: 52,5%, 18: 45,5%, 17: 39,5%, 16:34,5%, 15: 30% |
| Norway | Industry, age occupation | |
| Poland | No | No |
| Portugal | Age | <18: 75% |
| Spain | Age | <18: 89%, No reduction 1998 |
| Sweden | Industry, Age, Occupation | <24: 89% |
| Turkey | Age | <16: 85% |
| Uk | Industry,Age | <21: 0%, Change in 19999 |
| Usa | Age, Job tenure | No |

To capture the strictness of the law enforcement, we calculate 3 sub-indexes corresponding to the previous criteria. The first sub-index is equal to 1 if there is a statutory minimum wage, 0.5 if the minimum wage is bargained by unions but extended by law at non-union workers and 0 otherwise. The second sub-index measures potential level dispersion across industries, region, job-tenure or occupation. The sub-index is equal to 0 if the minimum wage is allowed to differ along at least three dimensions, 0.33 for two types of distinctions, 0.67 for one type of distinction and 1 if any level dispersion in the country is forbidden. The third sub-index measures the different sub-minimum rates. This indicator is equal to one if there is no provision at all for sub-minimum wages, 0.5 if the special rates only apply for people younger than 18 years old or if the derogation is less than half the official minimum wage, and 0 if the subminimum can be extended for people older than eighteen or/and if the special rates is lower than 50 percent of the standard wage floor.

We then calculate a composite index on the minimum wage enforcement, *minwage_ enforcement*, by taking the average of the previous sub-indexes. We also take into account the level of the minim wages by the indicator *minwage_ level* calculated as the ratio of the minim wage over the mean wage. The values are provided by the OECD database for countries with a statutory minimum wage and are completed with Neumark and Wascher (2003) for other countries. The global indicator *minwage* is defined as the average of the two enforcement and level indicators.

## A.3 Changes in inherited attitudes

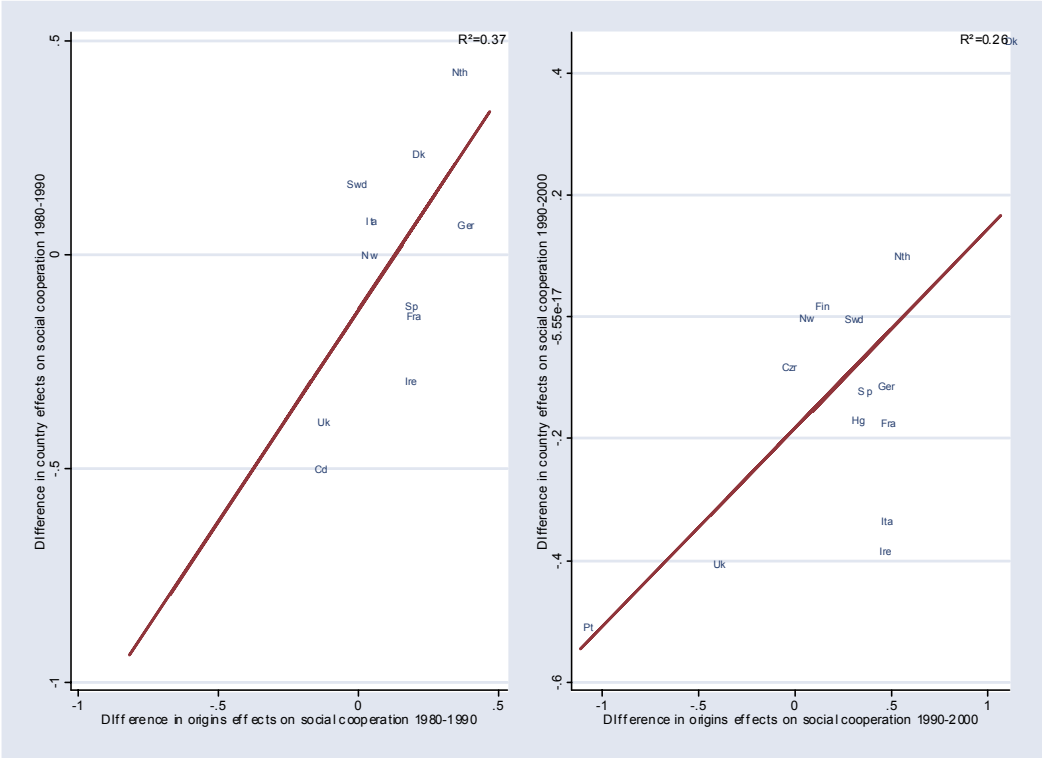


Figure 8: Changes in country fixed effects (for the probit regression on the indicator trust: see table 1) and changes in country of origin fixed effects (for the probit regression on the indicator trust_usa: see table 2) between 1980 and 1990 (left panel) and between 1990 and 2000 (right panel).