Officials versus Thieves: Is Public or Private Expropriation More Harmful to Small Firms?

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*Abstract:* Corruption and crime are factors that regularly affect firms, yet few papers compare the two impacts. This is largely due to a lack of data, something I overcome using recent surveys of microenterprises in Mexico. After instrumenting for individual firm level incidence, I find that thieves are much more harmful to microenterprises than officials. The incidence of robbery and extortion is associated with declines in income and employees, while the incidence of bribery and fines are associated with increases in both. This highlights that crime can be a larger deterrent to firm growth than corruption in certain environments.

## 1. Introduction

Corruption and robbery are now recognized as factors that regularly affect firms in many developing countries and likely are important determinants of their growth. The literature on corruption, or expropriation by the state, has a longer history and is larger, and yet the evidence to date is conflicting. One the one hand, fines and bribes may function like a tax, reducing investment incentives and encouraging inefficient production techniques (Svensson 2005). Fines and bribes also may increase informality, as firms choose to remain small and unregistered to avoid the state (DeSoto 1989). Papers that find evidence of a negative effect of corruption using firm level data include Fisman and Svensson (2007), who find corruption negatively impacts firms across multiple industries in Uganda; Safavian et al (2001), who find corruption negatively affects microenterprises in Russia and that the burden is higher for high growth firms; and Kaufmann and Wei (1999) who find corruption is associated with an increased cost of capital among firms across countries.

On the other hand, fines and bribes may increase the provision of valuable public services in places where their delivery is inefficient. In this case the most efficient firms, those most able to pay officials, are the ones that benefit from corruption. For example, Vial and Hanoteau (2010) find a positive relationship between corruption and output and productivity growth among firms in Indonesia. In cross-country surveys Méon and Weill (2010) find corruption is positively associated with efficiency in countries with high levels of institutional weakness, while Asiedu and Freeman (2009) find corruption has no significant impact on investment in firms in Latin America and Sub-Saharan Africa. Finally, Aterido et al (2011) find that some micro firms actually may benefit from difficult business environments. Overall the literature shows the impact of corruption is not uniform and depends on the effectiveness of a region's institutions and firms' exposure to these institutions.

Unlike corruption, there is less ambiguity on the impact that robbery, and the related crime of private extortion, have on firm level growth. Robbery constitutes a transfer of assets or income from the firm to the thief with no promise of reciprocal exchange, making the effect entirely negative. Extortion, on the other hand, also may be entirely negative, or may be only moderately negative if it comes with the provision of security services that protect property from other criminals or bribing officials. These services, though involuntarily solicited, may be valuable in areas with weak institutions, particularly low levels of state-provided police and courts (Frye and Zhuraskya 2000, Dimico et al 2012). In certain environments crime (expropriation by private actors) may be of equal or greater importance than corruption for firms. For example, in a survey of 100 firm managers in 29 countries, Gaviria (2002) finds that while 46 per cent say that corruption is an obstacle to doing business, 53 per cent say that crime is. For Latin America alone, he finds the percentage of firms that say corruption is an obstacle is 59 per cent, as compared to 67 per cent for crime. In recent versions of these World Bank Enterprise Surveys about a third of firms in Latin America and the Caribbean identify crime, theft and disorder as a major constraint, the highest percentage for any region in the world.

Despite the increasing recognition that crime is an important consideration for firms, the literature of the impact on firm growth or comparisons to corruption remains small.[1] One reason is the lack of reliable data on crime incidence, given the low reporting rates for property crime in many countries and the relatively recent inclusion of crime questions in firm level surveys. This paper is able to overcome these obstacles by using nationally representative surveys of microenterprises in Mexico, the most recent of which include modules on the incidence of bribes, fines, robbery and private extortion. Mexico is a country that faces high levels of public and private level expropriation and the data can provide a comprehensive picture of their incidence for micro firms[2]. These firms, defined as those with 10 employees or less, are smaller than those usually analyzed by papers

investigating crime and corruption, but are large generators of income and employment. For example, in Mexico the microenterprise sector makes up 95 per cent of total firms and 23 per cent of total employment.[3] Furthermore, the burden of expropriation may be larger for these firms than their larger counterparts. Using World Bank Enterprise Surveys from 14 Latin American countries, Amin (2009) finds that while crime incidence is higher for large firms, the burden of crime, measured by losses as a percentage of sales, is significantly higher for small firms. Using similar data from 90 countries, Aterido et. al. (2011) find that bribes to sales is higher for micro and small firms and that regulations have a larger drag on the growth for these firms than larger ones.

This paper aims to estimate and compare the impact of the incidence of expropriation by the state and the incidence of expropriation by private actors on microenterprise growth. A key challenge to identifying this relationship is the potential endogeneity of expropriation attempts, as officials and thieves likely do not target firms randomly. Rapacious state and private agents may be attracted to firms with higher growth trajectories, while unobservable firm level characteristics may simultaneously determine firms' ability to avoid officials, their investments in security and their growth trajectories. I attempt to reduce bias from these sources by instrumenting for individual expropriation incidence using state-industry averages, as proposed by Fisman and Svensson (2007). The logic is that the expropriation risk faced by a firm is due to factors common across industries and location as well as factors specific to the firm. For example, firms located in states with weaker institutions likely face higher rates of bribes and robbery, while firms in particular industries require more licensing or mobile assets, making them better targets for officials and thieves.

After controlling for the endogeneity of expropriation incidence, the results provide strong evidence that thieves are significantly more detrimental than officials to microenterprise growth. This shows the extent to which crime, itself a symptom of weak police and judicial institutions, can

be a major deterrent to firm level growth. The paper proceeds as follows. Section two describes the data. Section three describes the empirical strategy. Section four presents the results from ordinary least squares (OLS) and instrumental variable (IV) estimation of firm growth. Section five explores the possibility of heterogeneous impacts. Section six concludes.

## 2. Data

### 2.1. Expropriation Data

The data on microenterprenuers come from the 2008 and 2010 ENAMIN (*Encuesta Nacional de Micronegocios*, or the National Survey of Microenterprises), a cross-sectional, nationally representative survey conducted by the *Instituto Nacional de Estadística y Geografía* (INEGI, or the National Statistical and Geography Institute). The information on robbery, private extortion, bribes and fines comes from a module in the two most recent ENAMIN surveys on shocks. Entrepreneurs are asked if they suffered losses in the past year from any of the events and, if so, to estimate the amount lost. Since I am most interested in expropriation by thieves and the state, I combine fines and bribes into a variable entitled public expropriation and robbery and private extortion into a variable entitled private expropriation.[4]

--Table 1 Here--

Summary statistics on incidence, estimated losses in US dollars, estimated losses as a percentage of monthly profits and reporting rates are shown in Table 1. What clearly emerges is that private expropriation constitutes a larger threat to microenterprises than public expropriation. The incidence of private expropriation is higher, with close to eleven per cent of microenterprises reporting losses due robbery or extortion in a given year, as compared to eight per cent reporting

losses due to fine or bribes. These differences are significant at the one per cent level. More importantly, the estimated losses from private expropriation are more than three times higher than those from public expropriation. The estimated losses from private expropriation are $664, which constitute approximately 1.8 months of profits, while those for public expropriation are $194, only 0.6 months of profits. Despite the large difference in burden, in the estimation I focus only on expropriation incidence. This focus reduces concerns over measurement error, as firms may not accurately recall the losses from these incidents, but should accurately recall whether or not they occurred. It also emphasizes the impact of the shocks themselves.

## 2.2. Microenterprise Data

While the ENAMIN is not a panel, it is drawn from the rotating labor force survey that follows households for five quarters. This labor force survey, the National Survey of Occupation and Employment, or the ENOE (*Encuesta Nacional de Ocupación y Empleo*) began in 2005 and is conducted by INEGI. Approximately twenty percent of the ENOE sample rotates out every period, such that it is possible to follow eighty percent of the original ENAMIN sample for one subsequent quarter, 60 per cent for two subsequent quarters, etc. Given attrition from and rotation out of the survey, to obtain the largest sample possible I focus on firms that can be followed for one quarter after the ENAMIN survey.[5] This means there are two quarters of labor force information on every microentrepreneur, and given that the ENAMIN surveys take place in December, the sample covers the fourth quarter of a given year to the first quarter of the next year. The model thus analyzes the short-run response to crime and corruption, examining if incidence during a year impacts firm growth one quarter later. I emphasize that since the enterprise surveys have no panel component, changes in profits, investment and assets cannot be examined. To measure growth I use variables from the labor force surveys most likely to capture firm outcomes, particularly for self-employed

entrepreneurs. The first variable is the difference in the log of the entrepreneur's income (values expressed in 2005 pesos):

$$\log(\text{Income}_{Qt+1}) - \log(\text{Income}_{Qt}) \qquad\qquad (1)$$

While profits would be ideal, the labor force survey only asks about income from the primary occupation, which is running the microenterprise listed in the ENAMIN. In addition, close to 80 per cent of microentrepreneurs in the sample do not have any employees and 95 per cent are the sole owner of the firm. Thus although profits can be reinvested, the majority should accrue to the owners, making an entrepreneur's income representative of firm profits.[6]

----Table 2 Here----

One complication with the income data is that the non-response rate is high, with 44 per cent of the sample not reporting specific income values. To reduce the number of missing observations and maximize information provided in the labor force survey, I impute values for entrepreneurs who do not provide specific amounts but do provide information on how their income compares to the monthly minimum wage in their state of residence.[7] Concerns about the robustness of the results to assumptions about missing income data are provided in Section 4.3.

Despite the inclusion of imputed values, income data remains missing for 33 per cent of the sample. This naturally leads to concerns about sample selection bias, and I therefore assess if non-response is related to the incidence of shocks using a linear probability model. As shown in Panel B of Table2, there is no evidence of this. The results for shock incidence are shown in columns one and two. When no controls are included (column one), firms that were fined or bribed are significantly less, rather than more likely to have missing income data, while those who were robbed or extorted are not significantly more or less likely to have missing data. After controlling for firm

and state level characteristics (column two) there is no significant relationship between expropriation incidence and missing income data.

I also check if missing income data is correlated with informality or whether or not a firm keeps accounts. These may be linked to firm growth, for example, if less formal firms with lower growth potential are more likely to avoid income questions. In this case non-response removes firms least likely to grow. As shown in columns three and four of Panel B of Table 2, there is no evidence of this. Informal firms, defined as those that are not registered with the federal, state or municipal government, and those that keep accounts are not significantly more likely to have missing income data. This further reduces concerns about sample selection bias.

The second variable used to measure firm growth is the change in employees, both paid and unpaid. As shown in Panel A of Table 2, however, 72 per cent of the sample does not have any employees. Thus I also consider a third measure of firm growth, which is whether or not a firm moves from having zero employees to having at least one employee. This binary variable is restricted to enterprises that start without any employees.

Summary statistics on the measures of firm growth and enterprise characteristics are provided in Panel A of Table 2. The coefficients are population weighted averages, with standard deviations in parenthesis. Comments on the sample are warranted. First, to increase comparability to other research using the ENAMIN data and to focus on entrepreneurs most likely to be affected by crime, I limit the sample to urban entrepreneurs between the ages of 18 and 70 in all sectors except mining and electricity.[8] Earlier ENAMIN surveys were exclusively urban, while mining, electricity, water, gas and other energy sectors are significantly larger than other microenterprises and are outliers in terms of employment (there are only five firms in these sectors in the entire sample). Second, I limit the sample to entrepreneurs who do not report starting a new job in the quarter after the enterprise survey. This is the best way to restrict the analysis to on-going operations, as the labor force survey

does not ask about business continuation or closure. This raises concerns about sample selection bias, if firms who were robbed or bribed were more likely to go out of business. I therefore assess if expropriation incidence is associated with starting a new job. As shown in column five of Panel B, there is no evidence this is the case, reducing these concerns.

The summary statistics highlight several characteristics of urban microenterprises in Mexico. First, they show the small size of these firms. As of the ENAMIN survey period only 28 per cent have any employees and only 34 per cent are formal. Meanwhile, only 34 per cent have a fixed location (defined as if it has an official premise, such as a store, kiosk, permanent stall or office)[9], while approximately 20 per cent operate from the entrepreneur's home. Average monthly profits are $330 per month, which translates into approximate annual income ($3970) that is significantly below real GDP per capita, estimated by the World Bank to be $5982 in 2005. In confirming the small size of microenterprises the statistics highlight why many of these firms might be more vulnerable to expropriation attempts by officials and thieves.

Second, the summary statistics show that growth rates over a one quarter time frame are low. Across the two samples (2008 and 2010) the average change in monthly income is negative one per cent, while the change in employees is negative 0.07, a small number that reflects low employment levels. Limited employment growth is further shown by the number of firms who add any employees. Only seven per cent of firms move from zero to any employees over a one quarter basis, and only seven point eight percent do so over a four quarter basis. This highlights the need to assess potential barriers to these firms' growth.

## 3. Estimation Strategy

Growth in firm $i$, in state $s$, industry $j$ and year $t$ is expressed as the following linear relationship:

$$y_{isjt} = \beta_1 + \beta_2 X_i + \beta_3 Z_{st} + \beta_4 EX_{isj} + \delta_s + \delta_j + \delta_t + \mu_{st} + \varepsilon_i$$

<div align="right">(2)</div>

Growth is a linear function of whether or not the entrepreneur was expropriated by public or private actors in the previous year ($EX_{ijs}$), observable, time-invariant firm characteristics ($X_i$), observable, time varying state characteristics ($Z_{st}$), state, industry and year fixed effects, unobservable time varying state characteristics ($\mu_{st}$) and unobservable, time-invariant firm characteristics ($\varepsilon_i$).[10]

The challenge in identifying $\beta_4$ is that expropriation by state or private actors may be endogenous, determined by the growth potential of the firm; by unobservable, time-invariant firm level characteristics linked with $y_i$, such as entrepreneurial skill and risk aversion; or by unobservable time-varying state level characteristics, such as changes in institutional quality or the movement of high growth firms to areas with lower crime rates.[11]  Due to the potential correlation between expropriation incidence and unobserved characteristics, unaffected firms do a poor job of showing what affected firms would look like in the absence of the shock.  This means certain treatment models, such as matching or difference-in-differences, likely would yield inconsistent estimates because they assume unobserved factors, either fixed or time-varying, are not correlated with expropriation incidence.

I therefore use an instrumental variables model, dealing with potential endogeneity by instrumenting for individual expropriation incidence using state-industry level averages by year.  This follows Fisman and Svensson (2007), who employ this instrument for corruption.  It also is closely related to Gibbons (2004), who employs lags in district level property crime as an instrument for current neighborhood level property crime, and Aterido et al.(2011), who use location-sector-size averages as an instrument for the business conditions faced by individual firms.  The idea behind the

instrument is that the expropriation risk faced by a firm ($EX_{ijs}$) is due to factors common across

industries and location ($EX_{js}$) and factors specific to the firm ($EX_i$). For example, firms located in

states with weaker institutions likely face higher rates of fines, bribes and robbery. Similarly, firms in

particular industries might require more licensing, making them better targets for officials, while

others require more mobile assets, making them better targets for thieves. To check this Table 3

compares the average incidence of and losses from each type of expropriation by industry alone.

For public expropriation, incidence ranges from 41 per cent for firms in transportation to only 2.3

per cent for those in finance, while losses as a percentage of monthly profits range from 15.4 per

cent for recreation firms to 0.4 per cent for medical service ones. For private expropriation,

incidence ranges from 22 per cent for communication firms to 4.2 per cent for education ones,

while estimated losses range from 28.6 per cent for commercial firms to close to zero per cent for

financial ones. This provides clear evidence that industry is an important predictor of firm specific

expropriation risk.

---Table 3 Here---

Individual expropriation incidence therefore is expressed as a linear function of its aggregate

and idiosyncratic components:

$$EX_{isj} = EX_{js} + EX_i \qquad\qquad (3)$$

The aggregate component $EX_{js}$ is a valid instrument for firm level expropriation incidence under

the assumption it is uncorrelated with unobserved firm characteristics ($\varepsilon_i$) and with unobserved

time varying state characteristics ($\mu_{st}$). This assumption is violated if state and industry aggregates

are directly linked to either. The first instance would occur if firms with high growth potential are

concentrated in particular industries and states or if firms in those industries differentially move to certain states over time to avoid expropriation risk. In both examples state-industry averages predict individual firm growth, violating the exclusion restriction. There are several reasons to believe, however, this is not the case. First, there is no evidence that industry-state clusters predict firm level growth. As shown in Panel A of Table 4, regressions of the three growth measures on industry-state clusters find coefficients that are close to zero and insignificant. Second, it is unlikely that fast growing microenterprises in particular industries move to certain states to avoid expropriation. This is due to the fact that the geographic unit of focus (the state) is broad, the economic unit of focus (micro firms with 10 employees or less) is small and the time frame (two years ) is relatively short. Indeed, in the sample moving rates are low. In the 2008 survey only 17 per cent of microentrepreneurs have ever moved to other cities or municipalities for work, and only two per cent have moved in the past two years (the questions are not in the 2010 survey). Thus while firms may move within a municipality or city to reduce exposure to expropriation attempts, it appears that few move across state lines to do so. As a result, state-industry averages are unlikely to predict changes in the location of fast growing microenterprises.

What may prove a more valid threat to the exclusion restriction, however, is the case of unobserved changes at the industry-state level which are jointly linked with aggregate expropriation and firm growth. For example, if institutional improvements in certain states differentially impact certain industries, we may find that public expropriation attempts for firms in those states and industries falls, while growth prospects improve. To control for this possibility I include several measures of institutional change at the state level that may differentially impact microenterprises in certain industries. These controls include the number of days it takes to open a business, a measure of judicial effectiveness and a measure of the effectiveness of police in enforcing judicial decisions. Each variable is described below.

The first institutional control, the number of days it takes to open a business, is taken from the World Bank and International Finance Corporation's Doing Business in Mexico reports.[12] These reports compare regulations that affect an entrepreneur's ability to start a business, obtain necessary permits, register property and enforce contracts. I focus on the days it takes to start a business, as this is the most likely to impact firms in the sample since the majority are informal and are unlikely to seek permits, register property or attempt to enforce contracts in the courts.

The second and third controls are taken from surveys of lawyers on the effectiveness of local courts in enforcing commercial code governing bank debt. The surveys have been used by other authors as measures of local institutions in Mexico (Laeven and Woodruff 2007), and are conducted every several years by the *Consejo Coordinador Financiero* under the direction of the Center for the Study of Law at the *Instituto Tecnologico Automono de Mexico*. The focus on a specific commercial code comes from the fact that while bank debt laws are set at the national level, judicial proceedings must take place in courts where the debtor is located. Thus the implementation and enforcement of the laws varies at the state level. From the surveys I create a measure of judicial effectiveness, taken as an average of the quality and impartiality of judges, the adequacy of judicial resources, the efficiency of the execution of sentences, and the adequacy of local legislation related to contract enforcement. The second measure is the support of public forces in executing judicial sentences.

Following Fisman and Svensson, who jointly estimate the impact of corruption and taxes, I jointly estimate the impact of private and public expropriation. The empirical model thus becomes:

$$y_{isjt} = \beta_1 + \beta_2 X_i + \beta_3 Z_{st} + \beta_4 E\hat{X}_{it}^{PRIVATE} + \beta_5 E\hat{X}_{it}^{PUBLIC} + \delta_s + \delta_j + \delta_t + \mu_{st} + \varepsilon_i \qquad (4)$$

Where $E\hat{X}_{it}$ are the fitted values from the first stage regressions that use state-industry averages as instruments for individual expropriation incidence. The individual firm characteristics ($X_i$) are

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from the ENAMIN survey and are time-invariant. They include firm age (the log of months in operation), firm informality, and the gender and educational status of the entrepreneur.[13] State, time varying characteristics ($Z_{st}$) include real GDP per capita growth, unemployment rates, and the institutional controls. For comparison I also estimate the IV model with state-year interaction effects in lieu of the state-time controls.

## 4.  Estimation Results

## 4.2.  Main Results

Firm growth is estimated using two stage least squares (2SLS) and, for comparison, OLS. Two versions of the IV model are estimated: one with state-time controls (the main model) and one with state-time interaction effects. In all cases the model is estimated with the ENAMIN survey sampling weights and clustered, robust standard errors, where the clusters are industry-state groups.

--- Tables 4 & 5 here---

The first stage results from the 2SLS model are shown in panel B of Table 4. Since state-industry aggregates for private and public expropriation are used in each equation, for clarity the aggregate for the type of expropriation in question is indicated in **bold**.[14] The estimates show a high correlation between state-industry averages and individual incidence, as the coefficients on the averages are positive, large and significant. In the case of private expropriation, for log income a 10 per cent increase in the state-industry average incidence is associated with a 7.7 per cent increase in the individual robbery incidence for a firm in that industry and state. In the case of public expropriation, a 10 per cent increase in the state-industry average incidence is associated with an 11 per cent increase in the incidence for an individual firm. In all cases the Angrist-Pischke F and Chi-

square values are sufficiently large to reject the nulls that the model is weakly and under-identified. This further confirms the instruments are good predictors of individual expropriation incidence.

The results from the OLS and second stage IV models, provided in Table 5, provide clear evidence that thieves are decidedly worse for microenterprise growth in Mexico than officials. Starting with income growth, as shown in column two, after controlling for the potential endogeneity of individual firm incidence, robbery and extortion incidence are associated with decline in income growth of 44 per cent. Meanwhile, fines and bribes incidence are associated with an increase of seventeen per cent. The coefficients are very similar across the model that includes observable state-time controls and that includes state-time interaction effects. While none of the coefficients is precisely estimated, the differences are sufficiently large to suggest private expropriation has a more negative effect on income growth than public expropriation.

Similar, and even stronger, conclusions emerge when the change in employees is used as the measure of firm growth. After controlling for the endogeneity of individual incidence, private expropriation incidence is associated with a 0.73 decline in employees and a 30 per cent decline in the probability a firm without employees adds at least one. Meanwhile public expropriation is associated with an increase in employees of 0.16 and a decrease in the probability of adding an employee of only 5.8 per cent. In the case of private expropriation all of the IV coefficients are significant. Again, the results are similar across the two IV models. Overall the results provide strong evidence that thieves are more detrimental to microenterprise growth than officials, and suggest crime may lead to larger distortions than corruption in certain environments. The finding of positive coefficients for public expropriation in two out of three models also suggests that officials may offer beneficial services to microenterprises in exchange for fines and bribes, and that Mexico is a case where corruption provides a way for some firms to overcome institutional weakness.

Finally, the results show the importance of controlling for the endogeneity of expropriation incidence, as the OLS and IV coefficients differ greatly in all cases. In the case of income growth the OLS coefficient for private expropriation is negative 0.074, less than 17 per cent of the IV estimate, while the coefficient for public expropriation is 0.001, only 0.7 per cent of the IV estimate. In the case of employees, the OLS coefficients shrink in size and the signs actually change. These changes are expected if firms with greater growth potential are those more likely to be targeted by thieves and most likely to gain beneficial services in exchange for bribes and fines. Thus failing to control for the non-random nature of public and private expropriation yields an inaccurate assessment of their absolute and relative impacts.

## 4.3.    Robustness Checks

To address concerns regarding the treatment of missing income data I conduct two robustness checks. The first check removes imputed income values from the estimation of income growth. The second check removes survey weights from the estimation. The high non-response rate for income may change the representative nature of the data, and in lieu of altering the weights, which is difficult; the model is estimated without them. Second stage IV results from both checks are shown in Table 6. In both cases the size of the coefficients changes slightly, but the conclusions remain the same. Private expropriation continues to be associated with large declines in income, employees, and the probability of adding any employee, while public expropriation is associated with increases in income and employees and a slight decrease in the probability of adding any employee. The similarity of the estimates reduces concerns that non-response bias drives the results.


----Table 6 Here----

### 5. Heterogeneity Across Firms

Several papers have documented a high level of heterogeneity among microenterprises, showing the sector is populated by high skill entrepreneurs for whom self-employment is an optimal outcome, and low skill entrepreneurs who lack other opportunities (Maloney 2004, Mandelman and Montes-Rojas 2009). This raises concerns that the incidence and impact of shocks differ across high-tier and low-tier firms, and that these differences are washed out by average estimates across the two. To assess if this is the case, I re-estimate the model on the sub-set of firms with the greatest growth potential, the high-tier firms, using several classifications of high-tier microenterprises (Cunningham and Maloney 2001, Fajnzylber et al. 2009). The first are those who entered self-employment from a salaried position and did so voluntarily. The second are entrepreneurs with at least a secondary education whose currently income is higher than the average for salaried workers with the same gender, education level, age bracket, industry and state[15]. The third are formal firms, defined as being registered with any level of government.


----Table 7 Here----

Table 7 compares the incidence of and losses from public and private expropriation for the different categories of high tier firms to those from the full sample. The summary statistics show that high tier firms suffer more from both types of expropriation than their counterparts. The most striking differences are found for formal firms, which make up only one third of the sample. While the incidence of public expropriation for the full sample is eight per cent, it is 10.7 per cent for formal firms (thirty per cent higher). Similarly, while the incidence of private expropriation is 10.7 per cent for the full sample, it is 15.9 per cent for formal firms (fifty per cent higher). Meanwhile, the absolute losses from public expropriation are 38 per cent higher, and those from private

expropriation are 41 per cent higher. These results are expected if formal firms are larger and offer greater spoils to officials and thieves.

I next estimate the impact of the incidence of public and private expropriation on the growth of high-tier firms. The OLS and second stage 2SLS results are provided in Table 8. Panel A contains the results for those who entered self-employment from a salaried position. Panel B contains the results for those whose monthly income is higher than those for similar salaried workers. Panel C contains the results for formal firms. All of the control variables from the previous estimations are used, with the exception of the secondary education dummy and formality status.

---Table 8 Here---

The results generally mirror those from the full sample. As shown in columns two and four and six, private expropriation is associated with declines in income and employees in all three samples. As shown in columns eight and ten, public expropriation is associated with an increase in income, an increase in employees in two of the samples, and an increase in the probability a firm adds employees in two of the samples. The only differences from the main results are in sub-sample B. In this group public expropriation also leads to declines in employees, both in the total value and in the probability of increasing from zero to any. Nevertheless, the results largely show that thieves are much worse than officials for high tier firms as well. This allays fears that the high degree of heterogeneity in the sector leads to muted average effects, and confirms that crime indeed limits growth in the sector.

One surprising result is that the impact of public and private expropriation is not larger for formal firms, despite the higher incidence they face. As shown in column two of panel C, the impact on income is quite muted, with private expropriation decreasing income and public expropriation increasing it by dramatically less than in the full sample. One possible explanation is that formal firms are better able to withstand expropriation shocks. This may be because they are

more profitable and can better replace lost income or assets, or because they gain more from public officials in exchange for fines and bribes. The latter might occur if the need for public services increases as firms become more established. This highlights that the impact of crime and corruption varies across firms, and likely depends on their exposure to officials and thieves and their ability to manage these encounters.


## 6. Conclusions

This paper estimates the relative importance of corruption and crime to microenterprises in Mexico. After controlling for the potential endogeneity of individual firm incidence it finds strong evidence that thieves are more harmful to these firms than officials. Robbery and private extortion are associated with large declines in income and employees, while fines and bribes are associated with increases. This suggests crime impedes growth, while corruption may help some firms overcome institutional weakness.

The contribution of this paper is two-fold. First, it adds to the literature on corruption that uses firm level data. In the case of the smallest firms in Mexico, it shows the short-run effects are not negative. Nevertheless, it is difficult to jump to the conclusion that corruption is not harmful for microenterprises. The long-term effects may well be negative, if firms limit employee and asset growth over time to remain informal and avoid detection by officials. Answering this question in more detail and gaining a better understanding of the way in which corruption affects these firms is important, but requires data with a longer panel component and more detail on types of bribes and fines firms pay and the potential benefits received as a result of these payments.

The second contribution of the paper is to add to the small but growing literature that shows crime to be a major deterrent to firm growth in certain areas. High crime rates themselves are a symptom of institutional weakness, as they partially result from police and judicial systems that are

unable to keep criminals in check. This weakness has been underemphasized in the literature to date, but there is growing recognition that robbery and extortion may dampen investment incentives and lead to inefficient production technologies. In areas with very high crime rates, the associated distortions may be even larger than those linked with corruption. This highlights that the costs associated of institutional weakness are multi-faceted, and suggests that reducing the incidence of bribes and fines may be insufficient to spur firm growth.

[1] Papers that examine the impact of crime on microenterprises include Krkoska and Robeck (2009), who find street crime is associated with a decline in investment among firms in Eastern Europe and Central Asia, and BenYishay and Pearlman (2014), who find that higher burglary incidence is associated with reduced probabilities that firms expand in states across Mexico. This paper differs from the latter in that it uses firm level crime incidence rather than state level aggregates, and looks directly at firm growth over one a one quarter basis. It extends the analysis by comparing the impacts of crime to those from corruption. Papers that examine the impact of crime more generally include Pshisva and Suarez (2010), who find that kidnapping of corporate directors reduced investment among firms in Colombia, and Ashby and Ramos (2013), who find that organized crime deterred foreign direct investment in certain industries in Mexico.

[2] According to the 2010 World Bank enterprise survey for Mexico, 50 per cent of firms cite corruption as a major constraint, as compared to 36 per cent for the world. Meanwhile 29 per cent cite crime, theft and disorder as a major constraint, as compared to twenty eight percent for the world.

[3] The firm figure comes from the Summary of the 2009 Economic Census, available on the website of the Mexican National Institute for Statistics and Geography (www.inegi.gob.mx). The employment figure comes from the author's calculations using the fourth quarter 2010 National Survey of Occupation and Employment, available on INEGI's website.

[4] Although the literature on extortion finds it may reduce the incidence of robbery, I assume any of these countervailing effects are insufficient large to make extortion a positive rather than a negative shock. Furthermore, given the way the question is phrased in the ENAMIN survey, entrepreneurs likely will report being extorted only if they view it as harmful event that leads to losses.

[5] I investigate if firms that report being expropriated are more likely to leave the sample and find no evidence of this. The coefficients are close to zero and insignificant.

[6] In the quarter of the enterprise survey the correlation between monthly profits and monthly income is 0.45.

[7] Imputation is preferable to listwise deletion, which removes all missing values, as it does not discard valuable information (Cameron and Trivedi 2005). I impute missing income data as follows. Entrepreneurs are told the monthly, minimum wage in their state and those without income data are asked if their income falls into one of the following categories: less than the minimum wage; equal to the minimum wage; 1-2 times the minimum wage; 2-3 times the minimum wage; 3-5 times the minimum wage; 5-10 times the minimum wage; and more than 10 times the minimum wage. I take the midpoint of each range and multiply this times the minimum wage. For example, individuals in the first category are given a value of 0.5 times the minimum wage. Those in the third category are given a value of 1.5 times the minimum wage. Those in the last category are given a value of 11 times the minimum wage.

[8] Prior to 2008 the ENAMIN surveys only included urban microentrepreneurs. Urban firms constitute the majority of microenterprises in the country (64%) and face higher incidence of public and private expropriation than their rural counterparts (85% higher in the case of public and 58% in the case of private). The effects of expropriation thus are likely to be more concentrated among urban enterprises.

[9] The opposite are non-fixed locations, which include ambulatory vendors, improvised locations, motor vehicles, or the entrepreneur's home. Some authors argue that moving to a fixed location is the first step many microenterprises take toward becoming more established. (Fayzlnber et. al. 2009)

[10] A model with firm fixed effects in lieu of time-invariant firm characteristics is suboptimal for two reasons. First, there are only two observations for each enterprise. Second, the key variable in the model—expropriation incidence—is time invariant and would be absorbed by the firm fixed effect.

[11] For example, more skilled or risk-averse entrepreneurs may invest more in security, reducing the incidence of robbery, but also may be more or less likely to take chances to expand the enterprise.

[12] The reports are available on the Doing Business website (www.doingbusiness.org).

[13] I do not include enterprise assets due to a high non-response rate to the question in the sample.

[14] In the interest of space I only present the results from the main model, but results from the model with state-time interaction effects are quite similar and are available upon request.

[15] These numbers are based on the author's calculations from the ENOE.

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Table 1: Incidence of and Losses from Public and Private Expropriation

| Microentrepreneurs in Mexico | All Years | Year 2008 | Year 2010 |
|---|---|---|---|
| Victim in past year: | | | |
| Public Expropriation (Fines & Bribes) | 8.0% | 8.6% | 7.3% |
| of which Bribes | 4.5% | 4.6% | 4.5% |
| of which Fines | 4.5% | 5.4% | 3.6% |
| | | | |
| Private Expropriation | 10.7% | 10.4% | 10.9% |
| of which Robbery | 9.5% | 9.5% | 9.4% |
| of which Private Extortion | 1.8% | 1.2% | 2.3% |
| | | | |
| Of victims of given crime, Estimated losses, in 2005 USD | | | |
| Public Expropriation | 193.7 | 187.6 | 200.9 |
| | (698.2) | (620.6) | (780.9) |
| Private Expropriation | 663.6 | 764.7 | 563.0 |
| | (2828.5) | (3747.7) | (1405.7) |
| | | | |
| Of victims of given crime, Estimated losses/monthly profits | | | |
| Public Expropriation | 0.59 | 0.58 | 0.60 |
| | (3.40) | (2.44) | (4.23) |
| Private Expropriation | 1.84 | 2.04 | 1.63 |
| | (7.25) | (8.71) | (5.44) |
| | | | |
| Of victims of given crime, % who reported to authorities | | | |
| Robbery | 19.6% | 22.3% | 17.0% |
| Private Extortion | 19.1% | 26.3% | 15.3% |
| | | | |
| Observations | 20,375 | 9,472 | 10,903 |

Coefficients are population weighted averages. Standard deviations are in parentheses
Source: ENAMIN 2008 and 2010. Both are nationally representative.
Sample limited to urban entrepreneurs age 18-70 who do not start a new job in Q1.
Mining and electricity companies removed

Table 2: Summary Statistics

| Panel A: Enterprise Characteristics | All Years | Year 2008 | Year 2010 |
|---|---|---|---|
| | (1) | (2) | (3) |
| Entrepreneur a woman | 43.3% | 42.5% | 44.0% |
| Primary Education or Less | 36.5% | 38.8% | 34.2% |
| Secondary Education | 32.9% | 32.0% | 33.8% |
| Tertiary Education | 30.5% | 29.2% | 31.9% |
| Business Duration (in years) | 9.14 | 9.31 | 8.98 |
| | (9.50) | (9.57) | (9.42) |
| Has Any Employees | 28.0% | 28.1% | 28.0% |
| Enterprise has a fixed location | 33.8% | 34.2% | 33.4% |
| Enterprise located in home | 20.7% | 21.5% | 19.9% |
| Enterprise Informal | 66.2% | 65.8% | 66.5% |
| Monthly Profits (USD) | 330.93 | 360.36 | 302.05 |
| | (593.86) | (654.51) | (526.05) |
| Enterprise Assets (USD) | 3287.22 | 3405.49 | 3165.67 |
| | (15298.91) | (14655.25) | (15933.54) |
| | | | |
| Firm Growth, over one quarter | | | |
| Change in log monthly income | -0.011 | 0.004 | -0.026 |
| | (0.78) | (0.77) | (0.78) |
| Change in employees | -0.074 | -0.066 | -0.082 |
| | (1.22) | (1.00) | (1.41) |
| Change from zero to any employees | 7.0% | 6.9% | 7.1% |
| | | | |
| Observations | 20375 | 9472 | 10903 |

| Panel B: Sample Attrition | No Income | No Income | No Income | No Income | Change Job |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Fined or Bribed in the past year | -0.0810*** | -0.0320 | | | -0.00655 |
| | (0.0201) | (0.0208) | | | (0.00691) |
| Robbed or extorted in the past year | -0.00814 | -0.00184 | | | -0.00493 |
| | (0.0201) | (0.0197) | | | (0.00582) |
| | | | | | |
| Informal | | | 0.00837 | | |
| | | | (0.0128) | | |
| Keeps Accounts | | | | 0.0122 | |
| | | | | (0.0125) | |
| Individual controls | No | Yes | No | No | No |
| State-year controls | No | Yes | No | No | No |
| Observations | 20,902 | 20,705 | 20,902 | 20,902 | 20,902 |
| R-squared | 0.002 | 0.082 | 0.000 | 0.000 | 0.000 |

Coefficients are population weighted averages. Standard deviations in parentheses

Source is the 2008 and 2010 ENAMIN and corresponding ENOEs.

Sample limited to urban entrepreneurs age 18-70 who do not report a new job in Q1. Mining and electricity companies removed

Table 3:  Robbery and Bribery Incidence by Industry

| Mexican Microenterprises | Percent | Incidence | | Est. Losses (in USD) | | Est. Losses/Monthly Profits | |
|---|---|---|---|---|---|---|---|
| | Sample | Public | Private | Public | Private | Public | Private |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Construction | 8.31% | 5.8% | 8.0% | 20.06 | 39.12 | 3.4% | 8.1% |
| Manufacturing | 12.65% | 5.5% | 8.8% | 7.02 | 49.94 | 2.4% | 12.0% |
| Commerce | 37.26% | 7.2% | 13.4% | 17.71 | 83.86 | 6.2% | 26.8% |
| Transportation | 4.22% | 41.0% | 17.7% | 62.75 | 59.72 | 14.3% | 12.6% |
| Communications | 0.15% | 10.6% | 21.7% | 3.55 | 77.33 | 1.6% | 11.9% |
| Financial Services | 0.11% | 7.3% | 2.3% | 163.69 | 1.64 | 15.0% | 0.0% |
| Real Estate | 0.98% | 7.9% | 15.2% | 6.86 | 80.49 | 1.8% | 12.2% |
| Services: Professional, scientific | 5.07% | 7.3% | 8.0% | 26.61 | 191.65 | 9.8% | 18.1% |
| Services: Support of firms | 2.18% | 7.9% | 5.6% | 5.74 | 32.74 | 1.7% | 9.7% |
| Services: Education | 0.75% | 3.2% | 4.2% | 18.71 | 10.22 | 2.3% | 7.5% |
| Services: Medical | 2.54% | 2.3% | 7.1% | 2.24 | 40.11 | 0.4% | 13.7% |
| Services: Recreation | 1.32% | 11.8% | 9.6% | 417.14 | 93.52 | 15.4% | 12.8% |
| Hospitality: Restaurants, Bars, Hotels | 11.09% | 4.1% | 7.0% | 4.92 | 18.69 | 1.6% | 6.4% |
| Services: Other except government | 13.36% | 5.5% | 8.6% | 12.05 | 52.06 | 2.3% | 13.1% |
| | | | | | | | |
| Total | | 7.7% | 10.5% | 21.40 | 66.04 | 4.8% | 17.0% |

Public refers to fines and bribes by authorities.  Private refers to robbery and private extortion.

For incidence and losses, average values, weighted by population weights, are shown.

Estimated losses converted to 2005 pesos and then to USD using the end of December exchange rate.  Sample covers years 2008 and 2010

Mining, electricity, water, gas and other energy companies are removed from the sample.  This includes only 5 firms

Table 4: First Stage IV Results

Panel A: Correlation between instrument and firm growth

| Outcome variable: Change in | Log Income (1) | Employees (2) | Zero Employees (3) |
|---|---|---|---|
| Industry-state cluster | -0.000112 | -6.96e-06 | 1.90e-05 |
| | (9.26e-05) | (0.000104) | (3.59e-05) |
| | | | |
| Observations | 13,475 | 20,375 | 13,926 |
| R-squared | 0.000 | 0.000 | 0.000 |

| Panel B: First Stage IV Results | Private Expropriation | | | Public Expropriation | | |
|---|---|---|---|---|---|---|
| Outcome Variable: Change in | Log Income (1) | Employees (2) | Zero Employees (3) | Log Income (4) | Employees (5) | Zero Employees (6) |
| State-industry aggregate- Private | **0.775*** | **0.905*** | **0.756*** | 0.053 | -0.029 | -0.004 |
| | **(0.109)** | **(0.078)** | **(0.106)** | (0.082) | (0.056) | (0.084) |
| State-industry aggregate- Public | -0.012 | -0.112* | -0.106 | **1.098*** | **0.986*** | **0.869*** |
| | (0.078) | (0.062) | (0.076) | **(0.105)** | **(0.057)** | **(0.061)** |
| | | | | | | |
| State-Year Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| | | | | | | |
| Observations | 13,370 | 20,189 | 13,785 | 13,370 | 20,189 | 13,785 |
| R-squared | 0.045 | 0.048 | 0.044 | 0.140 | 0.122 | 0.152 |
| Angrist-Pischke partial R2 | 0.007 | 0.012 | 0.008 | 0.026 | 0.021 | 0.020 |
| Angrist-Pischke F test for weak identification | 49.79 | 135.79 | 50.93 | 107.97 | 279.84 | 191.13 |
| Angrist-Pischke ChiSquared for under-identification | 50.13 | 136.51 | 51.27 | 108.70 | 281.31 | 192.40 |

Robust, clustered standard errors in parentheses.  Industry-state clusters used.  Estimated using survey weights          *** $p<0.01$, ** $p<0.05$, * $p<0.1$

State-year controls include real GDP per capita growth, unemployment, the number of days needed to register a business,  measures of judicial efficiency, and

support of public services, gender, education, log duration, informality.  All regressions include state, year and industry fixed effects.  Sample limited to urban

microentrepreneurs age 18-70.  The sample for moving from zero to any employees limited to enterprises with  no employees as of the ENAMIN survey.

The aggregate for the type of expropriation in question is indicated in bold

Table 5: Second Stage IV and OLS Results

| Outcome Variable | Change in log income | | | Change in employees | | | Adds employee | | |
|---|---|---|---|---|---|---|---|---|---|
| Model | OLS | IV | IV | OLS | IV | IV | OLS | IV | IV |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Private Expropriation | -0.0738 | -0.441 | -0.458 | 0.0266 | -0.733* | -0.750* | 0.0457*** | -0.300** | -0.315** |
| | (0.0526) | (0.328) | (0.321) | (0.0628) | (0.376) | (0.398) | (0.0173) | (0.145) | (0.151) |
| Public Expropriation | 0.00133 | 0.177 | 0.202 | -0.0351 | 0.160 | 0.232 | 0.0291 | -0.058 | -0.038 |
| | (0.0431) | (0.211) | (0.222) | (0.113) | (0.330) | (0.338) | (0.0207) | (0.126) | (0.129) |
| | | | | | | | | | |
| Woman | 0.0213 | 0.021 | 0.022 | -0.0878*** | -0.099*** | -0.096*** | -0.0690*** | -0.080*** | -0.079*** |
| | (0.0226) | (0.024) | (0.025) | (0.0309) | (0.037) | (0.037) | (0.00906) | (0.012) | (0.013) |
| Secondary Education | -0.0253 | -0.019 | -0.021 | -0.0283 | -0.018 | -0.018 | -0.0102 | -0.003 | -0.003 |
| | (0.0219) | (0.024) | (0.024) | (0.0249) | (0.028) | (0.028) | (0.00963) | (0.010) | (0.010) |
| Tertiary Education | -0.0903*** | -0.089*** | -0.090*** | 0.0856 | 0.091 | 0.089 | -0.00657 | -0.003 | -0.003 |
| | (0.0306) | (0.033) | (0.033) | (0.0638) | (0.061) | (0.061) | (0.0112) | (0.012) | (0.012) |
| Ln(Duration) | -0.00997 | -0.010 | -0.010 | 0.00796 | 0.009 | 0.009 | 0.00186 | 0.003* | 0.003* |
| | (0.00977) | (0.010) | (0.010) | (0.0109) | (0.010) | (0.010) | (0.00144) | (0.002) | (0.002) |
| Informal | 0.0238 | 0.004 | 0.002 | 0.0547 | 0.008 | 0.008 | -0.0617*** | -0.085*** | -0.085*** |
| | (0.0260) | (0.034) | (0.034) | (0.0473) | (0.057) | (0.058) | (0.00962) | (0.014) | (0.014) |
| | | | | | | | | | |
| State-Year Controls | Yes | Yes | No | Yes | Yes | No | Yes | Yes | No |
| State-Year Interaction Effects | No | No | Yes | No | No | Yes | No | No | Yes |
| | | | | | | | | | |
| Observations | 13,370 | 13,370 | 13,370 | 20,189 | 20,189 | 20,189 | 13,785 | 13,785 | 13,785 |
| R-squared | 0.010 | -0.013 | -0.013 | 0.012 | -0.024 | -0.025 | 0.040 | -0.081 | -0.085 |

Robust, clustered standard errors in parentheses. Industry-state clusters used. Estimated using survey weights          *** p<0.01, ** p<0.05, * p<0.1

State-year controls include real GDP per capita growth, unemployment, the number of days needed to register a business, measures of judicial efficiency and

support of public services, state, year and industry fixed effects. Sample limited to urban microentrepreneurs age 18-70 who do not start a new job in Q1.

The sample for moving from zero to any employees is limited to enterprises with no employees as of the ENAMIN survey

Table 6: Robustness checks

| Outcome Variable: Change in: | No Imputed Values | No Weights | | |
|---|---|---|---|---|
| | Log Income | Log Income | Employees | Zero employees |
| Second Stage IV Results | (1) | (2) | (3) | (4) |
| Private expropriation | -0.288 | -0.161 | -0.409* | -0.091 |
| | (0.354) | (0.178) | (0.241) | (0.080) |
| Public expropriation | 0.270 | 0.159 | 0.180 | -0.011 |
| | (0.274) | (0.143) | (0.218) | (0.069) |
| | | | | |
| Observations | 11,197 | 13,370 | 20,189 | 13,785 |
| R-squared | 0.000 | 0.004 | -0.002 | 0.027 |

Robust, clustered standard errors in parentheses. Industry-state clusters used. Estimated using survey weights

*** p<0.01, ** p<0.05, * p<0.1

Other controls include real GDP per capita growth, unemployment, the number of days needed to register a business,

measures of judicial efficiency and support of public services, gender, education, log duration, informality.

All regressions include state, year and industry fixed effects. Sample limited to urban microentrepreneurs age 18-70

who do not start a new job in Q1. The sample for moving from zero to any employees is limited to enterprises

with no employees as of the ENAMIN survey

Table 7: Expropriation Incidence and Losses for High Tier Firms

| Microenterprises included: | All Firms | High Tier Only | | |
|---|---|---|---|---|
| Definition: | | Entered from salaried work | Salary above mean | Formal |
| <u>Victim in past year:</u> | | | | |
| Public Expropriation (Fines & Bri bes) | 8.0% | 9.6% | 9.9% | 10.7% |
| Private Expropriation (Robbery & Extortion) | 10.7% | 10.9% | 12.6% | 15.9% |
| | | | | |
| <u>Of victims of given crime, Estimated losses, in 2005 USD</u> | | | | |
| Public Expropriation | 193.7 | 211.6 | 213.1 | 267.2 |
| | (698.2) | (822.2) | (853.9) | (814.7) |
| Private Expropriation | 663.6 | 764.6 | 577.4 | 937.5 |
| | (2828.5) | (3611.6) | (1474.8) | (3839.1) |
| | | | | |
| <u>Of victims of given crime, Estimated losses/monthly profits</u> | | | | |
| Public Expropriation | 0.59 | 0.63 | 0.65 | 0.66 |
| | (3.40) | (4.06) | (4.16) | (2.64) |
| Private Expropriation | 1.84 | 1.78 | 1.21 | 2.19 |
| | (7.25) | (8.22) | (3.48) | (8.92) |
| | | | | |
| Observations | 20,375 | 9,830 | 7,964 | 7,331 |

Coefficients are population weighted averages. Standard deviations are in parentheses

Source: ENAMIN 2008 and 2010. Both are nationally representative

Sample limited to entrepreneurs age 18-70 who do not start a new job in Q1. Mining and electricity companies removed

Table 8: Heterogeneity by Firms

| Outcome variable: Change in | Log Income | | Employees | | Zero employees | |
|---|---|---|---|---|---|---|
| Model | OLS | IV | OLS | IV | OLS | IV |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| PANEL A: Entered Self Employment from Salaried Work | | | | | | |
| Private expropriation | -0.0559 | -0.404 | 0.126 | -0.890 | 0.0573*** | -0.433** |
| | (0.0603) | (0.387) | (0.121) | (0.596) | (0.0198) | (0.213) |
| Public expropriation | -0.0591 | 0.179 | 0.105 | 0.771* | 0.0387 | 0.013 |
| | (0.0534) | (0.293) | (0.149) | (0.420) | (0.0258) | (0.115) |
| | | | | | | |
| Observations | 6,797 | 6,797 | 9,757 | 9,757 | 6,616 | 6,616 |
| R-squared | 0.015 | -0.009 | 0.019 | -0.050 | 0.047 | -0.183 |
| PANEL B: Salary Above Mean for Similar Workers | | | | | | |
| Private expropriation | -0.0996** | -0.316 | 0.137 | -1.825** | 0.0398 | -0.178 |
| | (0.0420) | (0.416) | (0.120) | (0.884) | (0.0310) | (0.191) |
| Public expropriation | 0.0172 | 0.210 | 0.0831 | -0.322 | -0.0259 | -0.307* |
| | (0.0412) | (0.266) | (0.169) | (0.505) | (0.0252) | (0.176) |
| | | | | | | |
| Observations | 6,380 | 6,380 | 8,076 | 8,076 | 4,926 | 4,926 |
| R-squared | 0.029 | 0.014 | 0.026 | -0.171 | 0.037 | -0.087 |
| PANEL C: Formal Firms | | | | | | |
| Private expropriation | -0.0101 | -0.006 | 0.114 | -0.280 | 0.0474* | -0.317 |
| | (0.0579) | (0.494) | (0.122) | (0.528) | (0.0247) | (0.269) |
| Public expropriation | -0.0738 | 0.013 | -0.0117 | 0.477 | -0.0118 | 0.054 |
| | (0.0593) | (0.245) | (0.182) | (0.617) | (0.0279) | (0.170) |
| | | | | | | |
| Observations | 4,801 | 4,801 | 7,286 | 7,286 | 3,721 | 3,721 |
| R-squared | 0.026 | 0.025 | 0.023 | 0.012 | 0.038 | -0.083 |

Robust, clustered standard errors in parentheses. Industry-state clusters used. Estimated using survey weights

*** p<0.01, ** p<0.05, * p<0.1

Other controls include real GDP per capita growth, unemployment, the number of days needed to register a business,

measures of judicial efficiency and support of public services, gender, education, log duration, state, year and industry

fixed effects. Sample limited to urban entrepreneurs age 18-70 who do not starta a new job in Q1.

The sample for moving from zero to any employees is limited to enterprises with no employees as of the ENAMIN survey