# Minimum wage: Redistributive or discriminatory policy?\*

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#### Abstract

The standard model of optimal minimum wage policy in a perfectly competitive labor market suggests that a positive tax rate on minimum wage income is Pareto inefficient. However, most countries with a minimum wage exhibit a positive tax rate for minimum wage income. This paper introduces discrimination of individuals that do not contribute to social welfare, typically individuals that do not participate in the political process, into the standard model. If a minimum wage is introduced for discriminatory purposes, a positive tax rate on minimum wage income can be compatible with optimal government policy. In the empirical part, we show that the approval of discrimination against foreigners in the labor market and the presence of a minimum wage are indeed positively correlated.

JEL classification: E24; J31; J71; J78 Keywords: Minimum wage; discrimination

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#### 1 Introduction

For many decades, there had been been a consensus among economists that minimum wages increase unemployment among teenagers and young adults (Brown et al., 1982; Alston et al., 1992) and are therefore not advisable. This assessment however, started to change in the mid 1990s with the seminal contributions by Katz and Krueger (1992) and Card and Krueger (1994). The authors evaluate changes in statutory minimum wages in the US using establishment data and do not find negative employment effects. This finding lead to an intense debate about the effects of minimum wages on employment (Neumark and Wascher, 1992; Card et al., 1994; Neumark and Wascher, 2000; Card and Krueger, 2000).

Many subsequent studies investigate the economic effect of statutory minimum wages (Card and Krueger, 1995; Neumark and Wascher, 2004; Dube et al., 2007, 2010; Allegretto et al., 2011; Giuliano, 2013). More recently, the literature has also investigated employment effects of minimum wages that are set by an external committee like in the UK (Stewart, 2002; Metcalf, 2008) or by collective bargaining agreements for certain branches such as the German construction sector (König and Möller, 2009; Müller, 2010; Frings, 2013; vom Berge et al., 2013). However, the literature has not yet come to a consensus.

The lack of evidence for negative employment effects of minimum wages has led many economists to question the conventional model of perfect competition in labor markets. Proponents of minimum wages typically argue that labor markets could be better described by models with additional frictions. There are mainly two alternative model types under consideration. First, there are matching models in the style of Mortensen and Pissarides (1999). Second, models of monopsonistic competition in the labor market have gained considerable attention, especially in recent years (Manning, 2003, 2004, 2011). In such models, minimum wages could be used as a redistributive tool. Wages of low wage earners are increased at the expense of firms' profits with negligible or even positive effects on employment.

However, surprisingly little is known about the welfare effects of minimum wages in comparison to alternative redistributive policies, which should be the criteria for any policy recommendation. Cahuc and Laroque (2014) analyze the effect of minimum wages in a monopsonistic labor market. The authors show, that minimum wages can increase wel-

<sup>&</sup>lt;sup>1</sup>In a survey among the IGM Panel in 2013 (http://www.igmchicago.org), 34% agreed, 32% disagreed with the statement: "Raising the federal minimum wage to \$9 per hour would make it noticeably harder for low-skilled workers to find employment." In 2015, 21% agreed, 24% disagreed with the statement: "If the federal minimum wage is raised gradually to \$15-per-hour by 2020, the employment rate for low-wage US workers will be substantially lower than it would be under the status quo."

fare. But under realistic assumptions as a continuum of wages at the bottom of the wage distribution, there is an alternative tax scheme, which yields a superior allocation. However, minimum wages might still be a useful policy if policies that allow for this superior allocation are not available to the government. Considering competitive labor markets, Lee and Saez (2012) show that minimum wages can actually be welfare improving. However, one necessary condition is that minimum wage earners face negative tax rates, which seems to be in contrast to observed positive tax rates for the respective incomes in OECD countries (Immervoll, 2007). In case of positive tax rates for minimum wage earners, minimum wages are second best Pareto inefficient. This still growing literature on the welfare effects of minimum wages at least sows doubts that minimum wages are the best policy to increase welfare in the economy. Minimum wages should be considered in context with other policies. In practice however, the process that determines the introduction of a minimum wage typically does not exhibit the features of a careful welfare analysis, but seems to be rather ad hoc.

This raises the question of whether there might be another motivation for the latest popularity of minimum wages in many countries. For the demand side on the labor market, minimum wages might be a tool keep lower paying competitors out of the market (Haucap et al., 2001). Bachmann et al. (2014) show that the support for – on the sectoral level bargained – minimum wages in Germany is indeed stronger in industries and regions with low barriers to market entry and among firms that already pay collectively bargained wages. For the supply side, minimum wages might be a tool to price less productive workers out of the labor market. Historically, minimum wages have often been used in such a way. Sowell (2013) reports that in the past, minimum wages have been used in many countries to price immigrants out of the labor market, e.g. in Canada, Australia, South Africa, and the United States. Sumner (2015) asks whether even today, minimum wages might be used to keep certain population groups out of the labor market at the example of the planned minimum wage increase in Britain.<sup>2</sup>

This paper uses a Lee and Saez (2012) type model with perfect competition in the labor market and introduces discrimination of a sub-population in the labor market. A positive tax rate for minimum wage income can be optimal if there is support for discrimination in the labor market. Employing a cross country analysis, we investigate whether the presence of a minimum wage is associated with higher approval of discrimination against foreigners, which have often been the target of minimum wage legislation in the past

<sup>&</sup>lt;sup>2</sup>Sumner (2015) also reports that some commenters suggest that the introduction of collectively bargained minimum wages in Germany might have something to do with increased immigration from Eastern European Countries.

(Sowell, 2013). We find a positive and significant correlation.

#### 2 Model

This Section analyzes the conditions under which a minimum wage is welfare improving. We use the standard model of optimal minimum wage policy in a perfectly competitive labor market (Lee and Saez, 2008, 2012). There are two household types, high and low skilled individuals. High and low skilled labor are complements in the production process. In the following, we describe the standard model and introduce heterogeneity among low skilled individuals. There are two types of low skilled workers. One group does not participate in the political process and therefore does not contribute to social welfare. This setup allows for a welfare analysis if one group of low skilled individuals faces discrimination in the labor market. As foreigners have been the target of discriminative measures in the pats, we call the two types domestic (d) and foreign (f) individuals.

#### 2.1 Demand Side

Production takes place at perfectly competitive firms. There are two input factors in the production process, low skilled labor  $h_l$  and high skilled labor  $h_h$ . Firms combine these two inputs and produce consumption goods according to the production function  $F(h_l, h_h)$ . They maximize real profits  $\Pi = F(h_l, h_h) - w_l h_l - w_h h_h$  with w being the skill dependent wage rate. Foreign and domestic low skilled labor are perfect substitutes. This simple setup results in an identical wage for foreign and domestic low skilled workers and the standard condition for the two factor prices

$$w_i = \frac{\partial F}{\partial h_i} \tag{1}$$

holds for  $i \in \{l, h\}$ . Constant returns to scale result in workers receiving all of the firms' earnings, firms' profits are zero  $\Pi = 0$ . We also assume that wages for high skilled workers are higher than the ones for low skilled workers  $w_l < w_h$ .

### 2.2 Supply Side

There are two types of workers, high skilled  $h_h^0$  and low skilled ones  $h_l^0$ . All high skilled individuals are citizens of the country. Low skilled individuals consist of two groups, citizens  $h_{ld}^0$  and foreigners  $h_{lf}^0$ . We normalize the population such that  $h_h^0 + h_l^0 = h_h^0 + h_{ld}^0 + h_{lf}^0 = 1$ . Each individual faces a cost of working  $\theta$ . This cost of working is smoothly distributed

for each population group with the cumulative distribution function  $P_h(\theta)$  for high skilled individuals and  $P_{ld}(\theta)$  and  $P_{lf}(\theta)$  for domestic and foreign low skilled ones. This setup results in three possible labor market statuses. There are unemployed workers  $h_0$ , which consist of high skilled as well as domestic and foreign low skilled workers, employed low skilled workers  $h_l$ , which consist of domestic and foreign workers, and employed high skilled workers  $h_l$ .

All individuals make a binary labor supply decision. Individuals want to work if work effort is lower than the additional after tax labor income  $\theta \leq (1 - \tau_i) w_i$  with the occupation specific tax rate  $\tau_i$  with  $i \in \{l, h\}$ . All individuals in the economy receive lump sum transfers  $c_0$ . Therefore, disposable income for employed high and low skilled individuals is given by  $c_i = c_0 + (1 - \tau_i) w_i$ . A negative tax rate  $\tau_i$  represents government transfers. Unemployed individuals only receive lump sum transfers  $c_0$ .

Aggregate labor supply for high and low skilled individuals is increasing in labor income. The number of individuals that are willing to work for a given after tax labor income is given by

$$h_i = h_i^0 P_i ((1 - \tau_i) w_i) = h_i^0 P_i (c_i - c_0)$$
(2)

with  $i \in \{h, ld, lf\}$ .

### 2.3 Equilibrium

Combining the labor market's supply and demand side defines an undistorted equilibrium for wages  $w_l$ ,  $w_h$  and the shares of individuals that are working  $h_{ld}$ ,  $h_{lf}$ ,  $h_h$  conditional on an exogenous wage for low skilled workers  $w_l$ . (2) determines hours worked for low skilled workers conditional on the exogenous wage rate  $w_l$ . Constant returns to scale in combination with (1) and (2) determine hours worked and the corresponding competitive wage for high skilled workers.

Let us now define demand functions for domestic and foreign low skilled workers,  $D_{ld}(w_l) = h_{ld}$  and  $D_{lf}(w_l) = h_{lf}$ .

### 2.4 Government Social Welfare Objective

The government evaluates social welfare given a social welfare function SW. It values disposable income of domestic individuals<sup>3</sup> given the concave function G(c). The concavity either represents individuals' decreasing marginal returns to consumption or the

<sup>&</sup>lt;sup>3</sup>As in Benhabib (1996), foreigners do not contribute to the social welfare function.

government's preference for redistribution (Lee and Saez, 2012). The social welfare function cumulates the government evaluated utility of unemployed domestic individuals, low skilled domestic, and high skilled workers. As foreign workers do not participate in the political process, they e.g. are not allowed to vote, they do not contribute to social welfare.

$$SW = (1 - h_{ld} - h_{lf}^{0} - h_{h}) G(c_{0}) + h_{ld}^{0} \int G(c_{ld} - \theta) p_{ld}^{0}(\theta) d\theta + h_{h}^{0} \int G(c_{h} - \theta) p_{h}^{0}(\theta) d\theta$$
(3)

The distribution functions  $p_{ld}^0$  and  $p_h^0$  give the probability of an individual with disutility from working  $\theta$  to be employed.

All individuals in the economy receive lump sum transfer  $c_0$ . These transfers are financed via labor taxes. As in Lee and Saez (2012), the government observes whether an individual is employed and in which sector. Individual disutility from working  $\theta$  is not observable. Tax rates  $\tau_i$  are therefore linked to whether an individual works in the high or in the low skill sector, with  $\tau \in \{l, h\}$ . The government faces the budget constraint

$$h_{ld}\left(\tau_{l}w_{l}\right) + h_{lf}\left(\tau_{l}w_{l}\right) + h_{h}\left(\tau_{h}w_{h}\right) = c_{0}. \tag{4}$$

## 2.5 Desirability of a Minimum Wage

Let us now examine the conditions under which a minimum wage is welfare improving. Evaluating the desirability of a minimum wage should take all policies into account that are available to the government. We therefor analyze the case of the government setting an optimal tax and transfers scheme.

The government maximizes the social welfare function (5) by setting a minimum wage  $(\bar{w}, \text{ the wage for low skilled workers})$  as well as transfers  $c_0$  and the occupation-specific tax rates  $\tau_l$  and  $\tau_h$ . As wages are occupation specific, setting tax rates is equivalent to setting the increase in disposable income due to working  $\Delta c_h$  and  $\Delta c_l$ , where the additional income for low skilled workers is independent of being a citizen or a foreigner  $\Delta c_l = \Delta c_{ld} = \Delta c_{lf}$ .

$$SW = \left[1 - D_{lh}(\bar{w}) - h_{lf}^{0} - h_{h}^{0} P_{h}(\Delta c_{h})\right] G(c_{0})$$

$$+ D_{lh}(\bar{w}) \int_{0}^{\Delta c_{ld}} G(c_{0} + \Delta c_{ld} - \theta) \frac{p_{ld}(\theta)}{P_{ld}(\Delta c_{ld})} d\theta + h_{h}^{0} \int_{0}^{\Delta c_{h}} G(c_{0} + \Delta c_{h} - \theta) p_{h}(\theta) d\theta \quad (5)$$

As individuals are heterogeneous with respect to their disutility from working, individuals for which work effort is larger than the increase in disposable income due to working will not participate in the labor market. For high skilled workers, individuals with  $\theta \leq \Delta c_h$  are willing to work resulting in the fraction  $P_h(\Delta c_h)$  of high skilled individuals working. Therefore, integration of the second integral in (5) goes from  $\theta = 0$  to  $\theta = (1 - \tau_h)w_h = \Delta c_h$  and the integral represents average utility from working for high skilled individuals. For low skilled individuals, the shares  $P_{ld}(\bar{w}(1-\tau_l))$  and  $P_{lf}(\bar{w}(1-\tau_l))$ of low skilled individuals are searching for jobs. However, if the minimum wage is binding, labor demand is below labor supply, resulting in labor rationing. We assume that labor rationing is uniform within each subgroup. Each individual within a group that is looking for a job has the same probability of finding a job. Therefore, integration of the first integral in (5) goes from  $\theta = 0$  to  $\theta = (1 - \tau_l)w_l = \Delta c_l$ , thereby covers all individuals that are willing to work. The fraction corrects for the fact that not all individuals that are willing to work are actually working and that there are individuals that are not searching for a job. The integral therefore represents average utility of individuals that are working at wage  $\bar{w}$ .

The government faces the budget constraint

$$D_{ld}(\bar{w})(\bar{w} - \Delta c_l) + D_{lf}(\bar{w})(\bar{w} - \Delta c_l) + h_h^0 P_h(\Delta c_h)(w_h - \Delta c_h) = c_0$$

$$\tag{6}$$

Lump sum transfers cannot be increased indefinite but have to be financed via labor taxes. The government chooses a tax and transfer scheme  $(c_0, \Delta c_l, \Delta c_h)$  and a wage for low skilled workers  $(\bar{w})$  that is above the undistorted equilibrium level to maximizes the social welfare function (5) subject to the budget constraint (6).

The optimal government policy can be described by the following equations representing in order the derivatives with respect to  $c_o$ ,  $\Delta c_l$ ,  $\Delta c_h$ , and  $\bar{w}$ .

$$(h_0 + h_{lf} - h_{lf}^0)g_0 + h_{ld}g_{ld} + h_h g_h = 1 (7)$$

$$\frac{g_{ld} - 1 - \frac{D_{lf}(\bar{w})}{D_{ld}(\bar{w})}}{e_{ld}} = g_0^h \int_0^{\Delta c_{ld}} \left(1 - \frac{\theta}{\Delta c_{ld}}\right) \frac{p_{ld}(\theta)}{P_{ld}(\Delta c_{ld})} d\theta \tag{8}$$

$$g_h = 1 - e_h \frac{\tau_h}{1 - \tau_h} \tag{9}$$

$$-\frac{\tau_l}{1-\tau_l} \left( 1 + \frac{D'_{lf}(\bar{w})}{D'_{ld}(\bar{w})} \right) = g_0^h \int_0^{\Delta c_{ld}} \left( 1 - \frac{\theta}{\Delta c_{ld}} \right) \frac{p_{ld}(\theta)}{P_{ld}(\Delta c_{ld})} d\theta \tag{10}$$

 $g_0, g_{ld}$ , and  $g_h$  are the average social marginal welfare weights for the different occupation statuses and defined as  $g_0 = G'(c_0)/\lambda$  and  $g_i = h_i^0 \int G'(c_0 + \Delta c_i - \theta p_i(\Delta c_i)d\theta/(\lambda h_i))$  for  $i \in \{ld, h\}$  with  $\lambda$  being the Lagrangian multiplier for the government's budget constraint. The marginal weight of disposable income losses due to unemployment  $g_0^h$  is defined as  $g_0^h = [G(c_0 + (\bar{w} - \underline{w})(1 - \tau_l)]/[\lambda(\bar{w} - \underline{w})(1 - \tau_l)]$ .  $\underline{w}$  represents the equilibrium wage with no minimum wage,  $e_{ld}$  and  $e_h$  are the labor supply elasticities defined as  $e_i = \Delta c_i \ p_i(\Delta c_i)/P_i(\Delta c_i)$  for  $i \in \{ld, h\}$ .

It is easy to see that under the assumption that there are no foreigners in the economy  $(h_{lf} = h_{lf}^0 = 0, D_{lf}(\bar{w}) = 0 \text{ and } D'_{lf}(\bar{w}) = 0)$ , the model collapses to the one with uniform rationing by Lee and Saez (2008, Appendix B), in which a minimum wage is second best Pareto inefficient when tax rates on minimum wage income are positive.

The question in this paper is whether the presence of individuals that do not contribute to social welfare, typically non citizens, and their discrimination in the labor market, which has been observed in the past, can explain the presence of a minimum wage and the positive tax rate on minimum wage income. For the sake of simplicity, we assume a simple cumulative distribution function for low skilled individuals of the form  $P_{ld}(\theta) = C\theta^{e_{ld}}$ . We then can rewrite the right hand side of (8)

$$\frac{g_{ld} - 1 - \frac{D_{lf}(\bar{w})}{D_{ld}(\bar{w})}}{e_{ld}} = g_0^h \frac{1}{1 + e_{ld}}.$$
 (11)

As the government's weighting function of individual utility  $G(c, \theta)$  is concave, utility losses due to unemployment are at least of the size of marginal utility of low skilled workers  $(g_0^h \ge g_{ld})$ . We therefore know that

$$g_{ld} \ge (1 + e_{ld}) \left( 1 + \frac{D_{lf}(\bar{w})}{D_{ld}(\bar{w})} \right)$$
 (12)

On the other hand, combining (8) and (10) yields

$$g_{ld} = 1 + \frac{D_{lf}(\bar{w})}{D_{ld}(\bar{w})} + \frac{\tau_l}{\tau_l - 1} e_{ld} \left( 1 + \frac{D'_{lf}(\bar{w})}{D'_{ld}(\bar{w})} \right) . \tag{13}$$

<sup>&</sup>lt;sup>4</sup>These definitions are borrowed from Lee and Saez (2008).

Combining (12) and (13) yields an expression for the optimal tax rate conditional the government setting an optimal tax and transfer scheme and an optimal minimum wage.

$$\frac{\tau_l}{\tau_l - 1} \left( 1 + \frac{D'_{lf}(\bar{w})}{D'_{ld}(\bar{w})} \right) \ge 1 + \frac{D_{lf}(\bar{w})}{D_{ld}(\bar{w})} \tag{14}$$

As labor demand is cannot be negative, the right hand side of (14) is always positive. But for the minimum wage to be desirable, this equation has to hold. Let us therefore investigate under which conditions the left hand side of (13) is positive. If tax rates are negative, the expression  $\tau_l/(\tau_l-1)$  is positive and the distribution of job losses due to the minimum wage  $D'_{lf}(\bar{w})/D'_{ld}(\bar{w})$  should be larger than -1. If tax rates are positive,  $\tau_l/(\tau_l-1)$  becomes negative. For the inequality to hold  $D'_{lf}(\bar{w})/D'_{ld}(\bar{w})$  has to be smaller than -1.

We therefore have to give an interpretation of the term  $D'_{lf}(\bar{w})/D'_{ld}(\bar{w})$  and explain how it relates to discrimination. Assume that there is no discrimination between foreigners and low skilled citizens in the labor market. Then, labor demand D should be downward sloping for both groups, the magnitude of the slopes should depend on the distribution of disutility from working. Therefore, the fraction should be positive in all cases allowing for a minimum wage to be desirable in case of a negative tax rate on low wage income.

However, the empirically relevant case of a positive tax rate might be more interesting. For a minimum wage to be desirable, a necessary condition is that the left hand side is positive. Given a positive tax rate, this is the case if  $D'_{lf}(\bar{w})/D'_{ld}(\bar{w})$  is smaller than -1. However, this term can only be negative if one group of low skilled workers faces job losses due the minimum wage, typically foreign workers, while employment among the other group increases.<sup>5</sup>

**Proposition:** Assuming uniform rationing,  $e_{ld} > 0$ ,  $D'_i(\Delta c_i) > -\infty$  for  $i \in \{ld, lf\}$ , and the government setting an optimal tax and transfer scheme, a minimum wage can be desirable if citizens approve of discrimination against non citizens in the labor market.

#### 3 Data

To test whether the presence of a minimum wage is correlated with the approval of discrimination against foreigners, we employ a cross country analysis. Information on the approval of discrimination against foreign workers is taken from the World Values Survey

<sup>&</sup>lt;sup>5</sup>We are looking at a minimum wage only slightly above the undistorted equilibrium. Therefore, the change in the composition of potential workers should be negligible. We call this unequal distribution of job losses among the two groups of low skilled workers a case of discrimination.

(WVS). The WVS is a nationally representative household survey that covers almost 100 countries, roughly representing 90% of the world's population (World Values Survey, 2014). The countries that participate in the survey change over time. This paper uses the percentage of respondents in each country agreeing to the statement: "When jobs are scarce, employers should give priority to people of this country over immigrants." We explain the presence of statutory and national minimum wages, which corresponds to the OECD definition. We restrict our sample to OECD countries. One benefit of this choice besides data availability issues is that OECD countries are committed to democracy such that the approval of discrimination among citizens should have an effect on legislation. Information on the presence of a minimum wages is retrieved from Gräf et al. (2014, p. 10), the OECD, and Neumark and Wascher (2007).

We merge information on the approval of discrimination with information on the presence of a minimum wage. As one WVS wave corresponds to a time period of about five years, we use information on whether there was a minimum wage in the year the respective WVS wave was conducted in the specific country. Descriptive statistics are reported in Table 1. Figure 1 illustrates the correlation between the two variables of interest.

#### 4 Estimation and Results

To test whether the correlation between the presence of a minimum wage and the approval of discrimination against foreigners in the labor market can be found in the data we employ a cross country analysis for OECD countries. We estimate Equation (15).

$$y_{it} = \beta_0 + \beta_d d_{it} + \gamma_t + \varepsilon_{it} \tag{15}$$

y indicates the presence of a minimum wage,  $d_{it}$  represents approval of discrimination against foreigners in the labor market. i and t indicate the country and the corresponding WVS wave.  $\gamma_t$  represents time fixed effects,  $\epsilon_{it}$  is the error term. We employ an OLS and a probit estimator, standard errors are clustered on the country level.<sup>7</sup> As the marginal

<sup>&</sup>lt;sup>6</sup>This is the exact statement that is included in wave 6 (variable V46 with one observation between the years 2010 to 2014). Similar statements are included in waves 2-5. Each wave covers about 5 years resulting in a sample period from 1990 (first year of wave 2) to 2014 (last year of wave 6).

<sup>&</sup>lt;sup>7</sup>We are not able to include country fixed effects, which would allow for a statement on the causal effect of the approval of discrimination on the presence of a minimum wage, as there practically is no variation with respect to the presence of a minimum wage in the different countries in our sample. There is only one country that exhibits a change in the minimum wage status. In the UK, there was no minimum wage in 1998 while a minimum wage had been introduced in 2005. Additionally to that, we asses the potential country fixed effect to capture an important part of the connection between the presence of a

effect might not be constant, it might be highest when about half of the population approves of discrimination, we also test for nonlinear effects. Results are reported in Table 2. The explanatory power of discrimination for the presence of a minimum wage is statistically significant. Including the second order polynomial of discrimination further increases significance. The joint effect is significant at the 1% level in all cases. To illustrate the joint effect, we compute the effect at the minimum, the mean, and the maximum values of discrimination in our sample. In all cases the effect is positive, in most cases significant at the 1% level.<sup>8</sup>

# 5 Concluding Remarks

In the standard model of optimal minimum wage policy in a perfectly competitive labor market (Lee and Saez, 2008, 2012) the empirically relevant case of a minimum wage and a positive tax rate on minimum wage income is second best Pareto inefficient. However, a Pareto inefficient policy mix in most OECD countries with minimum wages seems kind of puzzling and raises the question about the aims of such a policy. Historically, minimum wages have often been used to discriminate against certain population groups (Sowell, 2013). Introducing such discrimination into this standard model and assuming uniform rationing, we show that a positive tax rate on minimum wage income can be optimal given the government's social welfare function if citizens approve of discrimination. Employing a cross country analysis, we find that the presence of a minimum wage and the approval of discrimination against foreigners in the labor market are indeed positively correlated.

Given the strong dependance of welfare effects of minimum wages on the tax and transfer scheme (Lee and Saez, 2008, 2012; Cahuc and Laroque, 2014), economists should better explain under which conditions minimum wages have positive welfare effects and under which conditions minimum wages are not desirable. This would enable policymakers to choose a Pareto efficient policy mix and would clarify the aims of minimum wage policy, resolving all doubts about a potential hidden agenda behind minimum wage legislation (Sumner, 2015).

minimum wage and the views towards discrimination. However, not being able to include country fixed effects comes at the price of identifying a correlation and not a causal effect.

<sup>&</sup>lt;sup>8</sup>For the probit estimation, the joint effect refers to the joint effect on the latent variable.

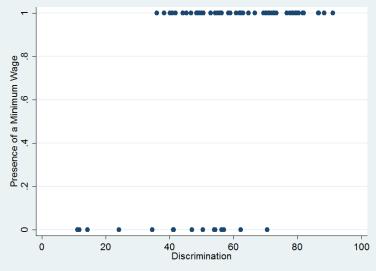
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Figure 1: Minimum wage and jobs for own nationality  $\,$ 



Source: Gräf et al. (2014, p. 10), Neumark and Wascher (2007), OECD, and World Values Survey, own illustration.

Table 1: Descriptive statistics

|                          | Mean  | SD    | Min   | Max   | Observations |
|--------------------------|-------|-------|-------|-------|--------------|
| Presence of minimum wage | 0.78  |       | 0     | 1     | 69           |
| Discrimination           | 58.59 | 17.91 | 11.10 | 91.10 | 69           |
| 1990-1994                |       |       |       |       | 7            |
| 1995-1999                |       |       |       |       | 19           |
| 2000-2004                |       |       |       |       | 8            |
| 2005-2009                |       |       |       |       | 21           |
| 2010-2014                |       |       |       |       | 14           |

Table 2: Explaining the presence of a minimum wage by approval of discrimination

|   |                       | OLS                   |                       |                       |                       | Probit                |                       |                       |  |  |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--|--|
|   | (1)                   | (2)                   | (3)                   | (4)                   | (5)                   | (6)                   | (7)                   | (8)                   |  |  |
| Discrimination                                    | 0.0114***<br>(0.0031) | 0.0294***<br>(0.0087) | 0.0122***<br>(0.0034) | 0.0295***<br>(0.0088) | 0.0482***<br>(0.0140) | 0.0775<br>(0.0507)    | 0.0543***<br>(0.0148) | 0.0960**<br>(0.0477)  |  |  |
| Discrimination <sup>2</sup>                       |                       | -0.0002*<br>(0.0001)  |                       | -0.0002*<br>(0.0001)  |                       | -0.0003<br>(0.0005)   |                       | -0.0004<br>(0.0004)   |  |  |
| Time FE   | No                    | No                    | Yes                   | Yes                   | No                    | No                    | Yes                   | Yes                   |  |  |
| Constant  | Yes                   |  |  |
| Joint significance of discrimination <sup>a</sup> |                       | 24.81***              |                       | 21.70***              |                       | 13.48***              |                       | 16.20***              |  |  |
| Joint effect of discrimination <sup>b</sup>       |                       |                       |                       |                       |                       |                       |                       |                       |  |  |
| at minimum  |                       | 0.3063***<br>(0.0866) |                       | 0.3076***<br>(0.0877) |                       | 0.8254 $(0.5087)$     |                       | 1.0152**<br>(0.4794)  |  |  |
| at mean   |                       | 1.1534***<br>(0.2305) |                       | 1.1723***<br>(0.2365) |                       | 3.5595**<br>(1.5218)  |                       | 4.1369***<br>(1.4367) |  |  |
| at maximum  |                       | 1.3004***<br>(0.1846) |                       | 1.3423***<br>(0.2039) |                       | 4.6858***<br>(1.3738) |                       | 5.3408***<br>(1.3626) |  |  |
| Observations                                      | 69                    | 69                    | 69                    | 69                    | 69                    | 69                    | 62 <sup>c</sup>       | 62 <sup>c</sup>       |  |  |

Note: Standard errors clustered on the country level in parentheses. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01. a F-statistic. b For probit estimations, effect on latent variable. c All countries with information on discrimination according to wave 2 of the WVS have minimum wages laws. We therefore have to reduce the sample size.