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IZA DP No. 10854

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ABSTRACT

Perception of Corruption and Public Support for Redistribution in Latin America*

This paper studies the relationship between people's beliefs about the quality of their institutions, as measured by corruption perceptions, and preferences for redistribution in Latin America. Our empirical study is guided by a theoretical model which introduces taxes into Foellmi and Oechslin's (2007) general equilibrium model of non-collusive corruption. In this model perceived corruption influences people's preferences for redistribution through two channels. On the one hand it undermines trust in government, which reduces people's support for redistribution. On the other hand, more corruption decreases own wealth relative to average wealth of below-average-wealth individuals leading to a higher demand for redistribution. Thus, the effect of perceived corruption on redistribution cannot be signed a priori. Our novel empirical findings for Latin America suggest that perceiving corruption in the public sector increases people's support for redistribution. Although the positive channel dominates in the data, we also and evidence for the negative channel from corruption to demand for redistribution via reduced trust.

JEL Classification: D31, D63, H1, H2, P16

Keywords: preference for redistribution, perception of corruption, political trust, bribery, Latin America

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* We thank the Latin American Public Opinion Project (LAPOP) and its major supporters (the United States Agency for International Development, the United Nations Development Program, the Inter-American Development Bank, and Vanderbilt University) for making the data available. We would also like to thank Anastasia Litina, Hannes Mueller, Gianmarco León, and Juan Pablo Nicolini for their comments and suggestions as well as participants at the 6th ECINEQ Meeting in Luxembourg. Xavier Ramos and Mónica Oviedo acknowledge financial support of projects ECO2013-46516-C4-1-R (Ministerio de Ciencia y Tecnología), ECO2016-76506-C4-4-R, and SGR2014-1279 (Generalitat de Catalunya). Hauk acknowledges financial support from the Spanish Ministry of Economy and Competitiveness through the Severo Ochoa Program for Centers of Excellence in R&D (SEV-2015-0563) and through CICYT project number ECO2015-67171-P (MINECO/FEDER) and from the government of Catalonia.

1 Introduction

Political support for redistribution from the rich to the poor is a cornerstone in the design and functioning of the social contract and the stability of welfare systems. Redistributive policies are designed and executed by public officials in charge not only of handling a substantial amount of resources, but also of ensuring that these policies are impartially, effectively and efficiently implemented. However, where corruption in the public sector is widespread, welfare states are not efficient and well-functioning. Moreover, corruption may distort the redistributive role of government by mis-targeting redistributive programs or favouring special interests (Tanzi and Davoodi, 1997; Mauro, 1998; Rose-Ackerman, 1999; Gupta et al., 2002; Bird et al., 2008). This paper examines whether corruption among public officials, as perceived by citizens, affects their willingness to support public policy aimed at reducing inequality in Latin America.

In order to guide our empirical analysis we introduce redistributive taxation into Foellmi and Oechslin's (2007) general equilibrium model of non-collusive corruption. In this model agents are heterogenous in their initial assets. To become an entrepreneur they have to ask for a licence and may be forced to pay a bribe to obtain the license. All agents have access to the same constant-return technology, which requires a minimum investment to produce output. Capital markets are imperfect, hence initial assets serve as collateral and determine how much can be borrowed and therefore also who can become an entrepreneur. An agent who does not become an entrepreneur uses his initial assets to become a lender in the capital market. The capital market clearing determines equilibrium interest rates. In this context we study how people's preferences for redistribution are affected by their corruption perceptions modeled as the probability that a corrupt bureaucrat goes unpunished. Redistributive taxation involves a deadweight loss which increases in the probability of impunity of corrupt officials. This assumption captures the fact that greater redistribution by a corrupt government may create further rent-seeking opportunities to those who are able to benefit from corruption and leaves a smaller part of the government budget for redistribution. Moreover, perceiving high levels of corruption affects people's trust in public officials' willingness or ability to redistribute in an effective and impartial way (Robinson, 2008; Kuziemko et al., 2015). This channel reduces support for redistribution when corruption perceptions increase.

However, if borrowing is limited due to capital market imperfections, the presence of corrupt and immune bureaucrats causes income/wealth inequality to increase because their bribe demands prevent poorer individuals from starting their own business and benefit very rich individuals by lowering the cost of capital. More corruption therefore leads to fewer entrepreneurs with higher net returns while the returns to the rest of the population that acts as lenders on the capital market falls. This change in wealth is likely to lead to an overall higher taste for redistribution. Indeed, any individual with income/wealth levels below the mean[1] whose ratio of own pre-tax wealth to average pre-tax wealth decreases will favor more redistribution.[2]

The net impact of the perception of corruption on the support for redistribution cannot be signed without making stark assumptions on underlying model parameters and is

[1] Agents with above-mean wealth want a zero tax rate.

[2] While everybody except for the richest suffer a loss in own income if corruption is higher, the effect on average income cannot be signed in the absence of precise distributional assumptions on initial wealth.

ultimately an empirical question.

We estimate the effect of perceptions of corruption on the probability of agreeing with state's intervention to reduce economic inequality. As the causal link between beliefs and preferences runs in both directions —beliefs not only shape public policies, but are also influenced by policies and institutional environment—, the concern for potential endogeneity of perceptions of corruption is addressed through a simultaneous equation model using individual bribery victimization as exclusion restriction.

Our empirical analysis employs data from the AmericasBarometer survey for 18 countries in Latin America, a region featuring very high and persistent inequality levels (World Bank, 2006; Goñi et al., 2008; OECD, 2009) and weak institutions with high levels of corruption (Transparency International, 2009; Kaufmann et al., 2009), where redistributive policies are not effective at reducing economic disparities.[3] Also, credit market imperfections that are widespread in "poorer countries" (Levine, 1997) clearly affect Latin America. Latin America is thus an especially appropriate region to examine the consequences of corruption for support for redistribution, and our findings may be informative for countries in similar regions such as Asia or Africa.

Our empirical results suggest that perceived corruption enhances support for redistributive policies. That is, the channel due to reduced relative wealth levels of below-average-wealth individuals is positive in Latin America and seems to outweigh the effect of undermined trust in government and political institutions brought about by increased corruption. This conclusion is robust to different modelling options and various measures of support for redistribution.

We do find evidence that corruption erodes political trust which justifies our model assumption that the deadweight loss of taxation increases with corruption perceptions. The negative channel from increased corruption perceptions to less demand for redistribution is indeed present in our data although it is weaker than the positive channel. Consequently, when controlling directly for political trust in our regressions the overall positive marginal effect of perceived corruption on support for redistribution increases.

We contribute to the literature in four ways. First, we provide new empirical evidence to the discussion of determinants of support for redistribution, emphasizing the relevance of the perceived quality of the institutional framework in general, and perceptions of corruption and trust in government institutions in particular, an issue that has received little attention. Second, we address the potential endogeneity of perceptions of corruption using data on corruption victimization as exclusion restriction. Our approach to the endogeneity of perceptions of corruption differ from other studies, such as Di Tella and McCulloch (2006, 2009), who study the effect of corruption on market regulation and defend the exogeneity of these perceptions using anger as a proxy to perceived corruption. Third, we present novel empirical evidence from Latin America, a region where examining the link between corruption and support for redistributive policies is especially pertinent, as it displays high levels of inequality, widespread corruption, and low levels of redistribution.[4]

[3] As Alesina and Angeletos (2005) point out, such bad equilibrium may result from corrupt governments receiving support from a coalition of those who benefit from high redistribution because they are in need, and those who are close to the levels of power and can capture taxes through rent-seeking activities.

[4] Significant empirical contributions, such as Gaviria (2008), Ardanaz (2009), Cramer and Kaufman (2009), Morgan and Kelly (2010) and Daude and Melguizo (2010), address the determinants of attitudes toward inequality and demand for redistribution using data for Latin America. Nevertheless, none of these studies addresses explicitly the consequences of perceived corruption.

Finally, we make a small theoretical contribution by introducing redistributive taxation into Foellmi and Oechslin (2007) to guide our empirical analysis.

The choice of our theoretical model is guided by the nature of our empirical data. Corruption perceptions are captured by people's impression whether or not corruption among public officials is very common based on their own experience or on their information. This question explicitly invokes public officials and therefore seems to call rather for a model where corruption refers to bribery than for a model where corruption refers to rent-seeking for tax-revenue as in Alesina and Angeletos (2005) and in Dong and Torgler (2011). We do not look at bribery as a means to lowering the effective tax rate[5] (Dusha, 2015) since our empirical variable for support for redistribution stems from the answer to the question to which extend do you agree or disagree with the statement: The government should implement strong policies to reduce income inequality between the poor and the rich. This question suggests that the underlying government's policies may actually be effective, another reason not to model corruption as rent-seeking over government revenue in our context.

This is not to say that corruption as rent-seeking is not relevant for people's tastes for redistribution. Indeed, Alesina and Angeletos (2005) prove in a dynamic model that when people are heterogeneous in their rent-seeking abilities talented rentseekers will be in favor of more redistribution but also the poor, since the gains from corruption as rent-seeking are unequally distributed in the population leading to more inequality. Since our data does not provide measures of people's rent-seeking abilities we abstract from the rent-seeking motive in our model. Moreover, if rent-seeking ability is connected with people's wealth then our empirical results suggest that in our data rent-seeking does not play a major role: support for redistribution declines with wealth levels in our regressions.

Another positive channel from more corruption to increased tastes for redistribution proposed in the literature are fairness concerns (Alesina and Angeletos, 2005). Individuals may deem inequality brought about by connections and corruption as less desirable than inequality resulting from effort. If this is the view of those who see corruption as a widespread problem, they will be more prone to consider inequality as a matter of social injustice and thus, demand more government intervention.[6] Unfortunately our data is not rich enough to allow us to examine whether this is a reality in Latin America and we therefore also ignore this channel in our theoretical model.

The remainder of the paper is organized as follows. In section 2 we present a simplified version of Foellmi and Oechslin's model of non-collusive corruption and introduce taxation into the model, which allows us to study how individual's preferences for redistribution change with corruption perceptions. Since the theoretical model cannot provide a clear-cut prediction without making stark assumptions on underlying model parameters, we take the model to the data. The data we use is described in section 3. Section 4 explains the empirical strategy. Results are presented in section 5. Section 6 is dedicated to robustness checks. The last section concludes.

[5] Which might lead to a regressive de facto tax system.

[6] Using public opinion data from Latinobarometro surveys conducted in 1997, 2001, and 2002, Cramer and Kaufman (2009) show that those who believe that corruption has increased in recent years are six per cent more likely to judge their country' distribution as very unfair.

2 A model of non-collusive corruption and preferences for redistribution

Our model is based on a slightly modified version of Foellmi and Oechslin (2007). We enrich their model by adding taxation. Our aim is to study how corruption perceptions, modeled by the probability of impunity of corrupt officials, affect preferences for redistribution captured by people's optimal tax rates.

As Foellmi and Oechslin (2007), we consider a closed economy with imperfect capital markets. The economy is populated by continuous individuals of mass 1 who maximize their ex post wealth and are heterogeneous in their initial wealth levels which are distributed according to the continuous distribution function $G(w)$. All agents can get a licence from a bureaucrat to get access to a constant return technology that yields a return of R to each capital unit invested but requires a minimum investment of $k \geq \kappa$ capital units. If they do not use their capital for production they can invest it as lenders in a competitive but imperfect economy-wide capital market. Since agents are infinitessimal the interest rate ρ is taken as given by each individual.[7] Credit obligations are imperfectly enforced. A defaulting borrower loses a fraction $\lambda \in [0, 1]$ of the revenue he receives from his physical investment in the constant return technology. Default never occurs in equilibrium, but the possibility of default limits the maximum amount of credit that an entrepreneur, who invest k capital units in constant return technology, can get to $\frac{\lambda R}{\rho}k$.[8] From now on we assume that $\lambda R < \rho \leq R$.[9]

There is a mass of bureaucrats without initial wealth and each agent is matched to one and only one bureaucrat who can offer the licence to the agent in exchange for a bribe $b \geq 0$.[10] Bureaucrats do not observe the assets of potential entrepreneurs and therefore set the same bribe for everybody. Bribe payments are invested in the capital market. Any bribe demand is detected with probability $1 - \pi$ and results in a punishment $\mu(b)$ which is strictly increasing in the size of the bribe demanded, $\mu'(b) > 0$ and $\mu''(b) > 0$.[11] Each bureaucrat sets the optimal bribe demand to maximize expected bribe payments minus expected punishment costs.

Bribes will only be paid by those agents who actually become an entrepreneur. Not everybody is wealthy enough to become an entrepreneur and different amounts of bribe demand will influence this wealth cutoff. The minimum amount of own capital to be able

[7] In Foellmi and Oechslin (2007) agents have also access to a backyard tecnology yielding a return of $r < R$. This ensures a minimum return on capital of r.

[8] To avoid default the maximum amount of credit c lenders are willing to give to a certain borrower is such that his payment obligations $c\rho$ equal his default cost λRk.

[9] The first part of the inequality $\lambda R < \rho$ ensures credit constraints since the credit an enterpreneur can get is smaller than his capital investment. We assume $\rho \leq R$ for convenience. If it was violated no one would want to invest in the technology, since returns on the capital market are higher: obviously, this cannot happen in equilibrium since there would be no capital demand.

[10] For convenience we set this mass of bureaucrats equal to 1 but the qualitive results are not affected by this assumption.

[11] The reader familiar with Foellmi and Oechslin (2007) should be aware that we define π as the probability of impunity while they use the same notation for the probability of punishment. We make this change since the probability of impunity in our model is a proxy for perceived corruption.

to become an entrepreneur investing $k \geq \kappa$ is

$$w^{\min}(k) = b + \left(1 - \frac{\lambda R}{\rho}\right) k. \tag{1}$$

So the maximal capital than an entrepreneur with wealth level w can invest is

$$k^{\max}(w) = \left(1 - \frac{\lambda R}{\rho}\right)^{-1} (w - b) \tag{2}$$

Since $k \geq \kappa$ the poorest person that can become an entrepreneur investing exactly κ units has wealth

$$\widetilde{w_1} = w^{\min}(\kappa) = b + \left(1 - \frac{\lambda R}{\rho}\right) \kappa \tag{3}$$

Everyone with $w \geq \widetilde{w_1}$ can become an entrepreneur. However, being an entrepreneur must also be the most profitable option, hence it must lead to an ex post wealth level that is at least as high as what the agent could have obtained as a lender leading to a second wealth cutoff of $\widetilde{w_2}$. To determine this cutoff we first have to model each agent's final wealth. The pre-tax wealth levels are as in Foellmi and Oechslin (2007). An entrepreneur earns pre-tax wealth equal to his returns from the new technology minus his credit costs

$$\begin{aligned} W^E(w) &= Rk^{\max}(w) - \rho\frac{\lambda R}{\rho}k \\ &= \frac{(1-\lambda)\,R}{\left(1 - \frac{\lambda R}{\rho}\right)}(w - b) \end{aligned} \tag{4}$$

Pre-tax wealth of a lender is

$$W^L(w) = w\rho \tag{5}$$

We now add taxation for redistributive purposes. Both entrepreneurs and lenders are taxed for their investments. The tax rate is τ, taxation involves a deadweight loss, and the remaining money collected is equally distributed among agents via a per agent transfer T. The deadweight loss is an increasing function in the probability of impunity of public officials π.This captures the idea that the less likely it is that corrupt officials are apprehended the more of the government's budget is deviated for their private gains. Transfers are given by

$$T\int_0^1 dx = T = \left(\tau - \frac{\tau^2}{2}f(\pi)\right)\left(\int_0^{\widetilde{w}} W^L(w)G'(w)dw + \int_{\widetilde{w}}^{\infty} W^E(w)G'(w)dw\right) \tag{6}$$

where we normalize $f(\pi = 0) = 1$ and $\frac{\partial f}{\partial \pi} > 0$ and $\widetilde{w}$ is the cutoff wealth level above which people become entrepreneurs.

We first show that taxation does not affect the threshold wealth level to become an entrepreneur. This wealth level is the maximum of the amount of wealth needed to be able to become an entrepreneur $\widetilde{w_1}$ and the wealth level at which a person is just indifferent between becoming an entrepreneur or not, call it $\widetilde{w_2}$. So $\widetilde{w} = \max\left[\widetilde{w_1}, \widetilde{w_2}\right]$. Since every

agent is infinitessimal he takes the transfer as given when deciding whether or not to become an entrepreneur. So the ex post tax wealth of an entrepreneur is given by

$$W_T^E(w) = (1-\tau)\frac{(1-\lambda)R}{\left(1-\frac{\lambda R}{\rho}\right)}(w-b)+T \tag{7}$$

while the ex post wealth of a lender is given by

$$W_T^L(w) = (1-\tau)w\rho + T \tag{8}$$

The cutoff wealth level $\widetilde{w_2}$ is defined where $W_T^E(\widetilde{w_2}) = W_T^L(\widetilde{w_2})$, leading to

$$\widetilde{w_2} = \frac{(1-\lambda)R}{R-\rho}b \tag{9}$$

which is independent of τ. Therefore

Lemma 1 *The tax rate τ does not affect people's decision whether or not to become an entrepreneur or a lender.*

Lemma 1 tells us that Foellmi and Oechslin (2007) analysis remains valid for our model and hence we can rely on their results. They show that the solution $b(\rho)$ to the bureaucrat's optimization problem is unique if the hazard rate of G is non-decreasing in $\widetilde{w}$ and that there is a unique equilibrium interest rate ρ^* which is determined endogenously through the equilibrium in the capital market [12] where gross capital demand $K^D(\rho)$ equals gross capital supply $K^S(\rho)$.[13]

We are interested in how corruption perceptions π modeled as the probability of impunity of a corrupt official affect individual's optimal tax rates.[14] A lender's optimal tax

[12] There is a minor difference in our model to Foellmi and Oechslin (2007) since we do not have any backyard projects that guarantee a return of r. In our model, capital supply is therefore totally inelastic and does not depend on the interest rates. Our results coincide with their results when $\rho > r$. Their analysis for $\rho = r$ in equilibrium is irrelevant for us.

[13] Notice that gross demand for capital $K^D(\rho)$ is given by the total demand for capital of all entrepreneurs with each entrepreneur investing $k^{\max}(w)$

$$K^D(\rho) = \left(1-\frac{\lambda R}{\rho}\right)^{-1}\int_{\widetilde{w}}^{\infty}(w-b(\rho))\,G'(w)dw \tag{10}$$

which is decreasing in ρ and goes to zero when $\rho > R$. A higher ρ increases the cutoff wealth level to become an entrepreneur and leads to less entrepreneurial investment $k^{\max}(w)$ due to higher incentives to default. But higher capital costs also reduce the bribe demands by officials: if the bribe was kept constant the higher interest rate would reduce the probability of bribe payment without affecting expected punishement. By lowering the bribe demand, the bureaucrat can collect more payments and reduce expected punishment. The reduced bribe demand softens the decline in capital demand due to higher capital costs.

Gross capital supply $K^S(\rho)$ is given by the total initial wealth - lenders supply their w_i, each borrower supplies $w_i - b$ and the bureaucrats supply the bribes they receive from the borrowers.

$$K^S(\rho) = \int_0^{\infty} wG'(w)dw \tag{11}$$

and is totally inelastic. The equilibrium interest rate is determined by $K^D(\rho) = K^S(\rho)$.

[14] We do not consider the well-being of bureaucrats. We assume they are not taxed nor receive any transfers.

rate maximizes $W_T^L(w)$ while an entrepreneur's optimal tax rate maximizes $W_T^E(w)$. Since equilibrium interest rates and bribe demands are unique, each agent's preferred optimal tax rate is also unique.

Lemma 2 *Agent i's optimal tax rate is given by*

$$\tau(w_i) = \max\left[0, \frac{\left(\int_0^{\widetilde{w}} W^L(w)G'(w)dw + \int_{\widetilde{w}}^{\infty} W^E(w)G'(w)dw\right) - W_i^j(w_i)}{f(\pi)\left(\int_0^{\widetilde{w}} W^L(w)G'(w)dw + \int_{\widetilde{w}}^{\infty} W^E(w)G'(w)dw\right)}\right] \tag{12}$$

where w_i refers to i's initial assets and W_i^j to his pre-tax wealth in the role of $j = L, E$ (lender and entrepreneur respectively).

Notice that

$$W^{mean}(\pi) = \left(\int_0^{\widetilde{w}(\pi)} W^L(w)G'(w)dw + \int_{\widetilde{w}(\pi)}^{\infty} W^E(w)G'(w)dw\right) \tag{13}$$

is the mean pre-tax wealth in society. Hence, only agents with a pre-tax wealth lower than the mean are in favor of redistribution[15] and the lower the personal pre-tax wealth the bigger the demand for redistribution.

Observe that (12) can be rewritten as

$$\tau(w_i, \pi) = \max\left[0, \frac{1}{f(\pi)}\left(1 - \frac{W_i^j(w_i)}{W^{mean}(\pi)}\right)\right] \tag{14}$$

As long as the optimal tax rate is positive, it is decreasing in pre-tax wealth $W_i^j(w_i)$ and increasing in mean pre-tax wealth in society W^{mean}. Holding $\frac{1}{f(\pi)}$ constant, a change in any parameter that affects both these variables will lead to a decreased taste for redistribution if the ratio own pre-tax wealth to average pre-tax wealth increases and to an increased taste for redistribution otherwise.

How does a change in corruption perceptions π affect the optimal tax rate? There are two forces at play. On the one hand, an increase in the probability of impunity of a corrupt official increases the deadweight loss of taxation and hence reduces the demand for redistribution. This implies a negative channel from corruption to taste for redistribution: more corruption reduces preferences for redistribution. On the other hand, more impunity of corrupt officials affects both mean and personal pre-tax wealth levels. This channel is likely to be positive for most people who want some redistribution, as we will explain below. Therefore the overall effect is ambiguous and ultimately an empirical issue.

To see how a change in corruption perceptions affects the taste for redistribution through changes in pre-tax wealth, we first need to understand who benefits and who loses from corruption. As Foellmi and Oechslin (2007), we only discuss the case where the equilibrium bribe demand is positive $b(\rho^*) > 0$ and where $\widetilde{w_1} > \widetilde{w_2}$ - everybody who has enough capital to become an entrepreneur wants to become an entrepreneur. If corruption is more severely prosecuted ($\pi \downarrow$), the optimal bribe demand of bureaucrats

[15] If rich agents could benefit from rent-seeking activities over part of the budget to be redistributed as in Alesina and Angeletos (2005) they would also favor some redistribution.

falls.[16] As a consequence, the net ex ante wealth endowment $w - b$ that can be used by an entrepreneur increases. Since $w - b$ also serves as a collateral, capital demand increases. Therefore the equilibrium interest rate ρ must raise. Moreover, more people become entrepreneurs ($\widetilde{w_1}$ falls).[17]

Figure 1 in Appendix C plots pre-tax wealth against initial wealth for a high and a low probability of impunity and illustrates who wins and who loses from less corruption. The blue lines correspond to π^{high}, the more corrupt scenario. Everybody with $w < \widetilde{w}(\pi^{high})$ is a lender and everybody with $w \geq \widetilde{w}(\pi^{high})$ an entrepreneur. The black lines illustrate the situation when the impunity of corrupt officials falls (π^{low}). Due to the higher interest rates on capital markets $\rho^*(\pi^{low}) > \rho^*(\pi^{high})$ all initial lenders clearly benefit from a more severe prosecution of corruption. Moreover, the richer lenders who were borderline to becoming entrepreneurs in the high corruption scenario but still were too poor to do so, can now become entrepreneurs since their $w-b$ is higher due to the fall in bribe demands. This is the group of people who benefits most from a fall in π, namely everybody with initial assets $\widetilde{w}(\pi^{low}) \leq w_i < \widetilde{w}(\pi^{high})$. All former entrepreneurs stay entrepreneurs: on the one hand, they benefit from a lower bribe demand and hence can increase their technological investment. On the other hand, they face higher interest rates on the capital market which leads to a lower slope of entrepreneurial returns when π^{low} than when π^{high}. Entrepreneurs who are relatively poor gain from these changes, since they can borrow little and hence the rise in interest rates affects them moderately while the reduction in the bribe demand has a positive impact on their capital investment opportunities. For the richest entrepreneurs the reduction in bribe demand does not outweigh the higher capital costs. Moreover, the wealthiest must invest less, since poorer entrepreneurs invest more and capital supply is inelastic. Indeed, everybody with wealth levels $w > \widehat{w}$ suffers from a reduction in corruption where[18]

$$\widehat{w} = \frac{\left(1 - \frac{\lambda R}{\rho^*(\pi^{low})}\right) b^*(\pi^{high}) - \left(1 - \frac{\lambda R}{\rho^*(\pi^{high})}\right) b^*(\pi^{low})}{\left(\frac{\lambda R}{\rho^*(\pi^{high})} - \frac{\lambda R}{\rho^*(\pi^{low})}\right)} \tag{15}$$

while everybody with $w < \widehat{w}$ benefits.[19] This reduces income disparities - the poorer and the middle class become richer and the richest poorer.

The effect on mean pre-tax income cannot be determined without making exact assumptions on the distribution of initial wealth since there are winners and losers in so-

[16] Proposition 3 in Foellmi and Oechslin (2007).

[17] Foellmi and Oechslin (2007), Lemma 4

[18] The cutoff $\widehat{w}$ is found by equalizing pre-tax wealth levels of the entrepreneur before and after the change in π.

[19] Proposition 4 in Foellmi and Oechlsin (2007).

ciety.[20] However, the losers are the rich and are likely to have above average pre-tax wealth in both scenarios, hence their taste for redistribution remains unaffected at a tax rate of zero. If the ratio of own pre-tax wealth to average pre-tax wealth of agents with below mean pre-tax wealth raises, this leads to a lower taste for redistribution by these agents. In this case a higher impunity of corrupt bureaucrats leads to the demand for more redistribution through this channel. However, if for any agent with below mean wealth the own pre-tax wealth - pre-tax mean income ratio falls, this agent will favor more redistribution when corruption is more severely prosecuted. But these agents are likely to be the minority.[21] Therefore, the effect of corruption on taste for redistribution through the wealth channel is likely to be positive.

Whether the positive or negative effect of corruption perceptions on demand for redistribution dominates is an empirical issue. We will now examine this issue for Latin America and try to disentangle the trust effect and the wealth effect.

3 Data

To analyze empirically the relationship between perceptions of corruption and public support for redistribution, we use data for 18 countries[22] from the 2008, 2010 and 2012 rounds of the AmericasBarometer, a survey carried out by the Latin American Public Opinion Project (LAPOP), supported by the United States Agency for International Development, the United Nations Development Program, the Inter-American Development Bank, and Vanderbilt University. In 2004, LAPOP established the AmericasBarometer as face-to-face regularly conducted surveys of democratic values and citizens' behaviors,

[20] The difference in mean income when π falls is calculated as follows

$$\int_0^{\widetilde{w}_1(\pi^{low})} (\rho^*(\pi^{low}) - \rho^*(\pi^{high}))w_i G'(w)dw \tag{16}$$

$$+ \int_{\widetilde{w}_1(\pi^{low})}^{\widetilde{w}_1(\pi^{high})} \left(\frac{(1-\lambda)\,R}{\left(1 - \frac{\lambda R}{\rho^*(\pi^{low})}\right)} \left(w_i - b^*(\pi^{low})\right) - \rho^*(\pi^{high})w_i \right) G'(w)dw \tag{17}$$

$$+ \int_{\widetilde{w}_1(\pi^{high})}^{\widehat{w}} \left(\frac{(1-\lambda)\,R}{\left(1 - \frac{\lambda R}{\rho^*(\pi^{low})}\right)} \left(w_i - b^*(\pi^{low})\right) - \frac{(1-\lambda)\,R}{\left(1 - \frac{\lambda R}{\rho^*(\pi^{high})}\right)} \left(w_i - b^*(\pi^{high})\right) \right) G'(w)dw \tag{18}$$

$$- \int_{\widehat{w}}^{\infty} \left(\frac{(1-\lambda)\,R}{\left(1 - \frac{\lambda R}{\rho^*(\pi^{high})}\right)} \left(w_i - b^*(\pi^{high})\right) - \frac{(1-\lambda)\,R}{\left(1 - \frac{\lambda R}{\rho^*(\pi^{low})}\right)} \left(w_i - b^*(\pi^{low})\right) \right) G'(w)dw \tag{19}$$

where (16) refers to the gains due to the mass of former lenders who remain lenders, (17) refers to the gains due to the mass of former lenders who become entrepreneurs, (18) to the gains from the mass of entrepreneurs who benefit from reduced corruption while (19) captures the losses due to the mass of the richest entrepreneurs who suffer from reduced corruption.

[21] From Figure 1 it is clear that the extremely poor ($w_i \simeq 0$) and the people slightly poorer than $\widehat{w}$ benefit least among the winners. The latter are likely to have above average pre-tax wealth. The former is the group that might have a lower pre-tax wealth to pre-tax income ratio when the impunity of corrupt bureaucrats falls, since they have little to invest in the capital market and therefore experience a small increase in own pre-tax income while their relative position to the mean of society might worsen.

[22] Mexico, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, Panama, Colombia, Ecuador, Bolivia, Peru, Paraguay, Chile, Uruguay, Brazil, Venezuela, Argentina and Dominican Republic.

with a principal focus on Latin American democracies.

AmericasBarometer surveys use a common design for the construction of a multi-staged, stratified probabilistic sample of approximately 1,500 individuals in each country per year, and stratified by major regions of the country and by urban and rural areas within municipalities. For the sample of 18 countries used in this paper, the pooled cross-section database counts 90,861 observations of individuals over 18 years of age.[23] Due to the definition of some variables, the presence of missing values in some explanatory variables, and the definition of the exclusion restriction,[24] the sample used in our baseline model is reduced to 76,274 observations, which accounts for the 84 per cent of the initial sample.

Across countries, sample sizes range from 990 in Paraguay in 2012, to 2,804 in Ecuador in 2010. For that reason, following LAPOP methodological guidelines, we reweighed the sample so that each country/year sample accounts for 1,500 observations. This way, every country has the same impact on the overall sample as any other country.[25] We prefer not to reweigh by population size, because in this case Brazilians and Mexicans would explain most of the variance of preferences in the region. Sample details can be found in Table A2 in the Appendix E.

Support for redistribution

The literature has used different questions to elicit individual preferences for redistribution. Most of these questions ask explicitly for the respondent's support to the role of government in reducing income inequality. This type of questions do not spell out the mechanisms through which redistribution can be accomplished (higher taxes, more progressive taxes, greater government spending), but they provide an adequate measure for the preferences for political redistribution, as traditionally used in the empirical literature (Corneo and Grüner, 2002; Alesina and Giuliano, 2009).

In this spirit, we use the following question from the AmericasBarometer:[26] "*The government should implement strong policies to reduce income inequality between the rich and the poor. To what extent do you agree or disagree with this statement*?" Possible responses range from 1 to 7, where '1' means "strongly disagree" and '7' means "strongly agree", so higher values indicate more support for redistribution. Average responses do not vary much across countries, but as Figure 2 in Appendix C shows, a greater variance is observed in the percentage of people strongly in favour of redistribution. Strong support for reducing inequality ranges from 31 per cent in Venezuela and Bolivia to 64 per cent in Paraguay.

However, the distribution of the level of agreement with the statement within each country is clearly negatively skewed as most of the respondents express the highest levels of agreement —see Figure 3 in Appendix C. For this reason, and for convenience in the interpretation of results, we focus our analysis on individuals expressing strong agreement

[23] 29,934 observations in 2008, 31,671 in 2010 and 29,256 in 2012.

[24] "Doesn't know" answers and non-responses are coded as missing values.

[25] For more details about survey design and weighting scheme see: http://www.vanderbilt.edu/lapop/survey-designs.php

[26] In the Spanish-language version of the questionnaire, the word "el estado" (the State) is used since the term "el gobierno" (the government) refers to the incumbent administration rather than the state apparatus: " *El Estado debe implementar políticas firmes para reducir la desigualdad de ingresos entre ricos y pobres*".

with redistribution. The dependent variable is thus built as a binary variable taking value 1 if the individual reports strong agreement with redistribution (i.e. her response is 7), and 0 otherwise.

Perception of corruption

To measure perception of corruption, we use a dummy variable that equals one if respondents answered "very common" to the following question: *"Taking into account your own experience or what you have heard, corruption among public officials is very common, common, uncommon, or very uncommon?"*. On average, 44 per cent of respondents report corruption among public officials to be a very common problem in their country, 36 per cent believe it is common, nearly 16 per cent regard it as uncommon, and only 4 per cent think corruption is very uncommon. The country with the lowest percentage of respondents holding the belief that corruption is a very common problem is Uruguay (23 per cent), followed by Chile (28), whilst more than 54 per cent hold this perception in the Dominican Republic and Argentina (see Table 1 in Appendix D and Figure 2).

One might wonder whether this question is a good measure of corruption perceptions. Corruption is an expression that evokes a variety of actions. When respondents are asked about "corruption", they may have in mind bribery, dishonesty, failure to implement policies or programs, poor quality administration, or something else.[27] The question used in this paper makes no sharp distinction between petty and grand corruption. Also, it puts emphasis on both people's experience and information they have "heard". Therefore respondents may have in mind both own, friends', or relatives' experiences with public officials in common situations and well-known cases of grand corruption when answering the question. We believe that this vagueness is a virtue rather than a vice for the purpose of our study since we are interested in people's perceptions about corruption in general not about a particular type of corruption and this perceptions should be based on all types of available information, not only on personal experience.

Notice that these corruption perceptions do not need to reflect the true level of corruption in a country and might differ from other measures of corruption. As can be seen from Figure 4 in Appendix C, there is only a moderate correlation between the percentage of people regarding corruption as a very common problem and the most often used measures of perception of corruption at aggregate level, the Corruption Perceptions Index (CPI) by International Transparency Organization (0.66) and the Control of Corruption Index by the World Bank (0.68), which rely mainly on experts' perceptions. The correlation becomes even less strong when the cases of Chile and Uruguay, which show a low level of corruption according to both individuals' perceptions and experts' opinions, are excluded from the sample. It is remarkable, for instance, that a country with a relatively low CPI index, like Costa Rica, shows higher levels of perception of corruption measured at individual level from the AmericasBarometer (44 per cent for the whole sample, 52 per cent in 2010) than other countries with a considerably greater CPI index, such as Nicaragua, Brazil or Venezuela, to mention but a few. These differences might be due not only to methodological differences across these measures, but also to the fact that only a minority of people actually interact with public officers and probably their perceptions are more

[27] Different interpretations of corruption may be determined by cultural characteristics. Nonetheless, comparisons between countries that belong to the same geographic region and share similar cultural roots should be meaningful enough.

related to the intensity of media coverage of important cases of corruption.

This possible potential lack of "accuracy" of perceptions of corruption regarding "true" levels of corruption is not a weakness of our study. It is worth noticing, that there is no reliable and homogeneous way to measure the "true" level of corruption in a country, so it is impossible to know to what extent individual perceptions differ from reality. Moreover and more importantly, people's preferences (and presumably their choices) depend on their beliefs, regardless of whether individuals' judgments of reality are accurate or not.

Control variables

Other individual characteristics that previous studies have found relevant to understand differences in attitudes towards redistribution are used as controls (Alesina and Giuliano 2009). We include gender, age, ethnic identification, religion, having children, years of education, labour status, whether the respondent is exposed to political news on a daily basis, and the level of wealth.

Regarding the latter, there are two alternatives to capture differences in income and wealth from LAPOP survey data. The first option is the income range reported by respondents which, according to the questionnaire design, represents the household total monthly income, including remittances from abroad and the income of all the working adults and children. We decided not to use this measure in our final specifications for two reasons: (i) there is a lot of non-response in this variable and (ii) the scale used in the 2012 wave is not comparable with the scale used in previous waves. The second alternative is to use data of assets ownership. We built a linear wealth index by country and year using principal-components analysis to derive weights.[28] This method provides a simple technique for creating a long-run household wealth proxy in the absence of either income or expenditure reliable data. Table A4 in appendix E shows variations by quintile of the wealth index across income deciles in the 2008 and 2010 waves. In line with other studies (Filmer and Pritchett, 2001; Gasparini et al., 2008), we find a correlation of 0.5 between the decile of self-reported income and the wealth index.[29] This moderate correlation is driven not only by income measurement errors,[30] but also by the fact that asset-based measures reflect the long term economic status of individuals or households and, therefore, do not necessarily take into account fluctuations in short term income.

Time and aggregate factors are captured by time, country and region fixed effects, and their interaction terms. Time-specific shocks common to all regions and countries are controlled for by time fixed effects. Country-specific time-invariant heterogeneity, such as

[28] We follow Filmer and Pritchett (2001). As a robustness check we compare the quantiles obtained from this method with those that result from polychoric principal components (Kolenikov and Angeles, 2009), and find that both methods yield very similar results —98 per cent of the quantiles are the same. Table A1 in appendix E lists the variables included.

[29] Filmer and Pritchett (2001), for instance, find correlation coefficients between the asset index and expenditures between 0.43 and 0.64 for developing countries. Gasparini et al. (2008), using data for Latin America and the Caribbean from the Gallup World Poll of 2006, construct an indicator of deprivation based on a multidimensional non-monetary index by taking into account information on durable goods and access to some facilities (water, electricity, telephone, etc.), and find the correlation between this index and self-reported household income to be 0.46.

[30] Measurement error arises, for instance, from large non-response rates, from income being usually reported in brackets (leading to just a rough measure of income), and because the questionnaire may be answered by a household member, who is not necessarily the one who knows her household income better.

institutional or even cultural features, is captured by country fixed effects, while region-specific time-invariant heterogeneity, such as inequality, poverty, social expenditure, or economic growth, is captured by region fixed effects. Interaction terms between year, on the one hand, and country and region, on the other are also included to make sure that the effect of individual corruption perceptions on preferences for redistribution is not driven by time-country or time-region specific effects. Summary statistics of all the variables is available in Table A3 in Appendix E.

4 Empirical Strategy

In order to evaluate the overall effect of perceptions of corruption on popular support for redistribution, we first estimate a simple reduced form of individual preferences for redistribution, which are modelled by a latent variable y_i^*

$$y_i^* = c_i\gamma + x_i\beta + \varepsilon_i \tag{20}$$

where y_i^* stands for the individual support for redistribution and c_i is a variable capturing the individuals' perception of corruption, that is, his or her belief of how widespread corruption among public officials is; x_i is a vector that includes individual characteristics (such as age, gender, level of wealth, occupation, etc.) as well as the time, country, and region fixed effects, which affect directly the individual likelihood of favouring redistribution;[31] and ε_i is the error term assumed to be independent of regressors x_i and c_i. The vectors β and γ are parameters to be estimated. The parameter γ expresses the correlation between the perceived level of corruption and the probability of favouring redistributive policy.

The variable y_i^* is not observed. Instead we observe a variable y_i that equals 1 if individual strongly favours redistribution, and 0 otherwise. Assuming a normal distributed error term, y_i is estimated using a probit regression model. The observed binary y_i and the latent variable y_i^* are related as follows:

$$y_i = \begin{cases} 1 \text{ if } y_i^* > 0 \\ 0 \text{ if } y_i^* \leq 0 \end{cases}$$

For a given value of the set of dependent variables x_i, we have

$$P(y_i = 1 \,|x_i, c_i\,) = P(\varepsilon_i < c_i\gamma + x_i\beta) = \Phi\left(c_i\gamma + x_i\beta\right),$$

where Φ is the cumulative density function for the standard normal distribution. The estimation of the parameters is performed by maximizing the log likelihood:

$$\ln \mathcal{L}\left(\beta, \gamma\right) = \sum_{i=1}^{n} \left[y_i \ln \Phi\left(c_i\gamma + x_i\beta\right) + \left(1 - y_i\right) \ln\left(1 - \Phi\left(c_i\gamma + x_i\beta\right)\right)\right].$$

We must be cautious, however, in interpreting the results in terms of causality, as observed relationships may only reflect co-variation driven by third, omitted variables, which capture unobservable differences between citizens. It is possible that the same

[31] For simplicity, we omit here the time, country, and region subscripts.

unobserved factors influencing the propensity to advocate greater redistribution are generating endogenous variation in the level of perceived corruption and thus either overstate or understate the impact that perceptions of corruption have on attitudes towards redistribution. For instance, perceptions of corruption depend on how a society understands the rules and what constitutes a deviation (Melgar et al., 2010), which in turn depends on unobserved personal characteristics (values and moral views, aversion to inequality, for instance) that may also affect views on inequality. In a related work, Di Tella and McCulloch (2006, 2009) acknowledge that a positive effect of perception of corruption on demand for regulation, for instance, might simply identify a fixed trait of left-wing citizens, namely a greater tendency to regard corruption as a pervasive phenomenon, or less tolerance with corruption than right-wingers. Therefore, the validity of the conclusions on the sign of γ depends on a proper treatment of the potential endogeneity problem.

In linear models with an endogenous right-hand side variable instrumental variables techniques are a common solution. However, in non-linear models this procedure is no longer directly applicable because this sort of models is not invertible and there is no expression of the error term (Arellano, 2007).[32] A way of addressing endogeneity is the use of simultaneous bivariate models which imply the estimation of the joint probability distribution of two or more variables in a simultaneous specification (Wooldridge, 2010). Specifically, we use a recursive bivariate probit model (Greene and Hensher, 2009), an extension of the univariate probit regression model, where the disturbances of the two equations are assumed to be correlated. The recursive version of the bivariate probit allows us to estimate the effect of interest while accounting for unobserved confounders. The general specification is as follows:

$$y_i^* = x_{1i}\beta_1 + c_i\gamma + \varepsilon_{1i} \qquad y_i = 1 \text{ if } y_i^* > 0, \text{ 0 otherwise} \tag{21}$$

$$c_i^* = x_{2i}\beta_2 + \varepsilon_{2i} \qquad c_i = 1 \text{ if } c_i^* > 0, \text{ 0 otherwise} \tag{22}$$

where c_i^* and y_i^* are continuous latent variables which determine the observed binary outcomes y_i, c_i, which equal 1 if the corresponding latent variable is greater than a given threshold. x_{1i} and x_{2i} are vector of variables explaining attitudes towards redistribution and perceptions of corruption respectively, while β_1 and β_2 are vectors of unknown parameters. The parameter γ is an unknown scalar, and it is again the main parameter of interest, which can be understood as the average treatment effect of perceiving a high level of corruption. Finally, ε_{1i} and ε_{2i} are error terms that are independent of x_{1i} and x_{2i} but not necessarily independent of each other. In other words, the explanatory variables in the model satisfy the conditions of exogeneity such that $E\left[x_{1i}\varepsilon_{1i}\right] = 0$ and $E\left[x_{2i}\varepsilon_{2i}\right] = 0$, but the error terms ε_{1i} and ε_{2i} are assumed to be distributed as bivariate standard normal with correlation ρ, this is: $F(\varepsilon_{1i}, \varepsilon_{2i}) = \Phi_2\left(\varepsilon_{1i}, \varepsilon_{2i}, \rho\right)$, where Φ_2 denotes the cumulative density function of the bivariate standard normal distribution. The joint distribution of

[32] As in any latent variable model, in this setting y^* is not observed, only y_i is. The "residual" would have no meaning even if the true parameters were known. As a robustness check we provide OLS and IV estimates of the model (see Appendix A).

c_i and y_i (conditional on x_{1i} and x_{2i}) has four elements:

$$\begin{aligned}
P_{11} &= P\left(y_i = 1, c_i = 1 \left| x_{1i}, x_{2i} \right.\right) = \Phi_2\left(x_{1i}\beta_1 + c_i\gamma, x_{2i}\beta_2, \rho\right) \\
P_{10} &= P\left(y_i = 1, c_i = 0 \left| x_{1i}, x_{2i} \right.\right) = \Phi_2\left(x_{1i}\beta_1, -x_{2i}\beta_2, -\rho\right) \\
P_{01} &= P\left(y_i = 0, c_i = 1 \left| x_{1i}, x_{2i} \right.\right) = \Phi_2\left(-x_{1i}\beta_1 - c_i\gamma, x_{2i}\beta_2, -\rho\right) \\
P_{00} &= P\left(y_i = 0, c_i = 0 \left| x_{1i}, x_{2i} \right.\right) = \Phi_2\left(-x_{1i}\beta_1, -x_{2i}\beta_2, \rho\right)
\end{aligned}$$

Thus, estimation of the parameters is performed by maximizing the log likelihood:

$$\begin{aligned}
&\ln \mathcal{L}\left(\beta_1, \beta_2, \gamma; \rho\right) \\
= &\sum_{i=1}^{n} \left[y_i c_i \ln(P_{11}) + \left(1 - y_i\right) c_i \ln(P_{10}) + y_i(1 - c_i) \ln(P_{10}) + \left(1 - y_i\right)\left(1 - c_i\right) \ln(P_{00})\right]
\end{aligned}$$

The recursive bivariate probit model introduces two sources of dependence between c_i and y_i, related to the parameters γ and ρ, respectively. While the joint model simplifies to two univariate probit equations under independence of the structural errors ($\rho = 0$), this does not mean that c_i and y_i are independent because the first probit equation of the recursive base model gives the probability of y_i conditional on c_i. Therefore, full independence of c_i and y_i would require $\rho = 0$ and $\gamma = 0$ (Winkelmann 2011: 4).

In this setting, the exogeneity condition is stated in terms of the correlation coefficient; the variable c_i is endogenous when $corr\left(\varepsilon_{1i}, \varepsilon_{2i} \left| x_{1i}, x_{2i} \right.\right) = \rho \neq 0$. On the contrary, when $\rho = 0$, y_i and ε_{2i} are uncorrelated and therefore c_i is exogenous. Thus, the null hypothesis of interest is that $\rho = 0$, that is, an exogeneity hypothesis. The usual parametric approaches to exogeneity testing, such as the likelihood ratio test and the 't-test' based on the maximum likelihood estimator of ρ, are suitable for endogeneity testing in this kind of models (Monfardini and Radice, 2008). Whenever the exogeneity hypothesis cannot be rejected, the model can be simplified and estimated as two separate models for each outcome of interest.

Identification strategy

The parameters in the system of equations (21) and (22) are usually identified by imposing an exclusion restriction on vectors x_1 and x_2, i.e. at least one element of x_2 should not be present in x_1 to avoid that identification strongly relies on functional form and non-linearity. One should find at least one variable that is believed to be correlated with c_i but independent of y_i. This variable could be included only in x_2 to obtain the consistent estimates of γ, β_1 and ρ.

As exclusion restriction we use information on individual bribery victimization, namely, whether the respondent reports having been asked for a bribe either by a police officer or a government employee in the twelve months previous to the survey.[33] We thus assume that individuals who have been victims of bribery are more likely to perceive higher corruption, and that such bribery episode does not directly shape their redistributive preferences. Individual characteristics do determine the likelihood of people being victimized. Individuals who are wealthier, highly educated, and living in bigger cities are

[33]The wording of each question is: "Has a police officer ask you for a bribe during the past year?", "During the past year, did any government employee ask you for a bribe?" The latter question includes several specific situations: at the respondent's workplace, or in the courts, or in public health services, or at school.

more likely to being asked for a bribe, as they are more likely to be in contact with public bureaucracy. On the other hand, women and older people are less likely to be victims of bribery. This is however not a threat to our identification strategy as we control for all these observables. To provide further credibility to our findings, in a robustness check, we use the provincial percentage of the population victimized by bribery as exclusion restriction, which is not directly related to own (un)observed characteristics, and obtain similar results –see Section 6.1.

In the final sample, 10.4 per cent of respondents were asked for a bribe by a police officer, while 5.4 per cent were asked for a bribe by a government employee. In total, 12 per cent of the survey sample was victim of bribery. Countries with highest level of bribery are Bolivia, Mexico and Peru, with shares above 20 per cent, while countries at the other end are Chile (2.7), Uruguay (5.3) and Brazil (5.1) (See Table 2). Figure 5 in Appendix C shows the distribution of the percentage of the population reporting having faced bribery at a province level.

5 Empirical results

We first present the results of the probit and bivariate probit models. Then we discuss the issue of endogeneity of perceived corruption. Section 5.3 checks whether higher corruption perceptions increase distrust in government institutions, which would be evidence for the negative channel from corruption perceptions to taste for redistribution in our model.

5.1 Effect of perceived corruption on support for redistribution

Columns 1 and 3 in Table 3 present the estimated marginal effects of perceiving a high level of corruption on the probability to strongly support redistributive policies from univariate and bivariate probit models respectively. The main result is that the effect of perceived corruption is positive in both models, namely, those who regard corruption as a very common problem are more likely to support redistribution. The marginal effect in the univariate probit model is 8.5 percentage points, while in the bivariate model the effect is twice as large. Thus, and importantly, the possible presence of endogeneity, which we address in detail in the next section, does not challenge our estimated positive effect. These results can be interpreted as the positive effect of perceived corruption dominating the potential negative effect of corruption related to distrust in government intervention, and modelled as an increase in the deadweight loss of taxation.

Estimates from linear probability models and instrumental variables reported in Appendix A yield the same results as uni- an bivariate probit models. The marginal effect of perceived corruption on preferences for redistribution is positive and more than doubles when endogeneity is corrected.

Note also that, as our model predicts, support for redistribution decreases with the wealth level. This decrease is statistically significant for the fourth and fifth wealth quintiles.[34]

[34]If wealth is linked to rent-seeking opportunities, this finding suggests that the rent-seeking motive for support for redistribution as suggested by Alesina and Angeletos (2005) does not play an important role in our data. This is not surprising, since rent-seeking diverts funds from redistribution to personal gains and the question for support for redistribution used in our data suggest that redistribution is effective.

5.2 Is perceived corruption endogenous?

As explained in Section 4 exogeneity of corruption perceptions requires independence of the two structural error terms. As can be observed in row "athrho" at the bottom of Column 3 in Table 3, the sign of the estimated correlation of the two error terms, ρ, is negative, and statistically significant.

We use two different methods to test the hypothesis of exogeneity. The first is a likelihood ratio test based on the idea that if ρ equals zero, the log-likelihood for the bivariate probit will be equal to the sum of the log-likelihoods from the two univariate probit models. Since we use heteroscedasticity robust clustered standard errors,[35] this becomes a Wald test. As displayed in the last row of Table 3 the statistic of this test is equal to 4.09, and it is distributed as a χ^2 with one degree of freedom under the null hypothesis, with a p-value of 0.04 indicating that the hypothesis that errors in both equations are independent can be rejected at the conventional 5 per cent level.

The second test uses an extension of the Rivers and Vuong (1988) approach, which implies a two-stage method, namely, obtaining the generalized residuals from the first-stage probit of perceived corruption on individual bribery victimization, other controls and the fixed effects, estimating a second-stage probit that includes such residuals as explanatory variable, and conducting a t-test on the estimate of the residuals. As usual, the null hypothesis is that corruption perception is exogenous.[36] As can be seen from Table 4, the residuals are significantly different from zero. The Wald test yields a χ^2 statistic equal to 2.90, with a p-value of 0.09. Again we can reject the hypothesis of exogeneity, at 10 per cent.

Table 3 shows that the exclusion restriction is significant at 1 per cent level to explain individual perception of corruption; having been a victim of bribery increases the probability of perceiving corruption by 11.4 percentage points. Not only is the t-test statistic (16.88) the highest statistic amongst the set of covariates, but also different tests in the context of instrumental variables estimation prove the validity of this exclusion restriction (see Section 6.1).

Given our main finding that perceived corruption has a strong positive effect on the demand for redistribution, Appendix B examines what explains that some individuals perceive more corruption than others.

5.3 Perceptions of corruption and (dis)trust in government institutions

The data suggests an overall strong positive effect of perceived corruption among public officers on the probability of supporting redistribution. Our theoretical model pointed to two opposing forces. Can we find any evidence for the negative effect? According to our

[35] The error terms are assumed to be correlated within clusters, but uncorrelated across clusters. Failure to control for within-cluster error correlation can lead to very misleadingly small standard errors, and consequent misleadingly large t-statistics and low p-values. Given the sampling design of the Americas Barometer, following Cameron and Miller (2015) we cluster at the level of the primary sampling unit, this is, the main regions in which each country's sample is stratified.

[36] See Wooldridge (2010: 597). For this test, we estimate c_i using maximum likelihood estimation. Under the assumption that the distribution of $\epsilon_{1i} | \, x_{1i}$ follows a probit model, the standardized residuals are defined according to the following formula: $e = \frac{(c_i - \Phi[x_{2i}\beta_1]\phi[x_{2i}\beta_1])}{\Phi(x_{2i}\beta_2)[1-\Phi(x_{2i}\beta_2)]}$.

model, the perception of high levels of corruption entails a negative effect if distrust in government institutions brought about by corruption makes people less willing to support redistribution, compared to a situation where people find their government and political institutions to be honest and trustworthy. To test the validity of this hypothesis we need to check whether perceived corruption reduces trust in government institutions and whether distrust in government indeed reduces people's support for redistribution. In order to do so we include an additional variable to our baseline model (21)-(22), measuring individual's level of trust in government and political institutions, to obtain specification (23)-(24). Parameter φ captures now the partial effect of trust in government, t_i, on support for redistribution, given the perception of corruption, while $\gamma\prime$ is the direct effect of perceived corruption on support for redistribution —which includes all other possible mechanisms besides political trust—, given t_i.

$$y_i^* = x_{1i}\beta_1 + c_i\gamma\prime + t_i\varphi + \varepsilon_{1i} \qquad y_i = 1 \text{ if } y_i^* > 0, \text{ 0 otherwise} \tag{23}$$

$$c_i^* = x_{2i}\beta_2 + t_i\delta + \varepsilon_{2i} \qquad c_i = 1 \text{ if } c_i^* > 0, \text{ 0 otherwise} \tag{24}$$

To define our variables of trust in government institutions, we follow the literature on political trust (Rothstein and Teorell, 2008; Svallfors, 1999, 2002, and 2012), and use some measures similar to those used in Algan et al. (2011 and 2014). As respondents may make judgements about the incumbent government rather than political institutions in general, we use principal component analysis to compute two indices —by country and year— that measure trust in political institutions and trust in the incumbent government, from a set of variables measuring different aspects of political trust.[37]

The first index is based on survey questions about respondents' trust in political institutions in general, the national parliament and the justice system, whereas the second index tries to approach different aspects of individuals' assessment of the incumbent government trustworthiness and effectiveness, including the extent to which the incumbent government fights poverty.

We first check whether perceived corruption brings about distrust in government institutions. Table 5 reports estimates of two simple OLS regressions of each of the two indices of trust in the incumbent government and in the political system on perceived corruption and the same set of controls as in Table 3 —that estimates equation (20), and suggests that indeed perception of corruption is inversely correlated with both indices of political trust. In particular, believing that corruption is very common reduces the index of trust in the incumbent government and in political institutions by 0.55 and 0.68 standard deviations respectively, so we could observe a variation in the effect of perceived corruption once we control for political trust.

Having asserted the negative relationship between perceived corruption and our indices of political trust, next we can test whether including either of our indices of political trust in our baseline model (equations (21)-(22)) increases the positive effect of perceived corruption on support for redistribution. This is precisely what equations (23)-(24) do, and estimates of the variables of interest are shown in Table 6, columns (3-4) and (7-8). For comparative purposes, Table 6 also includes the baseline model of equations (21)-(22)

[37] Specific questions and wording are available in Table A1 in Appendix E.

in Columns (1-2) and (5-6).[38]

As predicted by our model, the estimates of columns (4) and (8) suggest a direct negative effect of political trust on preference for redistribution, and also show how the inclusion of political trust increases the positive effect of perceived corruption on support for redistribution.

This strategy, however, is not free of endogeneity concerns. These effects should be interpreted with caution because they only identify causal mediation effects under the sequential ignorability assumption (Imai et al., 2010). This means that not only perception of corruption should be conditionally independent of unobservables ε_i, given covariates x_i, but also that the mediator variable (political trust) should be conditionally independent of unobservables ε_i, given background covariates x_i and c_i. As in the case of perceived level of corruption, the association between individuals' political trust and their willingness to support state intervention may be attributed to some common but unobserved factors.

A way to deal with this problem would be to estimate a recursive system which allows for correlation of unobserved determinants of corruption perception, trust in government, and support for redistribution. Identification in this model, however is difficult, as it is challenging to find a valid exclusion restriction, that is, a variable that affects political trust, and does not affect directly neither the perception of corruption nor support for redistribution.

6 Additional robustness checks

In this section we check the robustness of our key findings. First, in section 6.1 we use a different exclusion restriction. Instead of individual bribery victimization, we employ the provincial percentage of the population victimized by bribery. Then, in section 6.2, we employ an alternative survey questions to capture people's support for redistribution, which asks about who should be responsible to ensure the wellbeing of individuals.

6.1 Alternative exclusion restriction to address endogeneity

Our main results reported in Section 5 use individual bribery victimization as exclusion restriction to address the possible endogeneity of corruption perceptions. Therefore, our findings build on the assumption that individuals who have been victims of bribery are more likely to perceive higher corruption, and that such bribery episode has no direct impact on their preferences for redistribution. This section shows that exploiting a different, more aggregate, source of exogenous variation of individuals' corruption perceptions, corroborates the results obtained with the individual bribery victimization variable, which strengthens the credibility of our core findings. In particular, we use the provincial percentage of the population victimized by bribery as exclusion restriction, which is not directly related to own (un)observed characteristics.

Previous evidence has revealed that the social environment has a strong influence on individual attitudes towards corruption. Ceteris paribus, individuals living in regions

[38] A new baseline model is estimated each time because sample size is different due to missing values and because the question of confidence in the current government was not included in some countries in 2012.

where people are on average relatively less averse to corruption tend as well to be more forgiving of corruption (Gatti et al., 2003). Likewise, it is reasonable to argue that, ceteris paribus, the prevalence of bribery in the region where the individual lives is an important determinant of his or her perception of corruption, and that such prevalence affects individual's support for redistribution only through this perception rather than directly. As the estimate in Table 7 shows, living in a region where a high percentage of the population has been asked for a bribe increases the probability of considering corruption as very widespread. We do not discard region and country-level variables to also be determinants of the probability of being bribed but our region and country fixed effects do control for these factors.

The dataset contains observations for 362 provinces, and there are 984 provinces/year units in total. We only consider provinces with at least 30 observations per year; therefore the number of provinces is reduced to 301, with 759 provinces/year units. Figure 5 in Appendix C shows the distribution of the percentage of the population reporting having faced bribery at a province level.

The results, reported in Table 7, corroborate the positive effect of perceived corruption, and the negative bias introduced by the endogeneity of corruption perceptions. Now, when the exogenous variability comes from the provincial percentage of the population victimized by bribery, the effect of perceived corruption is somewhat larger than when we use individual bribery victimization. Such larger effect may be due to the impossibility of controlling for the region/year interaction effects when using the regional share of bribery victimization.

6.2 Alternative measures of support for redistribution

Preferences for redistribution are meant to capture people's views about the role of the state in altering the distribution of income (and wealth) originating in the markets. The question we use certainly has this emphasis. However, the wording of the question does not address the way people prefer this intervention to be carried out. We test the robustness of our results to using an alternative question, which measures the respondents' agreement with greater levels of state responsibility for provision of welfare.

More precisely, the question reads "The government, rather than individuals, is the main responsible in ensuring the well-being of the people. To what extent do you agree or disagree with this statement?"[39] Possible responses range from 1 to 7, where '1' means "strongly disagree" and '7' means "strongly agree", so higher values indicate increasing support for redistribution. As for the benchmark question above, the distribution of the level of agreement with the statement within each country is clearly negatively skewed as most of the respondents express the highest levels of agreement.[40] For this reason, and for comparative purposes, we collapse the seven response categories to a binary variable, taking value 1 if the individual reports strong agreement with redistribution (i.e. her response is 7), and 0 otherwise. In this case, we use a very similar sample to the previous one (75,580 observations) and obtain almost the same results in univariate and bivariate

[39] In the original (Spanish), the question is: El Estado (gentilicio), más que los individuos, debería ser el principal responsable de asegurar el bienestar de la gente. ¿Hasta qué punto está de acuerdo o en desacuerdo con esta frase?

[40] Details can be obtained from the authors upon request.

probit models as in Section 5. First, as can be observed at the bottom of Table 8, the sign of the estimated $ath\rho$ in the bivariate model is negative, being significantly different from zero at 10 per cent. Thus, once again we can reject the hypothesis that errors in both equations are independent, at 10 per cent. In addition, the estimated marginal effect of perceived corruption on the probability to strongly support redistributive policies from the bivariate probit model is 16.8 percentage points, very similar to the result we obtained with the main support for redistribution question (see Table 3), and also twice as large as the estimate from the univariate model. Also, support for redistribution decreases with the wealth level as predicted by our model.

Estimates from linear probability models and instrumental variables reported in Appendix Table A6 yield the same results as uni- an bivariate probit models. The marginal effect of perceived corruption on preferences for redistribution is positive and more than doubles when endogeneity is corrected. As far as the instrument is concerned, all the tests in Appendix Table A7 confirm that perception of corruption is indeed an endogenous variable and that our instrument is not weak.

7 Concluding remarks

As individual preferences eventually translate into policies via some aggregation mechanism, identifying the factors behind public support for public policy is an important issue. We investigate the effect of perceived corruption on people's support for redistribution, a relationship that has received little attention in the literature on preferences for redistribution so far.

Economists have suggested different channels through which corruption can shape individuals' preferences for redistribution. While all these channels might be relevant, the nature of our data pushed us to work with a theoretical model which only captures two of them:[41] (i) Corruption undermines trust in government and therefore reduces people's support for redistribution. (ii) Corruption reduces relative wealth of the disadvantaged, which leads to a higher demand for redistribution. These two opposing forces make it impossible to sign the net effect of perceived corruption on redistribution a priori.

We study empirically corruption and preferences for redistribution in a sample of 18 countries in Latin America, a region that suffers from high levels of inequality and weak institutions, where democratic systems are still consolidating, using data from the 2008, 2010 and 2012 rounds of the AmericasBarometer. Our findings take due account of the potential endogeneity between perceived corruption and support for redistribution, and are robust to using different measures of preferences for redistribution, that focus on different implications of redistributive policies and that have been found to affect the support people report for redistribution (Alesina and La Ferrara 2005). Our novel empirical findings suggest that perceiving corruption in the public sector increases people's support for redistribution. We also find evidence for the trust channel, that turns out to be less important than the wealth channel. The experience of Latin America might also provide direct evidence on the effects other countries and regions in Africa and Asia should expect.

[41] In particular, our data does not allow us to examine fairness concerns nor rent-seeking motives for favoring more redistribution if corruption is more wide-spread (Alesina and Angeletos, 2005).

As pointed out above, data limitations do not allow us to fully examine fairness concerns and rent-seeking motives. Notwithstanding this, the estimated negative relation between wealth levels and preferences for redistribution provides support to the prediction of our model and suggests that rent-seeking motives do not play an important role in our data. Nonetheless, future research should try to empirically identify the effects of the various different channels with richer data.

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A Linear Probability Models and Instrumental Variables

This section shows that fitting linear probability models and addressing the endogeneity of perceived corruption with instrumental variables yields results which are consistent with the bivariate probit estimates. We estimate equation (20) by OLS, replacing the unobserved y_i^* with the binary observed y_i, and instrumenting individual corruption perception with individual bribery victimization, as in our baseline model of section 5. Appendix Table A8 reports the OLS and IV estimates.[42] The OLS estimate of perceived corruption is positive and statistically significant, while the IV estimate is more than twice as large as the former.

There are two validity concerns we must address, relevance and exogeneity. If our instrument - bribery victims - is only weakly correlated with our endogenous variable - perceptions of bribery -, it is not relevant and will lead to very large standard errors on the IV estimates resulting in a finite-sample bias, and the standard t-statistic may be meaningless if the weakness is severe. Second, if our instrument is not truly exogenous, it is no longer consistent. Moreover, the inconsistency introduced by an even small covariance between the instrument and the unobserved determinants in the outcome variable will be exacerbated when the instrument is weak.

We therefore test both concerns. All the tests that we present in Appendix Table A9 confirm that perception of corruption is indeed an endogenous variable and that our instrument is not weak and is thus valid.

We first check the exogeneity of our key variable, perception of corruption. According to the result of the robust Durbin-Wu-Hausman endogeneity test reported in the upper panel of Table A9, the null hypothesis of exogeneity can be rejected (p-value of 0.018).[43]

The other tests reported in Table A9 establish that our instrument is not weak. The second panel of Table A9 reports the Angrist-Pischke F test of excluded instruments. Generally, with a single excluded instrumental variable, if one wanted to restrict the bias of the IV estimator to five per cent of the OLS bias, an F statistic over 10 is required to suggest instruments are sufficiently strong (Stock and Yogo, 2005). Therefore, the reported F-statistic in the IV specifications of 289.54 clearly suggests that we should not worry about weakness of our instrument. The same conclusion is reached with the Cragg-Donald Wald F statistic and the Kleibergen-Paap Wald rank F statistic, which is robust to heteroscedastic clustered standard errors (see the third panel).

We finally use an underidentification test, which is a Lagrange multiplier test. This is essentially the test of the rank of a matrix: under the null hypothesis that the equation is underidentified, the matrix of reduced form coefficients on the L excluded instruments has rank equal to $K-1$ where K is the number of endogenous regressors. Under the null

[42] The first stage equation in the IV estimates is the regression of perception of corruption, as in Table 3 column (1). It should be noted that accounting for endogeneity with either the IV or bivariate probit approaches leads to different estimates because both procedures yield different measures: average treatment on the treated (ATT) and local average treatment effect (LATE) respectively.

[43] The test statistic is distributed as χ^2 with degrees of freedom equal to the number of regressors being tested for endogeneity, i.e. one in our case. Unlike the traditional Durbin-Wu-Hausman endogeneity test, the statistic reported is robust to several violations of heteroscedasticity, like clustered standard errors (Baum et al. 2007: 482).

hypothesis, the statistic is distributed as χ^2 with degrees of freedom equal to $(L-K+1)$. A rejection of the null indicates that the matrix is full column rank, *i.e.*, the model is identified. The results shown at the bottom of Table A9 suggest that we can reject the null hypothesis of underidentification *i.e.* the excluded instrument is relevant —the Kleibergen-Paap rk LM statistic is 55.2 with a p-value of 0.

To summarize, the robustness checks confirm the endogeneity of corruption perceptions, the relevance and validity of our instrument bribe victims, and hence the positive relationship between corruption perceptions and preferences for redistribution.

B Explaining perceptions of corruption

Since perceived corruption has a big effect on taste for redistribution, it is interesting to examine what explains that some individuals perceive more corruption than others. The probit estimates of Table A10 in Appendix E show that women, Catholics are less likely to consider corruption as very common, while this perception tends to increase with age. Labour status is also important to understand differences in perceptions. People out of the labour force, employers and entrepreneurs, and public sector employees are less concerned about corruption than workers in the private sector, while the unemployed are the most likely to perceive corruption as a widespread problem. People living in rural areas are less likely to perceive high levels of corruption compared to those living in cities, regardless of their size. Wealthier people, particularly those at the top three quintiles of the wealth distribution, more educated individuals, and those who are aware of political news on a daily basis are more likely to consider that corruption among public officials is very common. Interestingly, in our sample there is only a moderate correlation between years of education and being daily aware of political information (0.16, see Table A5 in Appendix E), which suggests that specific and well-publicized events might have a large impact on the respondents' perception of corruption.[44]

It is also worth noting that while some variables influence both perceptions of corruption and support for redistribution in the same direction (as it is the case of being catholic, being aware of news on a daily basis), other variables act in the opposite direction, notably being public sector employee and the wealth levels.

[44]Melgar et al. (2010) analyse a similar question. They analyse the probability of perceiving the highest level of corruption in 33 countries using data from the 2004 International Social Survey Program, which includes six Latin American countries (Brazil, Mexico, Venezuela, Chile and Uruguay). Our results regarding labour market status and country level variables are generally in line with theirs, but gender and education effects differ. They find that being a woman is positively correlated with the perception of corruption, while having completed higher secondary education have the opposite effect. Differences in these results may be explained by the fact that men and more educated individuals are more exposed to incidents of corruption in Latin America for several reasons, for instance because they are more active in the labour market, or because they deal more often with governmental bureaucracy (see Swamy et al., 2001 and Mocan, 2004 for a gender analysis). In our sample, for instance, while 17.4 per cent of men and 25 per cent of individuals with higher education were asked for a bribe during the last twelve months, this was the case for only 8.4 per cent of women and 18 per cent of those with secondary education or less.

C Figures

Figure 1. The effect of a reduction of the probability of immunity of corrupt officials

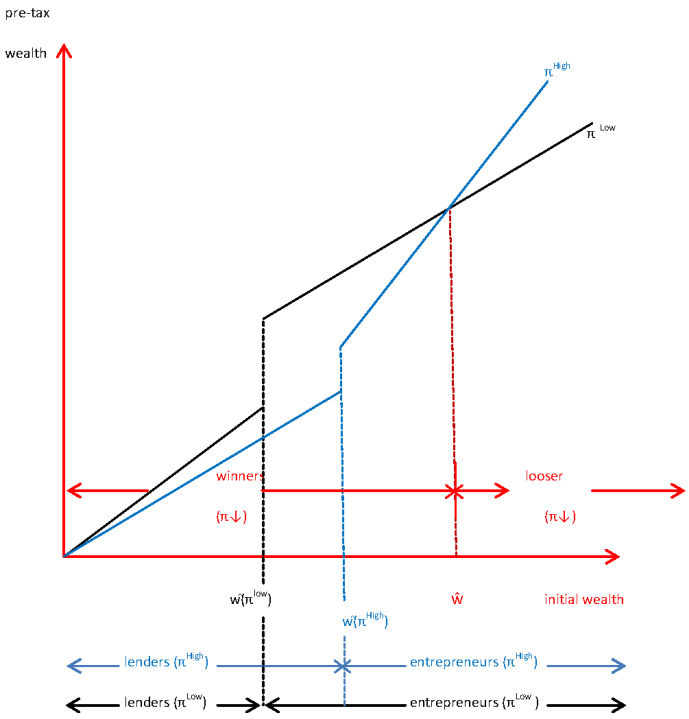


Figure 2. Support for Redistribution and Perception of Corruption

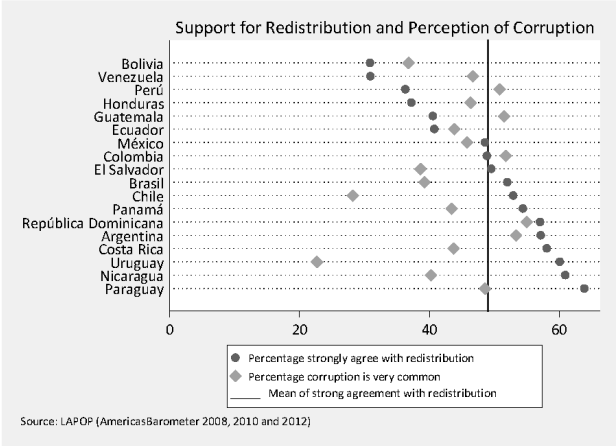


Figure 3. Distribution of support for redistribution – dependent variable

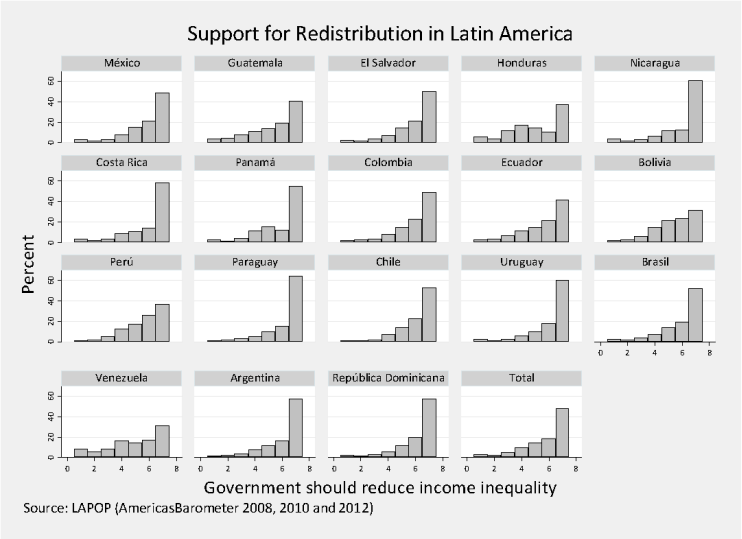


Figure 4. Correlation between CPI and perceptions of corruption from AmericasBarometer

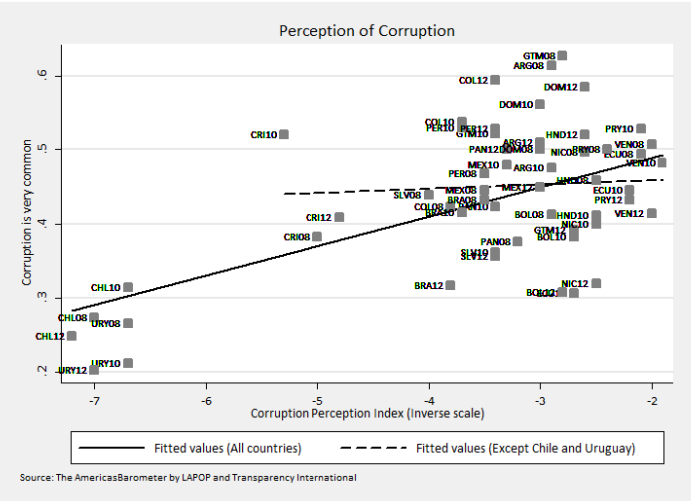
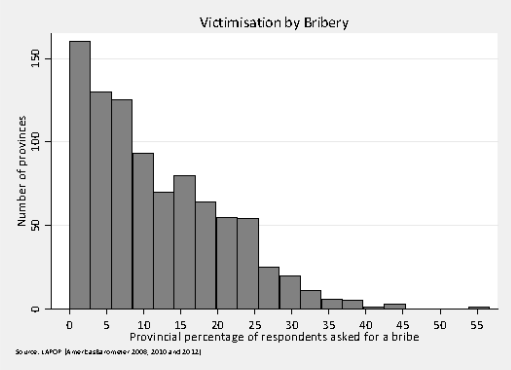


Figure 5. Bribery victimization at Province Level



D Tables

Table 1. Perception of the extent of corruption among public officials

	Very uncommon	Uncommon	Common	Very Common	Total
Mexico	2.2	13.0	39.2	45.6	100
Guatemala	4.8	15.9	27.4	51.9	100
El Salvador	6.8	23.2	31.5	38.5	100
Honduras	3.3	16.0	34.6	46.1	100
Nicaragua	7.0	21.8	30.5	40.7	100
Costa Rica	2.3	14.0	40.1	43.6	100
Panama	3.1	11.3	41.9	43.7	100
Colombia	3.3	12.7	31.1	52.9	100
Ecuador	3.2	15.6	37.0	44.2	100
Bolivia	2.4	17.0	43.7	36.9	100
Peru	2.4	13.6	33.0	51.0	100
Paraguay	2.8	11.3	36.0	49.9	100
Chile	4.1	19.4	48.5	28.1	100
Uruguay	5.5	23.4	48.3	22.9	100
Brazil	8.9	19.3	32.7	39.2	100
Venezuela	2.0	10.9	40.2	47.0	100
Argentina	1.3	6.9	37.6	54.2	100
Dominical Republic	6.1	12.0	27.4	54.5	100
Total	4.0	15.6	36.9	43.5	100

Table 2. Bribery victimization by year and country

	2008	2010	2012	Total
Mexico	20.8	27.6	21.5	23.3
Guatemala	12.5	16.0	19.3	15.9
El Salvador	8.5	7.7	6.7	7.7
Honduras	9.5	11.1	18.6	13.1
Nicaragua	11.3	8.8	5.9	8.7
Costa Rica	10.5	7.3	7.1	8.3
Panama	5.0	5.3	3.9	4.7
Colombia	6.5	7.9	11.4	8.6
Ecuador	16.0	13.4	18.5	16.0
Bolivia	23.6	22.5	23.6	23.3
Peru	20.5	22.2	18.8	20.5
Paraguay	14.8	17.1	15.6	15.8
Chile	2.4	2.9	2.9	2.7
Uruguay	4.9	5.5	4.8	5.1
Brazil	3.9	6.7	5.4	5.3
Venezuela	6.4	11.9	8.7	9.0
Argentina	18.8	14.9	11.5	15.1
Dominical Republic	11.2	12.7	17.1	13.7
Total	11.5	12.3	12.3	12.0

Percentage of individuals who were asked for a bribe by either a Public Employee or a Police Officer

Table 3. Support for Redistribution and Perception of Corruption

	Univariate Probit Model		Bivariate Probit Model ($Pr[y=1, c=1]$)			
	(1) Redistribution		(2) Perceived corruption		(3) Redistribution	
	dy/dx	(t)	dy/dx	(t)	dy/dx	(t)
Corruption very common	0.085***	(14.01)			0.181***	(4.05)
Ind. bribery victimization			0.114***	(16.88)		
Female	−0.004	(−0.97)	−0.004	(−0.86)	−0.003	(−0.77)
White or Mestizo	−0.016**	(−2.43)	−0.006	(−0.99)	−0.015**	(−2.42)
Age	0.000	(0.43)	0.002***	(7.03)	0.000	(0.67)
Has children	0.028***	(5.19)	−0.001	(−0.22)	0.026***	(5.07)
Catholic	−0.024***	(−4.57)	−0.010***	(−1.98)	−0.023***	(−4.42)
Labour Status: Worker in private sector (ref.)						
Inactive	0.005	(0.81)	−0.014**	(−2.18)	0.005	(0.83)
Unemployed	0.009	(0.98)	0.019*	(1.91)	0.009	(1.00)
Worker in public sector	0.025***	(2.92)	−0.034***	(−3.34)	0.024**	(2.84)
Employer or entrepreneur	−0.022	(−1.20)	−0.028*	(−1.70)	−0.022	(−1.26)
Self-employed	0.003	(0.36)	0.005	(0.74)	0.002	(0.33)
News daily	0.030***	(4.48)	0.030***	(4.77)	0.029***	(4.49)
Wealth index: Quintile 1 (ref.)						
Quintile 2	−0.007	(−1.01)	0.007	(1.15)	−0.007	(−1.00)
Quintile 3	−0.013	(−1.36)	0.015**	(2.05)	−0.012	(−1.35)
Quintile 4	−0.021*	(−1.90)	0.022***	(3.05)	−0.020*	(−1.90)
Quintile 5	−0.055***	(−5.45)	0.034***	(3.96)	−0.054***	(−5.35)
Education (years)	−0.000	(−0.56)	0.005***	(4.39)	−0.000	(−0.57)
City size: Capital or big city (ref.)						
Medium city	0.022*	(1.76)	−0.000	(−0.04)	0.021*	(1.77)
Small city	−0.008	(−0.75)	−0.010	(−1.03)	−0.008	(−0.73)
Rural	0.011	(1.01)	−0.020***	(−2.06)	0.010	(1.01)
athrho					−0.172***	(−2.02)
Pseudo R^2	0.067					
Observations	76,274		76,274			
Pseudo Log Likelihood	−43,998.8		−87,908.4			
Walt test of $\rho = 0$			$\chi^2(1) = 4.09$		$Prob > \chi^2(1) = 0.04$	

Average marginal effects of univariate and recursive bivariate probit models where each dependent variable equals 1 if the respondent strongly agrees with the statement "Government should implement strong policies to reduce income inequality". All regressions include fixed effects at country, region, and year level as well as country-year and region-year interaction terms. t-statistics in parenthesis. Standard errors are clustered at region level.
*** significant at 1 per cent; ** significant at 5 per cent; * significant at 10 per cent.

Table 4. Test of Exogeneity Based on Generalized Residuals

	(2) Baseline b/(t)	(3) Generalized residuals b/(t)
Corruption	0.228***	1.03**
	(13.66)	(2.18)
Generalized residuals		−.049*
		(−1.70)
R-squared	0.066	0.066
Observations	76,274	76,274
Pseudo Log Likelihood	−43,912.1	−43,771.8

Results of the coefficient of generalized residuals in a probit model of support for redistribution.

Models include the same set of controls as in Table 3.

*** significant at 1 per cent; ** significant at 5 per cent; * significant at 10 per cent.

Table 5. Perception of Corruption and Trust in Government Institutions

	Index of trust in incumbent government			Index of trust in political system		
	Coef.		(t)	Coef.		(t)
Corruption is very common	−0.551	***	(−20.87)	−0.680	***	(−22.01)
Female	−0.054	***	(−3.06)	0.042	**	(2.42)
White or Mestizo	0.030		(1.08)	0.029		(1.08)
Age	0.000		(0.22)	0.001		(0.52)
Has children	−0.022		(−1.13)	−0.068	***	(−3.52)
Catholic	0.066	***	(3.32)	0.081	***	(3.32)
Labour Status: Worker in private sector (ref.)						
Inactive	0.070	***	(3.91)	0.135	***	(6.45)
Unemployed	−0.065	**	(−2.08)	−0.063	*	(−1.66)
Worker in public sector	0.269	***	(6.74)	0.266	***	(7.29)
Employer or entrepreneur	0.061		(1.30)	0.039		(0.77)
Self-employed	−0.033	*	(−1.85)	−0.049	**	(−1.96)
News daily	0.094	***	(4.39)	0.086	***	(3.51)
Wealth index: Quintile 1 (ref.)						
Quintile 2	−0.045	*	(−1.83)	−0.041		(−1.54)
Quintile 3	−0.099	***	(−3.05)	−0.080	**	(−2.16)
Quintile 4	−0.086	***	(−2.90)	−0.059	*	(−1.83)
Quintile 5	−0.105	***	(−2.87)	−0.063	*	(−1.74)
Education (years)	−0.012	***	(−4.61)	−0.013	***	(−3.36)
City size: Capital or big city (ref.)						
Medium city	0.087	***	(2.63)	0.107	***	(3.11)
Small city	0.208	***	(5.41)	0.215	***	(5.11)
Rural	0.209	***	(5.84)	0.289	***	(7.16)
R^2	0.044			0.055		
Observations	72,230			66,647		
AIC	259,913.8			257,289.2		
Pseudo Log Likelihood	−129,912.9			−128,600.6		

Coefficients of OLS models where each dependent variable is an index of trust. All regressions include fixed effects at country, region, and year level as well as country-year and region-year interaction terms. Standard errors are clustered at region level. t-statistics in parentheses.

*** significant at 1 per cent; ** significant at 5 per cent; * significant at 10 per cent.

Table 6. Effect of Perception of Corruption on Support for Redistribution Net of Political Trust

	Trust in incumbent government				Trust in political system			
	Excluding Trust		Including Trust		Excluding Trust		Including Trust	
	Corruption	*Redistribution*	*Corruption*	*Redistribution*	*Corruption*	*Redistribution*	*Corruption*	*Redistribution*
Corruption is very common		0.169^{***}		0.235^{***}		0.190^{***}		0.265^{***}
		(3.86)		(4.95)		(4.48)		(6.32)
Trust in Inc. Gov./Pol. Syst.			-0.057^{***}	-0.010^{***}			-0.053^{***}	-0.010^{***}
			(-22.90)	(-3.20)			(-25.45)	(-3.85)
Individual bribe victimization	0.114^{***}		0.095^{***}		0.117^{***}		0.091^{***}	
	(16.52)		(13.37)		(16.07)		(12.49)	
arthrho				-0.296^{***}				-0.371^{***}
				(-2.81)				(-3.42)
Walt test of $\rho = 0$ (1)	$(3.36, 0.06)$		$(7.89, 0.005)$		$(5.14, 0.02)$		$(11.72, 0.000)$	
Observations	$72,230$		$72,230$		$66,647$		$66,647$	
Pseudo Log Likelihood	$-83,186.9$		$-82,150.9$		$-76,925.1$		$-75,820.2$	

Average marginal effects of recursive bivariate probit models where each dependent variable equals 1 if the respondent strongly agrees with the statement "Government should implement strong policies to reduce income inequality". All regressions include fixed effects at country, region, and year level, country-year and region-year interaction terms, and the same controls as in column (3) in Table 3. *t*-statistics in parenthesis. Standard errors are clustered at region level.
(1) The first figure reports the value of the $\chi^2(1)$ statistic, while the second figure reports $Prob > \chi^2(1)$.
*** significant at 1 per cent; ** significant at 5 per cent; * significant at 10 per cent.

Table 7. Support for Redistribution and Perception of Corruption
Alternative exclusion restriction: *Regional share of bribery victimization*

	Univariate Probit Model		Bivariate Probit Model ($Pr[y = 1, c = 1]$)			
	(1)		(2)		(3)	
	Redistribution		Perceived corruption		Redistribution	
	dy/dx	(t)	dy/dx	(t)	dy/dx	(t)
Corruption very common	0.088^{***}	(13.70)			0.340^{***}	(6.17)
Prov. bribery victimization			0.004^{***}	(4.88)		
Female	-0.004	(-0.87)	-0.012^{***}	(-2.69)	-0.004	(-0.98)
White or Mestizo	-0.017^{***}	(-2.66)	-0.009	(-1.29)	-0.014^{***}	(-2.59)
Age	0.000	(0.26)	0.002^{***}	(6.46)	0.000	(0.68)
Has children	0.027^{***}	(4.94)	-0.002	(-0.35)	0.022^{***}	(3.82)
Catholic	-0.025^{***}	(-4.66)	-0.011^{**}	(-2.08)	-0.020^{***}	(-3.67)
Labour Status: Worker in private sector (ref.)						
Inactive	0.003	(0.50)	-0.016^{**}	(-2.55)	0.002	(0.39)
Unemployed	0.008	(0.81)	0.020^{**}	(1.99)	0.007	(0.91)
Worker in public sector	0.026^{***}	(2.81)	-0.036^{***}	(-3.41)	0.019^{**}	(2.36)
Employer or entrepreneur	-0.021	(-1.18)	-0.025	(-1.46)	-0.017	(-1.22)
Self-employed	0.001	(0.19)	0.008	(1.12)	0.001	(0.24)
News daily	0.029^{***}	(4.33)	0.031^{***}	(4.98)	0.024^{***}	(3.78)
Wealth index: Quintile 1 (ref.)						
Quintile 2	-0.009	(-1.27)	0.007	(1.01)	-0.007	(-1.22)
Quintile 3	-0.015	(-1.63)	0.014^{**}	(2.02)	-0.012	(-1.47)
Quintile 4	-0.021^{*}	(-1.88)	0.025^{***}	(3.49)	-0.015^{*}	(-1.65)
Quintile 5	-0.054^{***}	(-5.01)	0.040^{***}	(4364)	-0.041^{***}	(-3.54)
Education (years)	-0.000	(-0.47)	0.005^{***}	(4.98)	-0.000	(-0.19)
City size: Capital or big city (ref.)						
Medium city	0.025^{***}	(2.00)	-0.005	(-0.55)	0.020^{**}	(1.98)
Small city	-0.007	(-0.63)	-0.013	(-1.42)	-0.006	(-0.63)
Rural	0.012	(1.15)	-0.024^{**}	(-2.56)	0.009	(1.09)
athrho					-0.580^{***}	(-2.45)
Pseudo R^2	0.055					
Observations	$76,274$		$76,251$			
Pseudo Log Likelihood	$-44,475.4$		$-88,876.4$			
Walt test of $\rho = 0$			$\chi^2(1) = 6.01$	$Prob > \chi^2(1) = 0.01$		

Average marginal effects of univariate and recursive bivariate probit models where each dependent variable equals 1 if the respondent strongly agrees with the statement "Government should implement strong policies to reduce income inequality". All regressions include fixed effects at country, region, and year level as well as country-year interaction terms. *t*-statistics in parenthesis. Standard errors are clustered at region level.
*** significant at 1 per cent; ** significant at 5 per cent; * significant at 10 per cent.

Table 8. Support for Redistribution and Perception of Corruption. Robustness check
Alternative dependent variable: *Government is main responsible to ensure well-being of individuals*

	Univariate Probit Model		Bivariate Probit Model ($Pr[y=1, c=1]$)			
	(1)		(2)		(3)	
	Redistribution		Perceived corruption		Redistribution	
	dy/dx	(t)	dy/dx	(t)	dy/dx	(t)
Corruption very common	0.088***	(12.73)			0.168***	(3.73)
Ind. bribery victimization			0.115***	(17.28)		
Female	−0.006	(−1.63)	−0.004***	(−0.97)	−0.005	(−1.40)
White or Mestizo	−0.010	(−1.47)	−0.007	(−1.10)	−0.009	(−1.49)
Age	0.001***	(5.19)	0.002***	(7.21)	0.001***	(5.38)
Has children	0.016***	(2.99)	−0.002	(−0.29)	0.015***	(2.85)
Catholic	−0.029***	(−5.86)	−0.010**	(−1.93)	−0.028***	(−5.70)
Labour Status: Worker in private sector (ref.)						
Inactive	0.005	(0.81)	−0.013**	(−2.08)	0.005	(0.83)
Unemployed	0.009	(1.05)	0.018**	(1.85)	0.009	(1.07)
Worker in public sector	0.025***	(3.04)	−0.34***	(−3.27)	0.024**	(3.01)
Employer or entrepreneur	0.002	(0.11)	−0.030*	(−1.80)	0.001	(0.06)
Self-employed	0.014**	(2.26)	0.005	(0.81)	0.013**	(2.24)
News daily	0.029***	(5.39)	0.029***	(4.69)	0.028***	(5.39)
Wealth index: Quintile 1 (ref.)						
Quintile 2	−0.012*	(−1.80)	0.007	(1.09)	−0.011*	(−1.80)
Quintile 3	−0.014*	(−1.71)	0.014*	(1.95)	−0.013*	(−1.71)
Quintile 4	−0.020**	(−2.32)	0.022***	(3.04)	−0.019**	(−2.32)
Quintile 5	−0.025***	(−2.84)	0.035***	(3.94)	−0.024***	(−2.86)
Education (years)	−0.001	(−1.25)	0.005***	(4.37)	−0.001	(−1.25)
City size: Capital or big city (ref.)						
Medium city	0.024	(2.08)	0.000	(0.04)	0.023**	(2.11)
Small city	0.001	(0.12)	−0.009	(−0.92)	0.001	(0.14)
Rural	0.018*	(1.86)	−0.019*	(−1.93)	0.017*	(1.86)
athrho					−0.151	(−0.70)
Pseudo R^2	0.067					
Observations	75,580		75,580			
Pseudo Log Likelihood	−42,996.0		−86,575.5			
Walt test of rho=0			$\chi^2(1) = 2.89$		$Prob > \chi^2(1) = 0.089$	

Average marginal effects of univariate and recursive bivariate probit models where each dependent variable equals 1 if the respondent strongly agrees with the statement "Government more than individuals is the responsible for ensuring the well-being of the people". t-statistics in parenthesis. Standard errors are clustered at region level.
*** significant at 1 per cent; ** significant at 5 per cent; * significant at 10 per cent.

E Appendix Tables

Table A1. Data Sources and Definitions

Variables	Definition and Questions	Variable in LAPOP
Dependent Variable		
Government should reduce inequality	The (Country) government should implement strong policies to reduce income inequality between the rich and the poor. To what extent do you agree or disagree with this statement? 1 means "strongly disagree" and 7 means "strongly agree"	ROS4
Individual Variables		
Female	Dummy variable equal to 1 if respondent is female and 0 if male	Q1
Age	Years	Q2
Has children	Dummy variable equal to 1 if respondent has any children and equals to 0 if the individual has no children	Q12
White or Mestizo	Dummy variable equal to 1 if white or mestizo and 0 otherwise	ETID
Catholic	Dummy variable equal to 1 if "Catholic" and 0 otherwise	Q3c
Labour status	Set of dummy variables equal to 1 if the individual is: "Inactive" (student, at home, retired, pensioner or permanently disabled to work, or not working and not looking for a job); "Unemployed" (actively looking for a job); "Worker in public sector" (salaried employee of the government or an independent state-owned enterprise); "Worker in private sector" (Ref.) (salaried employee in the private sector); "Employer or entrepreneur" (owner or partner in a business), and "Self-employed".	OCUP4A and OCUP1A
Newsdaily (access to political information)	We would like to know how much information about politics and the country is known by the people. About how often do you pay attention to the news, whether on TV, the radio, newspapers or the internet? Dummy variable equal to 1 if "Daily" and equal to 0 otherwise	A1, A2, A3 and A4i (2008) and GI0 (2010)
Education	Years of education	ED
Size of place	Set of dummies equal to 1 if individual lives in the Capital or big city (Ref.), middle size town, small town or in rural area.	TAMANO
Self reported income and wealth		
Income decile	Income range of total monthly household income, incl. remittances and income of the all working adults and children. 10 deciles built by LAPOP based on the currency and distribution of each country in 2008 and 2010 while 16 are used in 2012. Observations with "No income" were dropped.	Q10 and Q10new
Wealth index	Quintile of a wealth index built from a principal component analysis of dummy variables indicating ownership of the following assets: Television, refrigerator, landline telephone, cellular telephone, car, washing machine, microwave oven, motorcycle, indoor plumbing, indoor bathroom, computer, and internet	R1 to R18
Perceptions about corruption, government and political institutions		
Perception of corruption	Taking into account your own experience or what you have heard, corruption among public officials is: [1] Very uncommon [2] Uncommon [3] Common [4] Very uncommon. We use a binary version of this variable, it equals 1 if response is [4]	EXC7
Pay a bribe is justified	Do you think, given the way things are, sometimes paying a bribe is justified? Dummy variable equal to 1 if "yes"	EXC18
Was asked for a bribe	Dummy variable equal to 1 if in the last twelve months the individual was asked for a bribe by a police officer, or by any government employee, or in their work, or in the courts, or in public health services, or at school.	EXC2 to EXC16
Trust in incumbent government	To what extent do you trust the national government? To what extent do you trust the president? To what extent would you say the current government fights poverty? To what extent would you say the current government combats government corruption? Speaking in general of the current administration, how would you rate the job performance of President: very well, well, neither well nor poorly, poorly, or very poorly?	B14
Trust in political institutions	To what extent do you think that citizens' basic rights are well protected by the political system of (country)? To what extent do you trust the justice system of (country)? To what extent do you think the courts in (country) guarantee a fair trial? To what extent do you trust the Parliament of (country)? Speaking of National Parliament, and thinking of members as a whole, without considering the political parties to which they belong, do you believe that the members of the National Parliament are performing their jobs: very well, well, neither well nor poorly, poorly, or very poorly? To what extent do you respect the political institutions of your country? Except for the last question, options range from 1 to 7, where 1 means "Not at all" and 7 means "A lot".	B2

Table A2. Observations by country and year, Americas Barometer

Country	2008	2010	2012	Total
Mexico	1,267	1,288	1,233	3,788
Guatemala	1,163	1,190	1,135	3,488
El Salvador	1,442	1,468	1,270	4,180
Honduras	1,241	1,369	1,329	3,939
Nicaragua	1,156	1,214	1,450	3,820
Costa Rica	1,311	1,392	1,368	4,071
Panama	1,380	1,415	1,470	4,265
Colombia	1,247	1,289	1,146	3,682
Ecuador	2,672	2,802	1,102	6,576
Bolivia	2,603	2,560	2,563	7,726
Peru	1,280	1,328	1,316	3,924
Paraguay	1,022	1,281	985	3,288
Chile	1,363	1,758	1,367	4,488
Uruguay	1,336	1,340	1,201	3,877
Brazil	1,151	2,008	1,215	4,374
Venezuela	1,194	1,173	1,296	3,663
Argentina	1,133	1,116	1,287	3,536
Dominican Republic	1,188	1,219	1,182	3,589
Total	25,149	27,210	23,915	76,274

Table A3. Summary of dependent and independent variables

Variable	Obs.	Mean	Std.Dev.	Min.	Max.
Government should reduce income inequality	76,274	0.478	0.500	0	1
Perception of corruption	76,274	0.432	0.495	0	1
Was asked for a bribe	76,274	0.130	0.336		
Female	76,274	0.504	0.500	0	1
White or Mestizo	76,274	0.817	0.387	0	1
Age	76,274	39.061	15.775	18	99
Has children	76,274	0.735	0.441	0	1
Catholic	76,274	0.681	0.466	0	1
Labour status					
Inactive	76,274	0.383	0.486	0	1
Unemployed	76,274	0.062	0.241	0	1
Worker in private sector (Ref.)	76,274	0.196	0.397	0	1
Worker in public sector	76,274	0.075	0.263	0	1
Employer or entrepreneur	76,274	0.018	0.133	0	1
Self-employed	76,274	0.267	0.443	0	1
Daily exposure to mass media	76,274	0.689	0.463	0	1
Education (years)	76,274	9.436	4.448	0	18
Wealth index					
Quintile 1	76,274	0.197	0.398	0	1
Quintile 2	76,274	0.205	0.404	0	1
Quintile 3	76,274	0.201	0.400	0	1
Quintile 4	76,274	0.203	0.402	0	1
Quintile 5	76,274	0.194	0.395	0	1
City size					
Capital or big city (Ref.)	76,274	0.418	0.493	0	1
Medium city	76,274	0.167	0.373	0	1
Small city	76,274	0.145	0.353	0	1
Rural area	76,274	0.270	0.444	0	1
Year					
2008 (Ref.)	76,274	0.330	0.470	0	1
2010	76,274	0.357	0.479	0	1
2012	76,274	0.314	0.464	0	1

Table A4. Income decile and quintiles of wealth index

	Wealth deciles					
Income decile	1^{st}	2^{nd}	3^{rd}	4^{th}	5^{th}	Total
1^{st} (lowest)	51.47	25.28	14.43	6.54	2.29	100
2^{nd}	36.53	26.75	19.41	12.73	4.58	100
3^{rd}	26.46	27.31	22.35	16.30	7.58	100
4^{th}	16.07	23.38	25.28	22.14	13.13	100
5^{th}	9.27	17.87	23.35	26.09	23.42	100
6^{th}	6.03	13.13	22.86	26.95	31.03	100
7^{th}	3.26	9.50	17.90	26.25	43.09	100
8^{th}	3.73	6.16	13.72	26.50	49.79	100
9^{th}	2.64	5.63	8.62	24.50	58.61	100
10^{th} (highest)	1.48	2.64	4.43	18.89	72.56	100
Total	21.79	20.83	20.45	19.13	17.80	100

Calculated using Americas Barometer 2008 and 2010. Polichoric Correlation =0.54; S.E.=0.003; N=53,121

Table A5. Polychoric correlation matrix

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1)	Female	1.000								
(2)	White or Mestizo	0.027	1.000							
(3)	Age	−0.020	−0.003	1.000						
(4)	Has children	0.224	−0.055	0.636	1.000					
(5)	Catholic	0.050	0.079	0.106	0.067	1.000				
(6)	Labour status	−0.470	−0.050	−0.037	0.076	−0.013	1.000			
(7)	News daily	−0.070	0.098	0.121	0.116	0.067	0.013	1.000		
(8)	Quintile of wealth	−0.048	0.198	−0.044	−0.139	0.037	0.018	0.173	1.000	
(9)	Education (years)	−0.037	0.162	−0.297	−0.314	0.047	0.053	0.163	0.474	1.000
(10)	Size of city	−0.032	−0.100	−0.029	−0.056	0.056	0.050	−0.141	−0.410	−0.317

All correlations are significant at 1 per cent.

Table A6. Support for Redistribution and Perception of Corruption
Robustness check: Instrumental Variables
Government is main responsible to ensure well-being of individuals

	OLS		IV	
	Coef.	(t)	Coef.	(t)
Corruption very common	0.088***	(12.23)	0.233***	(4.28)
Female	−0.007*	(−1.67)	−0.005	(−1.16)
White or Mestizo	−0.010	(−1.50)	−0.009	(−1.31)
Age	0.001***	(5.14)	0.001***	(3.53)
Has children	0.016***	(2.93)	0.016***	(2.84)
Catholic	−0.029***	(−5.92)	−0.027***	(−5.73)
Labour Status: Worker in private sector (ref.)				
Inactive	0.005	(0.84)	0.007	(1.21)
Unemployed	0.009	(1.02)	0.006	(0.70)
Worker in public sector	0.025***	(3.02)	0.030***	(3.50)
Employer or entrepreneur	0.002	(0.13)	0.006	(0.36)
Self-employed	0.015**	(2.28)	0.013**	(2.11)
News daily	0.029***	(5.27)	0.025***	(4.43)
Wealth index: Quintile 1 (ref.)				
Quintile 2	−0.012*	(−1.81)	−0.013**	(−1.99)
Quintile 3	−0.014*	(−1.72)	−0.016**	(−1.99)
Quintile 4	−0.021**	(−2.33)	−0.024***	(−2.71)
Quintile 5	−0.025***	(−2.80)	−0.031***	(−3.40)
Education (years)	−0.001	(−1.21)	−0.002**	(−2.35)
City size: Capital or big city (ref.)				
Medium city	0.024**	(2.08)	0.025**	(2.10)
Small city	0.001	(0.10)	0.003	(0.30)
Rural	0.017*	(1.84)	0.021**	(2.20)
Constant	0.327***	(23.82)	0.313***	(22.15)
R^2	0.087		0.068	
Observations	76,580		76,580	

The dependent variable is the level of respondent's agreement with the statement: "Government should implement strong policies to reduce income inequality". The first stage regression includes the same control variables as in column (2) in Table 3, while the OLS regression and the second stage regression in the IV model include the same controls as in column (3) in Table 3. All regressions include fixed effects at country, region, year level, as well as country-year and region-year interaction terms. t-statistics in parenthesis. Standard errors are clustered at region level.
*** significant at 1 per cent; ** significant at 5 per cent; * significant at 10 per cent.

Table A7. Tests of endogeneity of perception of corruption and validity of instrument, bribery victims
Alternative dependent variable: *Government is main responsible to ensure well-being of individuals*

Endogeneity test of endogenous regressors: χ^2-statistic	
H_0: perception of corruption is exogenous	Robust score $\chi^2(1) = 7.567$ $p - value = 0.0059$
Relevance of our instrument	
F test of excluded instruments (F statistic adjusted for 108 clusters)	
Angrist-Pischke multivariate F test of excluded instruments	$F(1, 107) = 298.63$ $Prob > F = 0.0000$
Weak identification test	
H_0: equation is weakly identified	
Stock-Yogo weak ID test	
critical values for single endogenous regressor	Cragg-Donald Wald F statistic
10% maximal LIML size 16.38	446.27
15% maximal LIML size 8.96	
20% maximal LIML size 6.66	Kleibergen-Paap Wald rk F statistic
25% maximal LIML size 5.53	298.63
Underidentification test	Kleibergen-Paap Wald rk LM statistic
H_0: underidentified	$\chi^2(1) = 55.52$
H_a: Identified	$p - value = 0.0000$

Statistics robust to heteroscedasticity and clustering on primary sampling unit (subnational regions).

Table A8. Support for Redistribution and Perception of Corruption
Robustness check: Instrumental Variables

	OLS		IV	
	Coef.	(t)	Coef.	(t)
Corruption very common	0.085***	(13.63)	0.221***	(3.85)
Female	−0.004	(−0.94)	−0.002	(−0.55)
White or Mestizo	−0.016**	(−2.45)	−0.015**	(−2.21)
Age	0.000	(0.43)	−0.000	(−1.03)
Has children	0.028***	(5.13)	0.027***	(5.10)
Catholic	−0.025***	(−4.57)	−0.023***	(−4.18)
Labour Status: Worker in private sector (ref.)				
Inactive	0.005	(0.82)	0.007	(1.16)
Unemployed	0.009	(0.99)	0.007	(0.72)
Worker in public sector	0.025***	(2.91)	0.030***	(3.47)
Employer or entrepreneur	−0.021	(−1.17)	−0.018	(−0.99)
Self-employed	0.003	(0.38)	0.002	(0.34)
News daily	0.030***	(4.43)	0.026***	(3.73)
Wealth index: Quintile 1 (ref.)				
Quintile 2	−0.007	(−1.01)	−0.008	(−1.16)
Quintile 3	−0.013	(−1.37)	−0.015	(−1.62)
Quintile 4	−0.021**	(−1.89)	−0.024**	(−2.23)
Quintile 5	−0.056***	(−5.43)	−0.061***	(−6.04)
Education (years)	−0.000	(−0.52)	−0.001*	(−1.68)
City size: Capital or big city (ref.)				
Medium city	0.022**	(2.18)	0.023*	(1.85)
Small city	−0.008	(−0.72)	−0.006	(−0.57)
Rural	0.011	(1.01)	0.014	(1.36)
Constant	5.773	(10.19)	5.770	(10.26)
R^2	0.087		0.070	
Observations	76,274		76,274	

The dependent variable is the level of respondent's agreement with the statement: "Government should implement strong policies to reduce income inequality". The first stage regression includes the same control variables as in column (2) in Table 3, while the OLS regression and the second stage regression in the IV model include the same controls as in column (3) in Table 3. All regressions include fixed effects at country, region, year level, as well as country-year and region-year interaction terms. t-statistics in parenthesis. Standard errors are clustered at region level.
*** significant at 1 per cent; ** significant at 5 per cent; * significant at 10 per cent.

Table A9. Tests of endogeneity of perception of corruption and validity of instrument, bribery victims

Endogeneity test of endogenous regressors: χ^2-statistic

H_0: perception of corruption is exogenous	Robust score $\chi^2(1) = 5.631$ $p - value = 0.0176$

Relevance of our instrument

F test of excluded instruments (F statistic adjusted for 108 clusters)		
Angrist-Pischke multivariate F test of excluded instruments		$F(1, 107) = 289.54$ $Prob > F = 0.0000$
Weak identification test		
H_0: equation is weakly identified		
Stock-Yogo weak ID test		
critical values for single endogenous regressor		Cragg-Donald Wald F statistic
10% maximal LIML size	16.38	438.72
15% maximal LIML size	8.96	
20% maximal LIML size	6.66	Kleibergen-Paap Wald rk F statistic
25% maximal LIML size	5.53	289.54
Underidentification test		Kleibergen-Paap Wald rk LM statistic
H_0: underidentified		$\chi^2(1) = 55.22$
H_a: Identified		$p - value = 0.0000$

Statistics robust to heteroscedasticity and clustering on primary sampling unit (subnational regions).

Table A10. Determinants of Perception of Corruption

	dy/dx	(t)
Ind. bribery victimization	0.113^{***}	(16.83)
Female	-0.004	(-0.86)
White or Mestizo	-0.006	(-1.01)
Age	0.002^{***}	(7.02)
Has children	-0.001	(-0.22)
Catholic	-0.011^{**}	(-2.01)
Labour Status: Worker in private sector (ref.)		
Inactive	-0.014^{**}	(-2.20)
Unemployed	0.019^{*}	(1.91)
Worker in public sector	-0.034^{***}	(-3.34)
Employer or entrepreneur	-0.029	(-1.72)
Self-employed	0.005	(0.72)
News daily	0.030^{***}	(4.80)
Wealth index: Quintile 1 (ref.)		
Quintile 2	0.007	(1.14)
Quintile 3	0.015^{**}	(2.03)
Quintile 4	0.022^{***}	(3.02)
Quintile 5	0.034^{***}	(3.95)
Education (years)	0.005^{***}	(4.38)
City size: Capital or big city (ref.)		
Medium city	-0.000	(-0.05)
Small city	-0.01	(-1.03)
Rural	-0.020^{**}	(-2.05)
Pseudo R^2	0.054	
Observations	76,274	
Pseudo Log Likelihood	$-43,998.8$	

Average marginal effects of univariate probit model where the dependent variable equals 1 if the respondent reports that corruption among public officials is very common. The model includes fixed effects at country, region, and year level, country-year and region-year interaction terms. t-statistics in parenthesis. Standard errors are clustered at region level.
*** significant at 1 per cent; ** significant at 5 per cent; * significant at 10 per cent.