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Demographic Structure and the Security of Property Rights in Developing Countries

An Empirical Exploration

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Philipp Harms and Philipp an de Meulen¹

Demographic Structure and the Security of Property Rights in Developing Countries – An Empirical Exploration

Abstract

It is often argued that countries with a high population share of children and young workers should attract large capital inflows from aging industrialized economies. However, many of these countries deter foreign investors by a high risk of creeping or outright expropriation. In this paper we explore whether the correlation between countries' demographic structure and the perceived security of property rights reflects a causal relationship. We show that, once we control for other potential determinants of expropriation risk, the ratio of young to old workers has a positive effect on the perceived security of property rights in low-income countries. This effect is the stronger the more democratic the political system.

JEL Classification: F21, D78, J10

Keywords: International investment; political economy; expropriation risk; demographics

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1 Introduction

Most industrialized economies exhibit a growing life expectancy and declining birth rates. In the medium run, this demographic evolution will raise capital-labor ratios and reduce the returns to capital in these countries. As a consequence, rich-country savers should be eager to purchase assets in countries with higher population growth rates and a lower capital-labor ratio.¹ Unfortunately, many economies whose demographic structure should make them attractive targets for international investors do not offer a favorable business climate. A bad infrastructure, low human capital or poor information are obstacles to large international investments. In addition, potential host countries are often characterized by corruption, non-democratic regimes, weak legal systems and the risk of – outright or creeping – expropriation.² The correlation between countries' demographic structures and the security of property rights is illustrated in Figure 1. For a sample of 167 countries between 1984 and 2005, this scatterplot depicts the relationship between the age structure of countries' labor force – represented by the ratio of "young workers" (aged 15-39) to "old workers" (aged 40-64) – and the "Investment Profile" index, published in the *International Country Risk Guide (ICRG)*.³ Apparently, countries with a younger labor force are characterized by lower values of ICRG's Investment Profile index.

This creates a somewhat paradoxical situation: on the one hand, a high share of young individuals should enhance international capital flows to developing countries. On the other hand, such a favorable age distribution seems to be associated with the very institutional failures and political risks that deter foreign investors. Does this mean that a demographic structure which is tilted towards the young prevents the international capital flows that it is supposed to instigate?

The goal of this paper is to explore this question in some detail. When doing so, we need to take into account that the correlation shown in Figure 1 does not necessarily represent a *causal* effect of countries' demographic structure on the security of property rights. It might as well result from the

¹see Reisen (2000), Brooks (2003), the IMF (2004) and Börsch-Supan et al. (2006)

²See e.g., Lucas (1990), Alfaro et al. (2008), Li and Resnick (2003), Jensen (2008), Harms and Ursprung (2002), Busse and Hefeker (2007) and Harms (2002) for a discussion on the role of institutions for international capital flows.

³The Investment Profile index assesses the likelihood of a broad spectrum of outright or creeping expropriation, namely: (a) the risk of expropriation or contract viability, (b) payment delays and (c) barriers to the repatriation of profits. Each sub-component is scored on a scale from zero (denoting very high risk) to four (denoting very low risk). Hence, the optimal Investment Profile is reflected by a score of 12 points (Political Risk Services Group 2008).

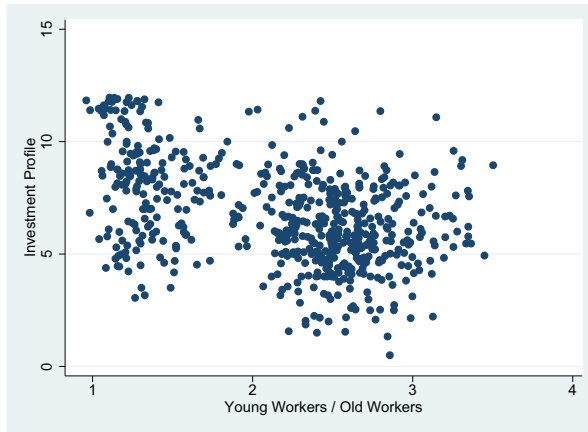


Figure 1: The ratio of countries’ ratios of young to old workers and the International Country Risk Guide ”Investment Profile” index (5-year averages for a panel of industrialized and developing economies)

fact that the age distribution of the labor force is correlated with other determinants of the Investment Profile index. To isolate the role of demographic structure we therefore need to control for other variables that potentially affect this index. Moreover, we have to account for the possibility that the effect of demographic structure differs across country groups and political regimes.

Our main empirical result indicates that, *ceteris paribus*, a higher share of young workers in the total labor force *raises* the ICRG’s investment profile index in low-income countries – provided that the political system is sufficiently democratic. We argue that this pattern reflects the distinct distributional interests of young and old agents in developing countries which, in turn, result from cohorts’ different time horizons, factor ownership etc. The relevance of this political-economic explanation is supported by the finding that the positive effect of a “young society” on the perceived security of property rights is weaker if political participation is restricted.

The rest of the paper is structured as follows: Section 2 offers a brief literature review and identifies various factors that possibly affect the security of property rights in developing countries. In addition it discusses the potential role of countries’ demographic structure. In Section 3 we introduce the empirical model as well as our data set. In Section 4 we present and discuss the results for different subsamples and specifications. Section 5 summarizes and

concludes. Variable descriptions and sources can be found in the appendix.

2 Distributional conflict and the security of property rights: theory

2.1 “Outright” and “creeping” expropriation

The most blatant form of infringing on foreign investors’ property rights is outright (or “direct”) expropriation, which Kobrin (1984) defines as “the involuntary forced divestment of foreign direct investment”. It explicitly includes the takeover of foreign ownership, either through (a) formal nationalizations by the executive, (b) extra-legal expropriation of foreign property, (c) forced sales of foreign equity and (d) forced contract renegotiation. While outright expropriation has become rather rare in recent decades (Minor 1994; Hajzler 2008), foreign investors’ property rights are still jeopardized by various forms of “creeping” (or “indirect”) expropriation, which includes restrictions on the repatriation of returns, but also discriminatory taxation and a deliberate tolerance towards corruption. We argue that both outright and creeping expropriation can be traced back to policymakers’ decisions which, in turn, depend on the costs and benefits of a more or less hostile policy towards foreign firms.

2.2 Expropriation: Costs and benefits

In this subsection we review the theoretical literature on the forces that influence the security of property rights in developing countries and emerging markets. Much of this literature focuses on the risk of outright expropriation. However, the insights gained by this line of research can also be used to understand the various forms of creeping expropriation – i.e. more subtle ways through which the government appropriates and/or redistributes foreign investors’ revenues and assets.

When deciding on the expropriation of foreign investors, a government weighs the costs and benefits arising from such a decision. In the short run, benefits from expropriation stem from the takeover of foreign property, and the refusal of any outstanding payments to the investor. In the long run, additional benefits may arise from spillovers and knowledge transfers from foreign enterprises to domestic producers (Tomz and Wright 2008). Costs of expropriation may result from the fact that some intangible factors of production like managerial skills cannot be replaced. In this case the host country uses foreign firms’ capital stock for production, but the returns are

likely to be lower than the returns which would have been achieved with the technological know-how of foreign investors (Eaton and Gersovitz 1984; Harms and an de Meulen 2009). Finally, as argued in Cole and English (1991) and Thomas and Worrall (1994), Aguiar et al. (2009) as well as Aguiar and Amador (2009), expropriating countries may suffer from a serious reduction of capital inflows in the future, e.g. because expropriation triggers an embargo by international investors.

2.3 The role of demographic structure

It is unlikely that the costs and benefits mentioned in the previous subsection affect all members of a society in a symmetric fashion or that there is a transfer mechanism through which the beneficiaries from expropriation compensate the losers. Hence, it is of crucial importance to determine which differences between members of a host-country population may give rise to conflicting attitudes towards foreign investors. In this paper, we argue that demographic structure is an important (albeit not the only) source of heterogeneity: members of different age groups differ with respect to their income sources (labor or capital), their productivity levels, their human capital endowments, as well as their time horizons. These differences are likely to expose them in a different way to the costs and benefits associated with expropriation.

As argued above, a deteriorating business climate is likely to result in the withdrawal of foreign expertise and a drop in productivity – at least in those firms that were previously operated by foreign managers. The lower productivity reduces the incomes of workers who are employed by multinational enterprises and – depending on the degree of intersectoral labor mobility – potentially the overall wage level in the economy. Since foreign firms usually pay higher wages to skilled labor (Martins 2004; Görg and Figini 2006; Görg and Girna 2007; Görg et al. 2007; Fosfuri et al. 2001; Görg and Geishecker 2008), this effect is especially strong for workers with a higher level of education. Conversely, while shareholders of foreign firms are hurt, the reduced competitive pressure is likely to raise the profits of domestic firms – and thus their owners’ incomes. Finally, individuals with a short time-horizon suffer less from the long-term costs of expropriation, arising e.g. from investment embargoes or reduced domestic capital accumulation (Li 2009; Harms and an de Meulen 2009; Minor 1994).

How these effects shape the distributional interests of different generations crucially depends on the relative importance of wages and capital incomes along agents’ life cycle. Moreover, the stake of domestic capital owners is determined by the extent to which they hold shares in foreign firms. These

patterns depend on the level of financial development, the structure of the educational system, the skill level of the work force etc.. We should therefore expect the effect of demographic variables to differ between countries that are at different stages of development.

2.4 The role of the political regime

In the preceding subsection we have discussed how the attitude towards multinational firms may vary across age groups. However, whether and how conflicting interests affect a government's decision crucially depends on a country's political institutions: on the one hand, it can be argued that democratic governments are less likely to expropriate since the constraints on the executive prevent actions that do not benefit the population (Li and Resnick 2003; Stasavage 2002; Li 2009; Jensen 2003; Jensen 2008). On the other hand, however, democratic institutions may *raise* the risk of expropriation if the popular mood turns against foreign firms (Wells 1998). Moreover, since democratic incumbents usually have a shorter expected tenure the executive is more amenable to popular pressure as the benefits from expropriation accrue immediately whereas most of the costs take longer to materialize.⁴ Hence, we conjecture that political institutions have an influence on the security of property rights, even if we don't have a clear hypothesis on the direction of this effect. In addition to this direct influence, the characteristics of the political system may also have an indirect effect on the security of property rights: since the extent of political participation defines the channel through which heterogeneous interests affect policy decisions, and since more democratic regimes supposedly give a greater weight to the more numerous groups in society, the political regime is likely to influence the effect of demographic structure on the perceived risk of expropriation.

3 Demographic structure and the security of property rights: An empirical investigation

3.1 Specification and data

Our sample consists of data for 68 developing countries and emerging markets for the years 1984 to 2005. Our focus on this time span is determined by the availability of our dependent variable, the *International Country Risk*

⁴Indeed, Li (2009) shows that leadership turnover increases the number of expropriations.

Guide's "Investment Profile" measure. When annual data were available we computed five-year averages (1986-90, 1991-95, 1996-2000, 2001-05), while the initial period (1984-85) covers only two years.

Note that the Investment Profile index reflects the *likelihood* of expropriation as perceived by international investors. Our choice of this indicator is motivated by the following considerations: first and foremost, this variable reflects the risk of both outright and creeping expropriation. Moreover, the fact that actual expropriations are rather rare does not imply that international investors are not concerned about the security of property rights. In fact, the upshot of most theoretical studies is that the volume and composition of capital inflows is chosen to *prevent* expropriation in equilibrium (see, e.g., Cole and English 1991, Thomas and Worrall 1994, Aguiar et al. 2009, Harms and an de Meulen 2009). The investment profile index accounts for this situation by reflecting agents' perceptions on the security of property rights.

The decision to use a quinquennial data set is motivated by data availability – in particular, demographic data and data on human capital endowments are available only every five years – but also by the notion that the link between countries' demographic structure and the security of property rights involves long-term processes which are hard to detect in annual data.

Our results are based on estimating variants of the following regression equation:

$$\text{IPROFILE}_{it} = \beta_0 + \beta_1 \cdot \text{DEMOGRAPH}_{it} + \sum_{j=2}^k \beta_j \cdot x_{j,it} + \xi_t + \epsilon_{it}. \quad (1)$$

In equation (1), IPROFILE is the *International Country Risk Guide*'s "Investment Profile" index as described in the introduction, which captures the perceived likelihood of expropriation. The variable DEMOGRAPH is some measure of demographic structure. The subscript i denotes the country while t refers to the time period. We will start by estimating equation (1) by pooled OLS. In a second step we will introduce fixed effects that account for unobserved heterogeneity. The calculation of standard errors will be based on a robust covariance matrix of the error term, controlling for heteroscedasticity and serial correlation of errors at the country-level. Sources and summary statistics for all variables are shown in the appendix.

3.2 Regressors

Our main goal is to determine how countries' demographic structure (DEMOGRAPH) influences the perceived security of property rights as reflected by

IPROFILE. Based on the discussion in Section 2 we first operationalize DEMOGRAPHY by using the ratio of young workers (aged 15-39) to old workers (aged 40-64) computed on the basis of data from the United Nations Population Division (2008). This variable (YWORKERS) reflects the relative size of two politically relevant age groups with potentially conflicting attitudes towards foreign investors.⁵ Since observations are available every five years, we relate the value of IPROFILE for 1984-85, 1986-90 etc. to the "initial" value of YWORKERS in 1980, 1985 etc. Note that this helps us to mitigate potential endogeneity problems arising from an (admittedly unlikely) reverse influence of IPROFILE on YWORKERS. To isolate the impact of a country's demographic structure *ceteris paribus*, we control for other factors which possibly influence the security of property rights and which are potentially correlated with YWORKERS. Two obvious candidates are countries' per-capita income level and their stock of human capital. While it is plausible that a country's per-capita income influences the risk of expropriation, it is not obvious *ex ante* whether this effect is positive or negative: on the one hand, poverty is usually a source of popular discontent which may eventually turn against foreign investors. On the other hand, however, Picht and Stüven (1991) and Tomz and Wright (2008) argue that expropriations are more likely to occur when economic conditions are favorable, foreign firms' profits are high, and the welfare losses associated with foreign sanctions are perceived as being low. We therefore include countries' real per-capita income without a clear hypothesis on the sign of this effect.⁶ To mitigate the obvious endogeneity problem – i.e. the fact that insecure property rights are harmful for macroeconomic performance⁷ – we lag the natural logarithm of countries' real per-capita income as reported in the Penn World Table by one period (INCOME(-1)). A country's stock of human capital is likely to matter since – as we argued in Section 2 – skilled workers reap higher benefits from the presence of multinational firms. To account for this effect, we use the variable SCHOOLING which is taken from Barro and Lee (2001) and which measures the average number of years of school attendance of individuals aged above 25 years. As with the demographic data, observations on school attendance are only available every fifth year, and we relate the values from 1980, 1985 etc. to subsequent five-year averages. We expect this variable to have a positive

⁵As we will show later, replacing YWORKERS by alternative measures of demographic structure, e.g. the young-age dependency ratio, does not alter our qualitative results.

⁶In fact, Jodice (1980) and Li (2009) find the effect of economic prosperity on the likelihood of expropriation to be curvilinear.

⁷See Hall and Jones (1999), Rodrik, Subramanian, and Trebbi (2004), Easterly and Levine (2003) and Acemoglu, Johnson, and Robinson (2001).

influence on IPROFILE. Like the *level* of a country’s per-capita income, the *growth rate* of real GDP per capita may both positively and negatively affect the security of property rights: on the one hand, multinational firms may be scapegoated in times of crises (Picht and Stüven 1991). On the other hand, however, high growth may render the expropriation of foreign assets more attractive (Tomz and Wright 2008). Again, there is an obvious endogeneity problem, and we therefore use the average growth rate of real per-capita GDP in the *preceding* five-year period ($\text{GROWTH}(-1)$). To capture the notion that macroeconomic instability generates social tensions that affect the risk of expropriation, we use the average inflation rate (INFLA) as a further regressor. Since some observations in our sample are extremely high, we take the logarithm of the CPI-inflation rate, as reported by World Bank (2009) and expect this variable to have a negative influence on IPROFILE. We also include a measure of trade openness – the sum of exports and imports relative to GDP – to account for the idea that more open economies are more vulnerable to foreign sanctions. Since drops in investor confidence are often associated with a reduction of international trade (Rose 2005), we use the lagged value ($\text{OPENNESS}(-1)$) as a regressor, and we expect this variable to have a positive effect on the perceived security of property rights.

In Section 2, we argued that political institutions may have an influence on the security of property rights. However, the effect may go both ways: on the one hand, lower accountability makes it likely that the government expropriates foreign firms to cater to particular interests against the will of the general population. On the other hand, however, democratic governments have a shorter time horizon and may therefore be more amenable to populist pressures. To account for the political regime, we use the “Political Rights” index compiled by Freedom House (2009). This variable measures (a) the degree of freedom in the electoral process, (b) the amount of party pluralism and the right of political participation and (c) the functioning of the government. We denote this variable by POLREPRESS.⁸ Later in the paper we will use alternative “democracy indicators” to test whether our results are sensitive to our particular choice of the Freedom House index.

Finally, we control for two aspects of the political and institutional environment, which are likely to influence the security of property rights: “Government Stability” (GOVSTAB) and “Law and Order” (LAWORDER), which we take from Political Risk Services Group (2008).⁹ We believe that greater

⁸Note that *Freedom House* uses a scale between 1 and 7 points to rate political rights, with a lower score reflecting a higher degree of political freedom. Hence, the original Freedom House indicator is essentially a measure of *political repression*.

⁹Government Stability measures “the government’s ability to carry out its declared program(s) and its ability to stay in office” (Political Risk Services Group 2008). It is

government stability positively affects the security of property rights since it implicitly lengthens the time horizon of the executive. Conversely, "Law and Order" measures the strength of the judiciary to control executive leaders. If a country's courts are unable or unwilling to enforce existing laws, multinational firms are more exposed to all sorts of creeping expropriation, and this should drag down the "Investment Profile" index. We therefore expect positive coefficients for both GOVSTAB and LAWORDER.

In addition to the time-variant regressors used so far, we include several "fixed factors" which potentially affect the risk of expropriation. First, we use the dummy variable OIL which takes on the value "1" whenever an economy belongs to the group of oil-exporting countries.¹⁰ Historically, firms in resource extraction sectors were exceptionally often affected by expropriation. There are (at least) two potential explanations: first, resource extraction is highly capital-intensive, and the wage losses in case of expropriation are usually low. Moreover, oil-exporting countries are in a better bargaining position since the reliance on their oil supply makes harsh sanctions less likely. Hence we should expect OIL to have a negative sign.

Basically the same arguments hold for a second resource-related variable, RAWMAT, which is the dummy variable "Exporter of non-fuel primary products" of the World Bank (1995). We also include the variable LATITUDE which measures a country's distance from the equator. This variable is meant to capture unobserved institutional properties which are not explicitly reflected by other variables in our regression. Although we expect the coefficient of LATITUDE to be positive, the effect might attenuate or even vanish as we control for numerous institutional and economic variables that are correlated with LATITUDE. Finally, we control for other regional- and time-specific features by using a set of regional dummy variables as well as time dummies for every five-year period.

4 Results

In this section we present the results of estimating equation (1). We start by estimating a linear specification using OLS with and without fixed effects. Later we allow for nonlinear effects, include alternative proxies for countries' demographic structure and political regime, and use the ordered probit and

calculated as the sum of three subcomponents, namely Government Unity, Legislative Strength and Popular Support.

¹⁰In determining the sample of oil-exporting countries we refer to Morsy (2009), as Morsy's assessment refers to a time span (1970-2006) that is very close to the one used in our study.

ordered logit estimators to account for the ordinal nature of the dependent variable. In Section 2, we argued that the effect of demographic structure might depend on the level of development: low- and middle-income countries are characterized by a particular set of economic and social institutions, and these are likely to shape the channels through which demographic structure affects the security of property rights. We therefore run our regression both for the complete sample and for subsamples that only include middle income countries (MIC) or low income countries (LIC).¹¹

4.1 Benchmark regressions

The estimation results based on our benchmark equation (1) are presented in Table 1. Columns 1-3 give the results of estimating equation (1) by OLS for different samples, while columns 4-6 document the effect of including fixed effects.

Turning first to the control variables, the coefficients for INFLA and GOVSTAB have the expected sign, are highly significant, and the qualitative impact is fairly stable across subsamples and estimation methods: inflation, being a symptom of macroeconomic instability, raises the perceived risk of expropriation, while government stability improves a country's Investment Profile index. The effect of $GROWTH(-1)$ is significantly positive in most columns, while $INCOME(-1)$ does not seem to have a positive impact. We checked whether this reflected the possibility highlighted by Li (2009) and Jodice (1980) that economic prosperity has a nonlinear influence on the security of property rights. However, when we included both $INCOME(-1)$ and squared $INCOME(-1)$, neither the former nor the latter variable turned out to be significant. The coefficients of LAWORDER, SCHOOLING and OPENNESS(-1) do not deliver a clear picture: while LAWORDER has the expected sign for the LIC sample, its coefficient is mostly insignificant for the other samples. The average level of education, as reflected by SCHOOLING, has a significantly positive effect for most samples – but only if we omit fixed effects. Finally, OPENNESS(-1) fails to be significant for any sample and specification. The significantly negative coefficients of POLREPRESS for all samples and specifications suggests that, *ceteris paribus*, there is a higher likelihood of expropriation in non-democratic countries. Apparently, the limited accountability of autocratic rulers is perceived as a greater threat than democratic governments' temptation to cater to redistributive interests.

¹¹The classification is based on countries' GNI per capita, using the World Bank's Atlas method (World Bank 2009). Note that we account for the fact that some countries moved from one income group to another over time (World Bank 2008).

Our main interest lies in the impact of countries' demographic structure, as reflected by the age-composition of the working-age population (YWORKERS), on the security of property rights. While the coefficient of YWORKERS reported in Table 1 is positive but insignificant for the complete sample, it is significantly *positive* for the LIC subsample. Once we move from OLS to fixed-effects estimation, the coefficient becomes significantly *negative* for the entire sample, but insignificant for the LIC and MIC subsamples. These results confirm our conjecture that the influence of demographic structure differs across income groups: in the more prosperous emerging markets, there is a middle class which has access to formal capital markets, and financial stability is crucial to protect old individuals' savings. At the same time, young individuals spend more time on education, and enter work life at a later date. Hence, a larger share of "young workers" has not yet entered work life and is therefore less affected by the negative wage effects of expropriation. Both properties are likely to contribute to the negative sign of YWORKERS in the total and MIC sample. The stakes of different generations change once we focus on low-income countries where informal modes of wealth accumulation prevail and where young individuals are much more exposed to the negative effects of expropriation.

4.2 Nonlinear effects

The result in Table 1 indicates that greater political repression reduces the security of property rights. In addition to this direct effect, the extent of political participation determines how conflicting distributional interests influence the government's decisions: if a large young generation strongly supports outright or creeping expropriation, this attitude is more likely to turn into an expropriation decision if citizens participate in the selection of their leaders and if the government's decision reflects the interests of the majority.

Based on these considerations, we introduce the regressor $YWORKERS \cdot POLREPRESS$ which interacts the composition of the labor force (YWORKERS) with the Freedom House indicator of political repression (POLREPRESS). If young individuals *support* expropriation more strongly than the old generation, the coefficient of this interactive term should be positive – indicating that the impact of demographic structure is muted in less democratic regimes. Conversely, if young individuals *oppose* expropriation, the coefficient of the interactive term should be negative.

The results in Table 2 once more confirm the notion that the role of demographic structure strongly differs across income groups: whereas a higher portion of young workers has a negative (though mostly insignificant) influence on the security of property rights in the total and the MIC sample, the

sign is reversed when we focus on low-income countries. The impact of the interactive term is significantly negative in the LIC sample, suggesting that the young generation’s opposition against expropriation is less influential in non-democratic political institutions. Evaluated at the low-income sample mean of POLREPRESS, the marginal effect of YWORKERS is not significantly different from zero, a finding that was foreshadowed by the result in column (6) of Table 1. However, as POLREPRESS decreases, i.e. the political system becomes more democratic, having a larger share of young workers positively affects the perceived security of property rights. Conversely, young agents are more hostile towards foreign firms in middle-income countries which dominate in the full sample, but their preference for expropriation is less regarded in non-democratic regimes. Note, however, that there are more than 30 LIC observations for which POLREPRESS is greater than 5.963, the value at which the marginal effect of YWORKERS turns negative in the LIC subsample. In these cases enlarging the share of young to old workers exacerbates the risk of expropriation. The interpretation we offer focuses on the influence of expropriation on factor prices: a large group of young workers reduces the capital-labor ratio and is likely to raise foreign firms’ profits. The resulting incentive to expropriate foreign firms is unchecked if an autocratic government does not account for the young generation’s resistance against expropriation. This may explain the negative marginal effect of YWORKERS on IPROFILE for very high values of POLREPRESS.

Interestingly, with fixed effects estimation the coefficient of POLREPRESS is significantly *positive* for the LIC sample once we include the interactive term. However, evaluated at the sample mean of YWORKERS the marginal effect of POLREPRESS is significantly negative, suggesting that less political repression still improves the perceived security of property rights.

4.3 Alternative proxies for demographic structure and political institutions

So far, we have used the ratio of young workers over old workers (YWORKERS) as a proxy for countries’ demographic structure, and the Freedom House index of political rights to measure the extent of political participation. We have argued that YWORKERS was well-suited to reflect the relative strength of interest groups with potentially conflicting interests, and that the “Freedom House index” accounted for the question whether specific distributional interests affected the government’s expropriation decision. There are, however, alternative proxies that reflect countries’ demographic structure and

political regime, and in this section we check whether our previous results are robust with respect to using these alternative variables. In doing so, we stick to the fixed-effects specification and include the interactive term discussed in the previous section.

We start by replacing (YWORKERS) by a ratio that divides the population aged 0-40 years by the population aged over 40 years (UNDER40) - i.e. we abandon our focus on the labor force and include both children (as part of the “young generation”) and retired persons (as part of the “old generation”). The first three columns in Table 3 demonstrate that this variation does not alter our key results. In particular, a higher share of the young generation improves the perceived security of property rights in low-income countries if the political regime is sufficiently democratic. Again, the results of the MIC and the full sample point in another direction: in the full sample the variable UNDER40 has a negative marginal effect on the perceived security of property rights. The significantly positive coefficient of the interaction term indicates that this effect is mitigated if the political system is less democratic. This supports the notion that the distributional interests of young agents substantially differ across countries at different income levels, and that the political regime determines how strongly their attitude towards international firms affects government policy.

Columns 4 to 6 in Table 3 show the results of using the young-age dependency ratio (YDEPRATIO) instead of YWORKERS. In all subsamples, the marginal effect of YDEPRATIO is not significantly different from zero. However, the interactive term with POLREPRESS has a significantly negative coefficient in the LIC sample, indicating that the stabilizing effect of YDEPRATIO is dampened in less democratic countries. The signs are reversed in the full sample and the MIC subsample, with a higher value of YDEPRATIO having a negative affect which is dampened by greater political repression.

In columns 7 to 9 we return to using YWORKERS as a measure of demographic structure, but replace the Freedom House index of political repression by the variable POLITYII which is taken from the Polity IV project and which measures a country’s level of democratization (Marshall and Jaggers 2007). This variable is defined on the interval [-10, 10] with higher values reflecting a more democratic political regime. Note that in comparison to POLREPRESS, POLITYII is a broader measure, reflecting more than just the possibility to participate in the political process, but also covering the separation of powers and the degree of civil liberties beyond the electoral process. In accordance with our previous results, we should expect a *positive* coefficient of the interactive term YWORKERS · POLITYII in the low-income country subsample. This is in fact what we get: while the separate coefficient of YWORKERS is no longer significant for low-income

countries, the interactive term has a significantly positive effect indicating that countries with a younger work force exhibit a lower risk of expropriation – provided that the political process is sufficiently democratic. Again, the opposite finding emerges for the full sample and the MIC subsample where the marginal effect of YWORKERS is negative.

The results presented in Table 3 thus suggest that our key finding is not an artifact of using a particular proxy for countries’ demographic structure or political regime: quite robustly, it turns out that a larger share of “young people” – be it young workers or young workers and their children – have a negative or negligible effect on the security of property rights in middle-income countries. In low-income countries, by contrast, the young generation potentially reduces the risk of expropriation. However, whether this effect actually materializes crucially depends on the political regime: if agents have no possibility to participate in the political process, the stabilizing influence of the young generation is muted or even reversed.

4.4 Ordered probit and logit

The “Investment Profile” index, which serves as the dependent variable in our estimations is a subjective and qualitative measure denoting the *perceived* degree of the security of property rights using an *ordinal* 12 points scale. Ignoring the non-cardinal nature of our dependent variable might bias our results, and we therefore estimated equation (1) using the ordered probit and logit estimators. To limit the number of threshold values to be estimated we divide the Investment Profile index into four categories. The resulting variable QUARTILED IPROFILE takes the value 1 for $1 \leq \text{IPROFILE} < 4$, the value 2 for $4 \leq \text{IPROFILE} < 7$, etc. As in the preceding estimations, the calculation of standard errors is based on a cluster-robust covariance matrix of the error terms. Furthermore, we run regressions for the complete sample and for subsamples of middle income or low income countries.

Moreover we allow for nonlinear effects by including a regressor that interacts YWORKERS and POLREPRESS. In Table 4 the results for the ordered probit estimator are presented in columns 1-3, while the findings for the ordered logit estimator are shown in columns 4-6. Not surprisingly, the results are quite similar. Moreover, they support the insights we derived from OLS estimation.¹² Countries’ economic growth and price level stability as well as institutional quality, e.g. high levels of GOVSTAB and

¹²Note however, that, with ordered probit/logit, the mapping of coefficients into marginal effects is not trivial since the latter depends on how much mass of the distribution is shifted between the different threshold values.

LAWORDER spur the security of property rights – at least in the LIC sample. Most importantly, the findings on the effect of YWORKERS mirror results from OLS regressions: while demographic structure does not affect the perceived risk of expropriation in the full sample and the MIC subsample, a higher share of young workers raises IPROFILE in low-income countries if the political system is sufficiently democratic. By contrast, the effect of YWORKERS is negative if young workers’ opposition against expropriation does not sufficiently influence the government’s decision.

5 Conclusions

While there is little disagreement that low institutional quality is an impediment to international capital flows, there are only few contributions which identify the empirical determinants of institutional quality in general and the security of property rights in particular.

In this paper we have focused on the role of demographic structure. Specifically we wanted to know whether a high population share of young agents which is often identified as a potential driver for North-South capital flows, is, at the same time, deterring foreign investors by raising the risk of creeping or outright expropriation. It turned out that, at least in low income countries, this is not the case. Once we control for other factors affecting the security of property rights, a higher share of young agents *reduces* the perceived likelihood of expropriation provided that the country is sufficiently democratic and grants its citizens the right of political participation. This result does not hinge on the choice of particular proxies for a country’s demographic structure or political regime.

We argue that this finding is driven by the heterogenous attitudes of different generations towards foreign firms which, in turn, result from the impact of expropriation – be it outright or creeping – on factor prices and agents’ incomes: due to the greater importance of wages in their income and their longer time horizons, young agents’ interests are likely to be aligned with those of foreign investors. While this conjecture is not generally confirmed, it emerges quite strongly for the low-income subsample: in these countries, an increase of the number of young workers relative to old workers reduces the perceived risk of expropriation, provided that the political system is sufficiently democratic. By contrast, a higher share of young agents tends to *reduce* the security of property rights in middle-income countries, and this effect is exacerbated by democratic institutions.

Our findings answer the original question on the role of demographic structure for the security of property rights. Moreover, they suggest that a

potential remedy to high expropriation risk in low-income countries would be to empower the young generation with the right to articulate their political preferences. However, our results also raise a number of additional issues. In particular, we need to explain why the role of young agents differs so much across income groups: why do young workers take sides with foreign investors in low-income countries while this relationship cannot be observed (or is even reversed) in middle income countries? We conjecture that this is due to the time path of earnings along the life-cycle. In low-income countries, individuals enter the labor force at an earlier age and are less reliant on stable financial markets at old age. By contrast, in more developed countries young persons are less exposed to the detrimental wage effects of expropriation since they usually enter work life at a relatively late age. In addition, the old generation in relatively rich countries is less likely to welcome expropriation since its members have possibly invested a share of their wealth in foreign firms and since expropriation reduces their incomes by resulting in large-scale financial sector turmoil. To explore whether these conjectures are actually supported by the facts is an exciting subject for further research.

References

- Acemoglu, D., S. Johnson, and J. A. Robinson (2001). The Colonial Origins of Comparative Development: An Empirical Investigation. *American Economic Review* 91(5), 1369–1401.
- Aguiar, M. and M. Amador (2009). Growth in the Shadow of Expropriation. *NBER Working Paper* (15194).
- Aguiar, M., M. Amador, and G. Gopinath (2009). Investment Cycles and Sovereign Debt Overhang. *Review of Economic Studies* 76(1), 1–31.
- Alfaro, L., S. Kalemli-Ozcan, and V. Volosovych (2008). Why doesn't Capital Flow from Rich to Poor Countries? An Empirical Investigation. *The Review of Economics and Statistics* 90(2), 347–368.
- Barro, R. J. and J.-W. Lee (2001). International data on educational attainment: Updates and implications. *Oxford Economic Papers* 53(3), 541–563. Data available on: <http://www.cid.harvard.edu/ciddata/ciddata.html>.
- Börsch-Supan, A., A. Ludwig, and J. Winter (2006). Aging, Pension Reform, Capital Flows: A Multi-Country Simulation Model. *Economica* 73(4), 625–658.

- Brooks, R. (2003). Population Aging and Global Capital Flows in a Parallel Universe. *IMF Staff Papers* 50(2), 200–221.
- Busse, M. and C. Hefeker (2007). Political risk, institutions and foreign direct investment. *European Journal of Political Economy* 23(2), 397–415.
- Cole, H. L. and W. B. English (1991). Expropriation and Direct Investment. *Journal of International Economics* 30(3–4), 201–227.
- Easterly, W. and R. Levine (2003). Tropics, germs, and crops: How endowments influence economic development. *Journal of Monetary Economics* 50(1), 3–39.
- Eaton, J. and M. Gersovitz (1984). A theory of expropriation and deviations from perfect capital mobility. *The Economic Journal* 94(373), 16–40.
- Fosfuri, A., M. Motta, and T. Rønne (2001). Foreign direct investments and spillovers through workers' mobility. *Journal of International Economics* 53(1), 205–222.
- Freedom House (2009). *Freedom in the World 2009: The Annual Survey of Political Rights and Civil Liberties*. Rowman & Littlefield Publishers, Inc.
- Görg, H. and P. Figinì (2006). Does foreign direct investment affect wage inequality? An empirical investigation. *IIIS Discussion Paper 186*.
- Görg, H. and I. Geishecker (2008). Winners und Losers: A Micro-Level Analysis of International Outsourcing and Wages. *Canadian Journal of Economics* 41(1), 243–270.
- Görg, H. and S. Girma (2007). Evaluating the foreign ownership wage premium using a difference-in-differences matching approach. *Journal of International Economics* 72(1), 97–112.
- Görg, H., E. Strobl, and F. Walsh (2007). Why Do Foreign-Owned Firms Pay More? The Role of On-the-Job Training. *Review of World Economics* 143(3), 464–482.
- Hajzler, C. (2008). Resource-based FDI and Expropriation in Developing Economies. *Job Market Paper*.
- Hall, R. E. and C. I. Jones (1999). Why do some countries produce so much more output per worker than others? *The Quarterly Journal of Economics* 114(1), 83–116.
- Harms, P. (2002). Poverty and Political Risk. *Review of International Economics* 10(2), 250–262.

- Harms, P. and P. an de Meulen (2009). The Demographics of Expropriation Risk. *Study Center Gerzensee Working Paper* (09.02).
- Harms, P. and H. W. Ursprung (2002). Do civil and political repression really boost foreign direct investments? *Economic Inquiry* 40(4), 651–663.
- IMF (2004). How Will Demographic Change Affect the Global Economy? In *World Economic Outlook September 2004*. Washington: International Monetary Fund.
- Jensen, N. (2003). Democratic Governance and Multinational Corporations: Political Regimes and Inflows of Foreign Direct Investment. *International Organization* 57(3), 587–616.
- Jensen, N. (2008). Political Risk, Democratic Institutions, and Foreign Direct Investment. *Journal of Politics* 70(4), 1040–1052.
- Jodice, D. A. (1980). Sources of change in Third World regimes for foreign direct investment, 1968-1976. *International Organization* 34(2), 177–206.
- Kobrin, S. J. (1984). Expropriation as an Attempt to Control Foreign Firms in LDCs: Trends from 1960 to 1979. *International Studies Quarterly* 28(3), 329–348.
- Li, Q. (2009). Democracy, Autocracy, and Expropriation of Foreign Direct Investment. *Comparative Political Studies* 42(8), 1098–1127.
- Li, Q. and A. Resnick (2003). Reversal of Fortunes: Democratic Institutions and Foreign Direct Investment Inflows to Developing Countries. *International Organization* 57(1), 175–211.
- Lucas, R. E. (1990). Why doesn't capital flow from rich to poor countries? *The American Economic Review* 80(2), 92–96.
- Marshall, M. G. and K. Jaggers (2007). The Polity IV Project: Political Regime Characteristics and Transitions 1800-2007. Tech. rept. <http://www.systemicpeace.org/polity/polity4.htm>.
- Martins, P. S. (2004). Do Foreign Firms really pay Higher Wages? Evidence from Different Estimators. *IZA Discussion Paper* (1388).
- Minor, M. S. (1994). The demise of expropriation as an instrument of LDC policy, 1980-1992. *Journal of International Business Studies* 25(1), 177–188.
- Morsy, H. (2009). Current Account Determinants for Oil-Exporting Countries. *IMF Working Paper* (09/28).

- Picht, H. and V. Stüven (1991). Expropriation of Foreign Direct Investment: Empirical Evidence and Implications for the Debt Crisis. *Public Choice* 69(1), 19–38.
- Political Risk Services Group (2008). International Country Risk Guide. http://www.prsgroup.com/prsgroup_shoppingcart/c-4-icrg.aspx. New York: Political Risk Services.
- PWT (2009). Penn World Table 6.2. Center for International Comparisons, University of Pennsylvania. http://pwt.econ.upenn.edu/php_site/pwt62/pwt62_form.php.
- Reisen, H. (2000). *Pensions, Savings and Capital Flows*. OECD Publishing.
- Rodrik, D., A. Subramanian, and F. Trebbi (2004). Institutions Rule: The Primacy of Institutions over Geography and Integration in Economic Development. *Journal of Economic Growth* 9(2), 131–165.
- Rose, A. K. (2005). One reason countries pay their debts: Renegotiation and international trade. *Journal of Development Economics* 77(1), 189–206.
- Stasavage, D. (2002). Private Investment and Political Institutions. *Economics and Politics* 14(1), 41–63.
- Thomas, J. and T. Worrall (1994). Foreign direct investment and the risk of expropriation. *Review of Economic Studies* 61(1), 81–108.
- Tomz, M. and M. L. J. Wright (2008). Sovereign Theft: Theory and Evidence about Sovereign Default and Expropriation. In W. Hogan and F. Sturzenegger (Eds.), *The Natural Resources Trap: Private Investment without Public Commitment*. Cambridge, MA: MIT Press, forthcoming 2010.
- United Nations Population Division (2008). World Population Prospects: The 2008 Revision Population Database. <http://esa.un.org/unpp>.
- Wells, L. T. (1998). God and Fair Competition: Does the Foreign Direct Investor Face Still Other Risks in Emerging Markets? In T. H. Moran (Ed.), *Managing International Political Risk*, pp. 15–31. Blackwell Publishers.
- World Bank (1995). World Development Report 1995: Workers in an Integrating World. New York: Oxford University Press, 1995.
- World Bank (2008). World Development Indicators Database 2008. World Bank GNI per capita Operational Guidelines & Analytical Classifications. <http://web.worldbank.org/external/default/main?>

contentMDK=20487070&menuPK=64133156&pagePK=64133150&piPK=64133175&print=Y&theSitePK=239419. Washington DC, The World Bank.

World Bank (2009). World Development Indicators Database 2009. Data via Reuters Ecowin. Washington DC, The World Bank.

A Tables

	Benchmark Specification					
	OLS			Fixed Effects		
	Full Sample	MIC	LIC	Full Sample	MIC	LIC
YWORKERS	0.023 [0.255]	-0.026 [0.274]	0.649** [0.313]	-1.309** [0.528]	-0.717 [0.764]	0.664 [1.016]
GROWTH(-1)	0.116*** [0.027]	0.111*** [0.031]	0.059 [0.041]	0.080*** [0.028]	0.088*** [0.029]	0.044 [0.039]
INCOME(-1)	-0.001 [0.217]	0.198 [0.229]	-0.930** [0.399]	-0.651 [0.558]	-0.825 [0.622]	-0.104 [0.841]
LAWORDER	-0.056 [0.088]	-0.188* [0.094]	0.438*** [0.136]	0.047 [0.144]	-0.142 [0.185]	0.469* [0.255]
INFLA	-0.347*** [0.100]	-0.372*** [0.134]	-0.338*** [0.112]	-0.355*** [0.113]	-0.327** [0.155]	-0.427*** [0.129]
POLREPRESS	-0.234*** [0.060]	-0.255*** [0.071]	-0.255*** [0.052]	-0.247*** [0.073]	-0.292*** [0.093]	-0.255** [0.103]
GOVSTAB	0.456*** [0.055]	0.528*** [0.060]	0.448*** [0.064]	0.410*** [0.072]	0.594*** [0.070]	0.393*** [0.093]
SCHOOLING	0.157*** [0.057]	-0.004 [0.070]	0.185* [0.095]	0.106 [0.183]	-0.233 [0.187]	-0.034 [0.514]
OPENNESS(-1)	-0.073 [0.274]	-0.059 [0.314]	0.450 [0.397]	-0.032 [0.639]	-0.615 [0.664]	-0.510 [1.280]
OIL	-0.147 [0.258]	-0.107 [0.259]	0.103 [0.276]			
LATITUDE	-0.000 [0.000]	0.000 [0.000]	-0.001*** [0.000]			
RAWMAT	0.350 [0.213]	0.237 [0.278]	0.262 [0.223]			
EAST ASIA & PACIFIC	-1.358 [0.877]	-1.004 [1.000]				
EUROPE & CENTRAL ASIA	-0.061 [0.696]	0.146 [0.776]				
MIDDLE EAST & NORTH AFRICA	-0.867 [0.797]	-0.873 [0.830]				
SOUTH ASIA	-1.310 [0.838]	-0.555 [1.054]	0.091 [0.447]			
SUB SAHARAN AFRICA	-0.610 [0.889]	-0.289 [0.915]	-0.696 [0.590]			
LATIN AMERICA & THE CARIBIC	-0.941 [0.869]	-0.512 [0.965]	-0.493 [0.588]			
R-squared	0.648	0.671	0.710	0.671	0.725	0.637
Observations	296	213	110	296	213	110

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The dependent variable is IPROFILE. The data sample is an unbalanced panel, comprising initial values or five-year averages (1986-90, 1991-95, 1996-2000, 2001-05), with the initial period (1984-85) covering only two years. All regressions include time dummies; their coefficients are available upon request. The estimates are based on robust standard errors clustered by country.

Table 1: Benchmark Specification: The effect of YWORKERS on IPROFILE using pooled OLS and fixed effects estimation

	Nonlinear Effects					
	OLS			Fixed Effects		
	Full Sample	MIC	LIC	Full Sample	MIC	LIC
YWORKERS	-0.080 [0.392]	-0.009 [0.412]	2.552** [1.112]	-1.681*** [0.621]	-0.782 [0.966]	4.349*** [1.226]
YWORKERS · POLREPRESS	0.032 [0.111]	-0.006 [0.119]	-0.428** [0.198]	0.117 [0.094]	0.017 [0.141]	-0.923*** [0.239]
Marginal Effect of YWORKERS	0.039 [0.274]	-0.029 [0.286]	0.587 [0.403]	-1.247** [0.530]	-0.726 [0.773]	0.110 [1.044]
Marginal Effect of POLREPRESS	-0.233*** [0.061]	-0.255*** [0.072]	-0.261*** [0.052]	-0.244*** [0.075]	-0.290*** [0.104]	-0.268*** [0.770]
GROWTH(-1)	0.117*** [0.027]	0.111*** [0.031]	0.055 [0.041]	0.080*** [0.028]	0.088*** [0.029]	0.032 [0.035]
INCOME(-1)	0.002 [0.222]	0.197 [0.233]	-0.850** [0.371]	-0.618 [0.543]	-0.823 [0.616]	-0.416 [0.734]
LAWORDER	-0.056 [0.089]	-0.188* [0.094]	0.447*** [0.136]	0.050 [0.144]	-0.141 [0.185]	0.504** [0.226]
INFLA	-0.346*** [0.101]	-0.372*** [0.132]	-0.330*** [0.110]	-0.361*** [0.114]	-0.328** [0.153]	-0.339*** [0.119]
POLREPRESS	-0.311 [0.260]	-0.241 [0.269]	0.850 [0.507]	-0.526** [0.220]	-0.329 [0.271]	2.131*** [0.638]
GOVSTAB	0.459*** [0.056]	0.528*** [0.060]	0.451*** [0.059]	0.419*** [0.073]	0.595*** [0.075]	0.397*** [0.085]
SCHOOLING	0.153*** [0.056]	-0.004 [0.068]	0.228** [0.101]	0.111 [0.181]	-0.227 [0.211]	0.209 [0.440]
OPENNESS(-1)	-0.064 [0.279]	-0.059 [0.316]	0.349 [0.402]	-0.010 [0.635]	-0.614 [0.663]	-0.262 [0.963]
OIL	-0.148 [0.258]	-0.106 [0.265]	0.111 [0.295]			
LATITUDE	-0.000 [0.000]	0.000 [0.000]	-0.002*** [0.000]			
RAWMAT	0.347 [0.214]	0.237 [0.277]	0.224 [0.264]			
EAST ASIA & PACIFIC	-1.292 [0.900]	-1.014 [0.993]				
EUROPE & CENTRAL ASIA	-0.003 [0.688]	0.136 [0.776]				
MIDDLE EAST & NORTH AFRICA	-0.838 [0.800]	-0.877 [0.831]				
SOUTH ASIA	-1.251 [0.861]	-0.565 [1.038]	0.520 [0.513]			
SUB SAHARAN AFRICA	-0.566 [0.910]	-0.295 [0.924]	-0.358 [0.616]			
LATIN AMERICA & THE CARIBIC	-0.879 [0.889]	-0.522 [0.960]	-0.384 [0.644]			
R-squared	0.647	0.669	0.718	0.671	0.724	0.678
Observations	296	213	110	296	213	110

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The dependent variable is IPROFILE. The data sample is an unbalanced panel, comprising initial values or five-year averages (1986-90, 1991-95, 1996-2000, 2001-05), with the initial period (1984-85) covering only two years. All regressions include time dummies; their coefficients are available upon request. The estimates are based on robust standard errors clustered by country.

Table 2: Nonlinear Effects: Inclusion of YWORKERS · POLREPRESS – pooled OLS and fixed effects estimation

Other demographic and political variables

	Fixed Effects			Fixed Effects			Fixed Effects		
	Full Sample	MIC	LIC	Full Sample	MIC	LIC	Full Sample	MIC	LIC
UNDER40	-1.142*** [0.403]	-0.437 [0.647]	1.835*** [0.593]						
UNDER40 · POLREPRESS	0.111*** [0.041]	0.079 [0.079]	-0.452*** [0.107]						
Marginal Effect of UNDER40	-0.730** [0.328]	-0.172 [0.513]	-0.239 [0.397]						
Marginal Effect of POLREPRESS	-0.253*** [0.076]	-0.273** [0.113]	-0.266*** [0.078]						
POLREPRESS	-0.688*** [0.175]	-0.563** [0.249]	1.783*** [0.505]	-0.895*** [0.218]	-0.771*** [0.276]	1.111** [0.457]			
YDEPRATIO				-4.979** [2.466]	-2.524 [3.351]	6.587** [2.648]			
YDEPRATIO · POLREPRESS				0.960*** [0.287]	0.863* [0.468]	-1.710*** [0.569]			
Marginal Effect of YDEPRATIO				-1.416 [1.850]	0.374 [2.432]	-1.262 [2.512]			
Marginal Effect of POLREPRESS				-0.231*** [0.081]	-0.216* [0.117]	-0.273*** [0.090]			
YWORKERS							-1.112* [0.634]	-0.577 [0.875]	0.082 [1.047]
YWORKERS · POLITYII							-0.018 [0.028]	-0.021 [0.028]	0.243*** [0.063]
POLITYII							0.078 [0.075]	0.093 [0.057]	-0.577*** [0.165]
Marginal Effect of YWORKERS							-1.157* [0.621]	-0.651 [0.880]	0.045 [1.049]
Marginal Effect of POLITYII							0.036 [0.026]	0.044 [0.032]	0.055** [0.027]
GROWTH(-1)	0.079*** [0.027]	0.087*** [0.030]	0.028 [0.032]	0.080*** [0.027]	0.083*** [0.030]	0.025 [0.034]	0.086*** [0.028]	0.080*** [0.029]	0.046 [0.037]
INCOME(-1)	-0.598 [0.520]	-0.703 [0.641]	-0.382 [0.756]	-0.503 [0.508]	-0.794 [0.678]	-0.153 [0.726]	-0.846 [0.607]	-1.153* [0.684]	-0.319 [0.749]
LAWORDER	0.043 [0.141]	-0.148 [0.180]	0.570*** [0.198]	0.043 [0.138]	-0.066 [0.192]	0.527** [0.216]	0.037 [0.152]	-0.176 [0.196]	0.563** [0.212]
INFLA	-0.366*** [0.119]	-0.338** [0.164]	-0.345*** [0.125]	-0.361*** [0.121]	-0.313* [0.168]	-0.419*** [0.133]	-0.365*** [0.123]	-0.347** [0.171]	-0.361** [0.149]
GOVSTAB	0.431*** [0.069]	0.597*** [0.074]	0.359*** [0.091]	0.421*** [0.067]	0.577*** [0.076]	0.346*** [0.089]	0.432*** [0.084]	0.653*** [0.078]	0.420*** [0.092]
SCHOOLING	0.016 [0.174]	-0.232 [0.222]	0.279 [0.415]	0.015 [0.155]	-0.117 [0.202]	0.207 [0.456]	0.005 [0.219]	-0.267 [0.232]	-0.087 [0.408]
OPENNESS(-1)	0.014 [0.577]	-0.502 [0.597]	-0.307 [1.002]	0.218 [0.550]	-0.537 [0.575]	-0.415 [1.261]	0.190 [0.708]	-0.521 [0.718]	-0.030 [1.310]
Constant	14.092*** [4.100]	12.954** [5.385]	-2.212 [7.575]	12.018*** [3.988]	12.777** [5.862]	-0.243 [6.325]	13.170*** [4.769]	16.793*** [5.653]	4.617 [7.745]
R-squared	0.676	0.724	0.687	0.676	0.729	0.662	0.647	0.704	0.649
Observations	296	213	110	296	213	110	296	214	107

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The dependent variable is IPROFILE. The data sample is an unbalanced panel, comprising initial values or five-year averages (1986-90, 1991-95, 1996-2000, 2001-05), with the initial period (1984-85) covering only two years. All regressions include regional and time dummies; their coefficients are available upon request. The estimates are based on robust standard errors clustered by country.

Table 3: Other demographic and political variables: Substituting YWORKERS by UNDER40 and YDEPRATIO and POLREPRESS by POLITYII and including the corresponding interactive terms using fixed effects estimation

	Nonlinear Effects					
	Ordered Probit			Ordered Logit		
	Full Sample	MIC	LIC	Full Sample	MIC	LIC
YWORKERS	0.195 [0.426]	0.216 [0.416]	6.071*** [1.720]	0.295 [0.794]	0.245 [0.765]	11.234*** [3.581]
YWORKERS · POLREPRESS	-0.048 [0.114]	-0.091 [0.123]	-1.255*** [0.330]	-0.056 [0.214]	-0.089 [0.250]	-2.296*** [0.660]
GROWTH(-1)	0.128*** [0.036]	0.141*** [0.042]	0.211** [0.087]	0.248*** [0.071]	0.276*** [0.086]	0.406* [0.215]
INCOME(-1)	-0.075 [0.196]	-0.073 [0.262]	-0.625 [0.553]	0.004 [0.362]	-0.016 [0.552]	-1.211 [1.030]
LAWORDER	-0.042 [0.105]	-0.243** [0.113]	0.976*** [0.279]	-0.114 [0.206]	-0.467** [0.220]	1.888*** [0.724]
INFLA	-0.340*** [0.119]	-0.450*** [0.173]	-0.480** [0.206]	-0.615*** [0.225]	-0.851** [0.350]	-1.041** [0.525]
POLREPRESS	-0.166 [0.272]	-0.144 [0.273]	2.796*** [0.784]	-0.372 [0.516]	-0.454 [0.544]	5.085*** [1.532]
GOVSTAB	0.414*** [0.096]	0.597*** [0.110]	0.602*** [0.147]	0.786*** [0.199]	1.149*** [0.232]	1.189*** [0.373]
SCHOOLING	0.079 [0.064]	-0.065 [0.083]	0.217** [0.109]	0.127 [0.120]	-0.113 [0.162]	0.302 [0.221]
OPENNESS(-1)	0.153 [0.336]	0.022 [0.405]	1.802*** [0.642]	0.351 [0.607]	-0.042 [0.754]	3.168*** [1.161]
OIL	0.126 [0.217]	0.251 [0.248]	1.007** [0.401]	0.108 [0.397]	0.363 [0.483]	2.016** [0.864]
LATITUDE	-0.000 [0.000]	0.000 [0.000]	-0.002** [0.001]	0.000 [0.001]	0.001 [0.001]	-0.004** [0.002]
RAWMAT	0.257 [0.245]	0.090 [0.363]	0.358 [0.384]	0.464 [0.466]	0.355 [0.742]	0.811 [0.798]
EAST ASIA & PACIFIC	-1.469* [0.877]	-0.889 [0.967]	-0.717 [0.828]	-2.425 [1.663]	-1.219 [1.815]	-0.985 [1.445]
EUROPE & CENTRAL ASIA	0.011 [0.539]	0.458 [0.684]		0.315 [1.021]	1.263 [1.314]	
MIDDLE EAST & NORTH AFRICA	-1.106* [0.632]	-0.881 [0.698]		-1.821 [1.138]	-1.321 [1.208]	
SOUTH ASIA	-1.482** [0.748]	0.438 [1.035]	1.090* [0.653]	-2.411* [1.428]	1.281 [1.960]	2.294* [1.321]
SUB SAHARAN AFRICA	-0.846 [0.833]	-0.239 [0.847]		-1.090 [1.600]	0.097 [1.521]	
LATIN AMERICA & THE CARIBIC	-0.859 [0.853]	-0.101 [0.908]	0.278 [0.680]	-1.301 [1.657]	0.209 [1.678]	0.970 [1.360]
cut1 Constant	-1.960 [1.901]	-2.037 [2.399]	12.644** [6.229]	-2.293 [3.506]	-2.514 [4.767]	22.759* [12.131]
cut2 Constant	1.456 [1.921]	1.715 [2.414]	17.437*** [6.282]	4.076 [3.552]	4.497 [4.852]	31.863** [12.702]
cut3 Constant	4.184** [1.982]	4.534* [2.551]		9.030** [3.701]	9.670* [5.205]	
R-squared						
Observations	296	213	110	296	213	110

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The dependent variable is QUARTILED IPROFILE. The data sample is an unbalanced panel, comprising initial values or five-year averages (1986-90, 1991-95, 1996-2000, 2001-05), with the initial period (1984-85) covering only two years. All regressions include time dummies; their coefficients are available upon request. The estimates are based on robust standard errors clustered by country.

Table 4: Nonlinear Effects: Inclusion of YWORKERS · POLREPRESS using Ordered Logit and Ordered Probit estimation

B Summary Statistics

Variable	Mean	Overall Std. Dev.	Min.	Max.	Between-country Std. Dev.	No. of Observations
IPROFILE	6.594646	2.025492	2.15	11.80834	1.538672	284
YWORKERS	2.211295	0.5907305	1.055366	3.352113	0.5784389	311
UNDER40	3.416431	1.32394	1.018159	5.985173	1.359318	311
YDEPRATIO	0.6024704	0.2148067	0.2170014	1.061042	0.22648	311
GROWTH(-1)	1.638547	3.775536	-15.92021	13.69979	3.091028	286
INCOME(-1)	8.476271	0.6429799	6.917544	9.688134	0.7485066	293
LAWORDER	3.257707	1.220507	1	6	1.106367	284
INFLA	2.390398	1.388273	-0.8609771	7.992248	1.085104	289
POLREPRESS	3.623778	1.918607	1	7	1.894521	300
POLITYII	2.547635	6.816182	-10	10	6.67591	296
GOVSTAB	7.18231	1.984571	2	11.41667	1.631954	284
SCHOOLING	5.100565	2.197367	0.39	10.52	2.438206	248
OPENNESS(-1)	0.7227921	0.3596449	0.1353524	2.046739	0.3542256	299
OIL	0.2250804	0.4183083	0	1	0.4086967	311
LATITUDE	856.7022	871.0888	0.138384	3443.929	893.3973	294
RAWMAT	0.2250804	0.4183083	0	1	0.4430993	311

Table 5: MIC sample summary statistics

Variable	Mean	Overall Std. Dev.	Min.	Max.	Between-country Std. Dev.	No. of Observations
IPROFILE	5.650531	1.818406	1.333334	11.80834	1.302637	172
YWORKERS	2.565982	0.3778817	1.100947	3.502297	0.4076995	231
UNDER40	4.451716	0.9141188	1.147334	6.28129	0.995531	231
YDEPRATIO	0.7984807	0.1639346	0.24265	1.070101	0.1744139	231
GROWTH(-1)	0.3107449	5.074228	-30.602	24.94644	3.052013	220
INCOME(-1)	7.204671	0.5611761	5.560337	8.84851	0.5918507	223
LAWORDER	2.752976	1.119105	0.5666666	5.933334	1.011894	172
INFLA	2.375351	1.279815	-0.5003149	7.993372	0.905341	202
POLREPRESS	5.045022	1.57316	1.8	7	1.350589	231
POLITYII	-1.247534	5.584025	-9	10	4.501913	223
GOVSTAB	6.767103	2.387895	1	10.95001	1.516608	172
SCHOOLING	2.54255	1.406149	0.37	6.53	1.459386	149
OPENNESS(-1)	0.5893763	0.3054058	0.1145425	1.615024	0.2941571	227
OIL	0.0952381	0.294181	0	1	0.3025317	231
LATITUDE	375.8209	523.5414	0.051984	2528.179	628.4258	220
RAWMAT	0.4891775	0.5009684	0	1	0.5039393	231

Table 6: LIC sample summary statistics

C Variable Description

Variable Description	
Variable	Description & Source
GOVSTAB	Five-year average of the International Country Risk Guide "Government Stability" rating, which reflects the government's ability to carry out its declared program(s) and its ability to stay in office. "Government Stability" is the sum of three subcomponents (Government Unity, Legislative Strength and Popular Support), each with a maximum score of four points (very low risk) and a minimum score of 0 points (very high risk). <i>Source:</i> Political Risk Services Group (2008)
GROWTH(-1)	Five-year average of the annual growth rates of real-per capita GDP of the preceding five-year period in constant PPP-adjusted international Dollars (Base year: 2000). <i>Source:</i> PWT (2009)
IPROFILE	Five-year average of the rating of the government's attitude to inward investment as the sum of three sub-components, each with a maximum score of four points (very low risk) and a minimum score of 0 points (very high risk). The subcomponents are risk of expropriation or contract viability, payment delays and barriers on the repatriation of profits. <i>Source:</i> Political Risk Services Group (2008)

Table 7: Variable Description

Variable Description

Variable	Description & Source
INCOME(-1)	Five-year average of the log of real-per capita GDP of the preceding five-year period in constant PPP-adjusted international Dollars (Base year: 2000). <i>Source:</i> PWT (2009)
INFLA	Five-year average of the log of percentaged inflation rates measured by the consumer price index. <i>Source:</i> World Bank (2009)
LATITUDE	A country's squared latitude measuring the geographical distance from the equator. <i>Source:</i> World Bank (2009)
LAWORDER	Five-year average of the rating of Law and Order, assessed separately. The Law sub-component is an assessment of the strength and impartiality of the legal system, while the Order sub-component is an assessment of popular observance of the law. Both sub-component comprise zero (low quality) to three points (high quality). <i>Source:</i> Political Risk Services Group (2008)
OIL	Subsumes 28 oil-exporting economies, referring to the period of 1970 - 2006, using the World Economic Outlook (WEO) and World Development Indicators (WDI) as well as Data on oil production and reserves obtained from BP Statistical Review of World Energy June 2007 as data sources. The chosen countries are Algeria, Angola, Azerbaijan, Bahrain, Colombia, Republic of Congo, Ecuador, Equatorial Guinea, Gabon, Indonesia, Iran, Kazakhstan, Kuwait, Libya, Mexico, Nigeria, Norway, Oman, Qatar, Russia, Saudi Arabia, Sudan, Syria, Trinidad and Tobago, Turkmenistan, United Arab Emirates, Venezuela, and Yemen. <i>Source:</i> Morsy (2009)

Table 8: Variable Description (contd.)

Variable Description

Variable	Description & Source
OPENNESS(-1)	<p>Five-year average of the sum of exports and imports of goods and services as a share of GDP of the preceding five-year period. Exports or imports of goods and services represent the value of all goods and other market services provided to or received from the world. Included is the value of merchandise, freight, insurance, travel, and other nonfactor services. Factor and property income (formerly called factor services), such as investment income, interest, and labor income, is excluded.</p> <p><i>Source:</i> World Bank (2009)</p>
POLITYII	<p>Five-year average of the difference between the DEMOC score and the AUTOC score, with a scale ranging from +10 (strongly democratic) to -10 (strongly autocratic). DEMOC measures the degree of institutionalized democracy conceived as three elements:</p> <ol style="list-style-type: none"> 1. Presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders 2. Existence of institutionalized constraints on the exercise of power by the executive 3. The guarantee of civil liberties to all citizens in their daily lives and in acts of political participation <p>AUTOC is derived from codings of the competitiveness of political participation, the regulation of participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive.</p> <p><i>Source:</i> Marshall and Jaggers (2007)</p>

Table 9: Variable Description (contd.)

Variable Description

Variable	Description & Source
POLREPRESS	Five-year average of The Freedom House Political Rights index, measuring the degree of freedom in the electoral process, political pluralism and participation, and functioning of government. Freedom House rates political rights on a scale of 1 (most free) to 7 (least free). <i>Source:</i> Freedom House (2009)
RAWMAT	Subsumes major exporters of non-fuel primary products if more than 50% of total exports of goods and services are non-fuel raw materials between 1988-1992. <i>Source:</i> World Bank (1995, pp. 250-254)
SCHOOLING	Initial value of the average years of school attendance of the total population aged over 25 years. <i>Source:</i> Barro and Lee (2001)
UNDER40	Initial value of the ratio of the population number aged 0-40 years to the population number aged over 40 years. <i>Source:</i> United Nations Population Division (2008)
YDEPRATIO	Five-year average of the ratio of the population number aged 0-14 years to the population number aged 15-64 years. <i>Source:</i> World Bank (2009)
YWORKERS	Initial value of the ratio of the population number aged 15-39 years to the population number aged 40-64 years. <i>Source:</i> United Nations Population Division (2008)

Table 10: Variable Description (contd.)

D Countries

Sample	Countries
MIC	Algeria, Argentina, Bolivia, Botswana, Brazil, Bulgaria, Cameroon, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Egypt, El Salvador, Ghana, Greece, Guatemala, Honduras, Hungary, Indonesia, Islamic Republic of Iran, Ireland, Israel, Jamaica, Jordan, Kenya, Liberia, Malaysia, Mexico, Nicaragua, Niger, Panama, Papua New Guinea, Paraguay, People's Republic of China, Peru, Philippines, Poland, Portugal, Republic of Congo, Romania, Russia, Senegal, South Africa, Spain, Sri Lanka, Sudan, Syrian Arab Republic, Thailand, Togo, Trinidad & Tobago, Tunisia, Turkey, Uruguay, Venezuela, Zimbabwe
LIC	Bangladesh, Bolivia, Cameroon, Ethiopia, Gambia, Ghana, Haiti, Honduras, India, Indonesia, Kenya, Liberia, Malawi, Mali, Mozambique, Nicaragua, Niger, Pakistan, Papua New Guinea, People's Republic of China, Philippines, Republic of Congo, Senegal, Sierra Leone, Sri Lanka, Sudan, Togo, Uganda, Zambia, Zimbabwe

Table 11: List of Countries included in the samples of low- and middle-income countries