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Diana Chen April 16, 2012

Bribery? We Call It The Cost of Business:

An Examination of the Effect of Bribery and Corruption on Investment Decisions in Eastern European Countries

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Abstract

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Bribery in Eastern Europe has been an endemic problem since the fall of Communism. After an era plagued by nepotism, bribery, underhanded deals, unofficial payments, and corrupted officials, Eastern Europe has yet to fully recover from the rampant corruption that permeated through all ranks of the communist regimes. With much of Eastern Europe falling behind in most measures of economic development, standard of living, foreign investment, and general prosperity, there has been much speculation that its delayed growth is due in large part to its corrupt business practices. By using data from the Word Bank's Business Environment and Enterprise Performance Surveys, this study is focused on measuring the affect bribery has on investment decisions at the firm level in 28 Eastern European countries. Breaking down bribery into country-industry averages and then controlling for various explanatory variables, we are able to prove that there is a significant negative relationship and that an increase in bribery will cause a decrease in investment.

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I. Introduction

A Moscow furniture salesman's business is failing until he pays a bribe to two local "intermediaries" in exchange for their services. Suddenly, he sees his business turn from a failing local shop to a multicity furniture behemoth landing multimillion dollar contracts (Myers, 2005). Bribes such as these are commonplace throughout Russia. From $40,000 for entrance into a top university, to $5,000 to avoid the military draft, to $3,000 for a birth certificate—it is no wonder that bribes represent more than two and a half times the amount the government collects in revenue in Moscow (Myers, 2005). In 2005 alone, Russian citizens paid over "$3 billion in bribes annually and businesses paid $316 billion - nearly 10 times [the amount paid four years ago]" (Myers, 2005). With bribes and corruption so intertwined in Eastern European culture, commerce and community, the inevitable question arises—how is this affecting the greater business environment?

Looking at the effect corruption has on the business environment and economy, most of the modern testing has concluded that there is a direct negative relationship between the amount of corruption in a country and the general economic prosperity (Fisman Svensson (2000), De Rosa, Gooroochurn and Görg (2010), Mauro (1995), Starosta De Waldemar (2011). Though each study finds a negative relationship between corruption and general economic prosperity, each study defines corruption and economic wellbeing differently. Because corruption ranges from an official demanding an informal payment to lobbying to preferential treatment of certain firms to nepotism, it is notoriously tricky to define. (De Rosa, 2010) For our purposes, the only type of corruption that we will focus on is bribery. Loosely defined, bribery is an unofficial payment

made to a government official in order to facilitate general business transactions between firms and individuals with the government. To apply this definition to our study, we will be using an enterprise survey conducted by the World Bank. Because the survey is conducted based on responses from firms across Eastern Europe, we are able to extract firm-level results and have a more accurate representation of the individual decision making process that relates investment decisions with the bribes paid out.

Building upon previous material, this paper will consider firm level decisions to invest using a group of 28 Eastern European Countries. This study will provide a critical examination of the effect of bribery and how informal payments have had an impact on investment decisions in Eastern Europe.

The paper will be organized into the following sections: the next section provides the background and relevance of the research. Section III is a brief discussion of the relevant published literature. Section IV presents the data and methodology and Section V is a discussion of the empirical estimations. Section VI includes additional robustness checks. Section VII concludes with a discussion of our findings and areas of further study. Section VIII contains the appendices and additional notes.

II. Background and Relevance

Eastern Europe has tremendous development potential. With ample land, readily available labor, and capital resources, it seems as if it is only a matter of time before its production and GDP are on par with its Western European counterparts. However, looking at any indicator of economic prosperity, it is evident that Eastern Europe is lagging behind the rest of the modern Western world. Given the ample literature on development issues, there are many explanations ranging from political instability to the lack of a prominent hegemony as to why

Eastern Europe is dealing with more depressed economic prosperity. We believe that many of its development issues stem from the rampant commercial, bureaucratic and systematic corruption that has come to define the region after the fall of communism and the opening of the Eastern European economies to the rest of the free world.

Even two decades after the fall of the communist regime in Eastern Europe, there is still strong evidence to show that many countries have not moved beyond the nepotism, bribery and corruption that permeated all ranks of the communist regimes (Dionisie). Under communism, the state controlled the public sector and access to public services through a mixture of intimidation and bribery. This system, in tandem with the lack of qualified high level officials created a political structure dominated by patronage, bribery, nepotism and non-transparent governmental practices. The ruling elites used political clout to establish corrupt policies and collected private gains from public funding. New controls were slow to emerge, and the old political regime collapsed before a new and stronger one could develop. This combination of an unreliable legal system, undefined property rights and lack of internal political controls with the "persistence of the culture of state intervention, facilitated the emergence of corruption as one of the key governance problems of the region" (Dionisie). Though corruption and bribery undoubtedly exist in every country in the world, the problem is endemic in Eastern Europe.

These endemic bribery and corruption issues are significantly hurting Eastern European economies. Based on this Solow-Swan growth model, seeing the importance of innovation and technology is imperative to the growth of a developing nation. The Solow-Swan growth model relates population growth, capital accumulation, productivity and technological progress in an attempt to explain long-run economic growth (Solow). There are three main lessons that can be learned from the model. First, the output will continue to grow at a constant level. Secondly,

countries that are relatively less well off will grow at a faster rate because of the higher marginal growth rate. Lastly, because of the diminishing returns to marginal productivity, the economy will eventually converge and meet at a "steady state" (Hoover). Without developing new technology, any economy will stagnate at this steady state.

Corruption is the essential market failure that signals a weak and ill-functioning governing entity. Looking at the developing world, corruption is a systemic issue. Even twenty years after the fall of communism in Eastern Europe, corruption and bribery are two issues that Eastern Europe has yet to resolve. In these corrupt markets, firms are able to purchase "decrees, legislation, and influence at the central bank, which [are] found to be prevalent in a number of transition economies" (Hellman, 2000) Given that "corruption thrives where states are too weak to control their own bureaucrats, to protect the contract and contract rights, and to provide the institutions that underpin an effective rule of law", transitional countries are breeding grounds for corrupt practices (Hellman, 2000). Especially in Eastern Europe where many communist regimes collapsed and premature governments had to cope with the fallout, corruption and bribery became the standard for everyday business practices (Hellman, 2000)

III. Theoretical Basis and Literature Review

Given the existence of bribery that is embedded in their markets, the developing countries have had to deal with some serious microeconomic level ramifications—namely the negative effect on internal investment. It stands to reason that if an individual firm does not believe that there will be enough of a payoff, then it will not invest. Thus, the existence of corruption creates a market inefficiency where in the end, society loses out.

The corruption game that Veracierto (2008) sets up involves three players: the incumbent, the innovator and the government. The incumbent player is the current producer who

operates under a complete monopoly. This incumbent player has an incentive to bribe the governmental official to restrict access of other firms into the industry. The innovator is the potential entrant. This innovator has access to better technology and can produce the same product as the incumbent player but more efficiently. This innovator has the incentive to bribe the official to obtain a permit to produce in the industry and take the market power away from the incumbent. On the other hand, the incumbent has an incentive to bribe the official to restrict entry into the market and maintain its market power. The government official has the incentive to take a bribe of whoever will pay the most. In this model, the government makes successive "take-it-or-leave" offers to both the incumbent and innovator without the threat of the federal government detecting the actual payment (Veracierto, 2008). After Veracierto goes through and discusses the motivation and rationale behind each move and the mathematical background behind each player choosing his or her optimal production level, the main result he finds is that there is a nonlinear relationship between penalties and equilibrium innovation rate and that the effect of increasing the penalty will significantly curb bribery (Veracierto, 2008). This is to say that the amount that each player will bribe and the amount that the official will accept are highly dependent on government accountability. This is significant when considering how to control for endogeneity when examining the relationship between bribery and investment.

Though Veracierto discussed the game theory behind bribery decisions, his extrapolations were built upon the empirical testing of other studies. Notably, Mauro conducted the first empirical test of the relationship between corruption and growth. He identified the "channels through which corruption and other institutional factors affect economic growth" and conducted the first cross-country systematic empirical analysis of the relationship between indicators of bureaucratic honesty and efficiency to economic growth (Mauro, 1995). His findings provide the

empirical basis for this study. Mauro finds through his empirical analysis that there is a highly significant relationship between corruption and the investment rate. Specifically, a "one-standard-deviation increase (an improvement) in the corruption index is associated with an increase in the investment rate by 2.9 percent of GDP" (Mauro, 1995). Mauro creates a corruption index that is a compilation of measures of corruption, red tape, the efficiency of the legal system and various measures of political instability. He examines this corruption index against a measure of the foreign investment rate. Though Mauro's study tests two variables that we do not include in our study, he establishes the foundational relationship between corruption and investment. We take his results further by empirically testing using firm level decisions and narrow corruption to include only bribery.

Since Mauro's publication in 1995, his ideas have been confirmed by a number of studies. Theoretically, there has been a fair amount of testing to quantify the negative effect bribery has on investment. Fisman and Svensson's research on "firms in Uganda [have found that] that the rate of taxation and bribery are negatively correlated with firm growth" (Fisman, 2000). De Rosa, Gooroochurn and Görg's research found concluded in their analysis of Central and Eastern Europe and the CIS that the "bribe tax" has a negative effect on innovation. This "bribe-tax" is defined as an informal payment that has been added to the day-to-day operations of a given firm (De Rosa, 2010). Using the same dataset as this study, they concluded that "in countries where corruption is more prevalent and the legal framework is weaker, bribery is more harmful for firm-level production" (De Rosa, 2010). Our study follows along with De Rosa's methodology of using country-industry averages and factor variable estimates to lessen the individual firm response. The results from this study will quantify the effect that a bribe would have on firm-level investment.

This study will be taking both macro- and micro-economic variables and seeing the affect on a firm's individual decision to invest. This will provide a more precise indication of the incentives, tradeoffs, and decision factors of firms on a microeconomic level.

IV. Data and Methodology

To assess the relationship between bribery and investment, this paper uses the 2005 EBRD/ World Bank Business Environment and Enterprise Performance Surveys (BEEPS). The BEEPS survey is conducted periodically and was first administered in 1999. The 2005 dataset contains information from 28 countries and surveyed 9,500 enterprises. Of the countries surveyed, there are 16 from CEEE (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, FR Yugoslavia, FYROM, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, Slovenia and Turkey) and 12 from the CIS (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan) (Synovate, 2005). By using the firm level data on all 9,500 firms, the data paints a comprehensive picture of the business environment and of the firm-level characteristics.

IV.1 The Business Environment and Enterprise Performance Survey (BEEPS)

This dataset is a joint effort by the European Bank for Reconstruction and Development and the World Bank Group and contains two parts: the "Main BEEPS" survey and an overlay of manufacturing firms. This study will be conducted using the "Main BEEPS" survey. Firms which began operations after 2002 and that employed only one or more than 1,000 employees were excluded also from the sample (Synovate, 2005). The composition of the sample size of enterprises surveyed was to be proportional in terms of manufacturing and services with respect to each sector's relative contribution to GDP (Synovate, 2005). The data that was used in this analysis is the 2005 "main" BEEPS survey in its entirety. This dataset contains "all formerly

communist countries of Europe and the Former Soviet Union, which have undergone the profound institutional transformation connected with transition to a market economy. The group of formerly communist countries presents substantial variation ranging from the low income economies of Central Asia to the high income Central European countries, which [have a] fully developed market system" (De Rosa, 2010). Having this wide variation in country background, current development levels and production possibilities provides a more accurate view on the true effect of bribery on corruption at the firm-level.

One of the biggest problems associated with survey data, especially on bribery and corruption, is the possibility of an individual perception bias. This can be manifested in missing observations, underreporting, and incorrect responses by firms. For example, a firm may believe that other firms similar to itself bribe a lot more and will thus inflate the amount that it will report. In theory, the only time when this individual perception bias would be an issue is with the standard error of the estimates of each of the individual responses assuming that the bias is not correlated across different groups of respondents. In the case of the cross-country BEEPS survey, the different groups of the respondents are the different countries (De Rosa, 2010). Another sampling issue that we have to address is the underreporting of bribes. Because bribes are theoretically illegal, firms have an incentive to underreport bribe activity. The country-industry averages also help solve this problem because the effect of the individual firm bias is decreased.

In order to test the hypothesis that there is a relationship between investment and bribery, we had to choose from the survey questionnaire variables to represent bribery, investment, and any other explanatory variables. After considering the wording and the relationship with other variables, each variable was checked for the number of missing values.

IV.2 Investment and Bribery

The aim of this study is to examine the affect of corrupt business practices and the existence of an informal payment system—namely bribes—on investment decisions at the firm level. Theoretically considering the relationship between investment and bribery, a negative relationship is expected for many reasons. First examining the relationship from a micro-level, corruption will pull resources away from its most productive use because of scarcity (De Rosa, 2010). Because of this, a bribe paid to an official would take away for funds used for investment. Secondly, a bribe would increase costs and decrease the incentive to invest. Without a positive expected return on an investment, a rationally acting firm will not invest in a new product or expand a current product line. In order to quantify the effect of bribery on investment in our model, we must specify the variables from the questions in the survey. Considering investment, the following question was chosen to represent the variable that would serve as a measure of the firm-level investment:

"What percentage of your total profits in 2003 were invested in the firm in 2004?"

This question was chosen because it is a continuous variable that directly considers how much a firm actively reinvested its funds in 2004. We chose this variable because it is a percentage of total profits and is more indicative of the investment levels. This variable will help control for the effect of firm size because it is taking a percentage of profits.

In looking to quantify the bribe variable, the following question was used from the survey:

"On average, what percent of total annual sales do firms like yours typically pay in unofficial payments/gifts to public officials?"

Much of the same rationale was used in choosing this variable. Looking at the graph in Figure 1, this shows each of the bribe and investment variables for each country.

[Figure 1]

It is impossible to tell from the graph above what the true incremental change in investment is when there is an increase in bribes paid out.

First considering the bribe variable, there are a few problems that we need to address. First, this variable is highly susceptible to endogeneity. The bribe variable represents of the bribes paid in 2004 while the investment variable is the percentage of profits that were made in 2003 and reinvested into the firm in 2004. Because of this timing issue, we are unsure if the bribe is necessitating the investment, investment is necessitating a bribe or there is a third variable that is necessitating both bribery and investment. Secondly, we must consider individual sampling and perception biases. According to Fisman, because two firms may need to pay different bribes because they are in different countries, there is an unobserved difference that may be correlated with the amount of investment (Fisman, 2000). By aggregating the data points across industry and across country, this effect will be greatly reduced. The bribe variable could be subject to individual sampling biases because the statistics are self-reported. The wording of the survey question controls for this because it asks about "firms like yours." Though the self-reporting bias is decreased, there could be a perception bias. Firms may overstate the effect because their perception of the amount of bribes paid may be higher than the real amount that firms are paying. By taking the country-industry average, we mitigate for endogeneity and the biases.

IV. 3 Explanatory Variables

In order to get a full picture of the effect of bribery on investment decisions, we must control for other variables that could affect investment. Referring back to the previous literature

about firm-level decisions to invest, there are many macro- and micro-economic variables that could affect investment. In this study, we controlled for variables representing firm level characteristics such as age, firm size, profitability, ownership, security payments and exports, and macroeconomic market characteristics such as local competition, government accountability and property rights[1]. In addition to controlling for these independent explanatory variables, we also include controls for country and industry dummy variables.

The "age" variable represents the age since the firm has been founded up until 2005. Logically, the older a firm is, the less likely it is to invest. The relationship between age and investment is heavily driven by the productive capability of a firm and the younger a firm is more likely it is to invest heavily in order to gain a foothold in the market (D'Erasmo, 2011). However, looking at the graph of Age in Figure (2), we see that the variable is highly right skewed. By taking the natural log, we can standardize the variable and bring the extreme values closer to together. We are able to bring in outliers and take away some of the bias that arises with skewed data. Figure 3 represents the new age variable after taking the natural log. We can see that by taking the natural log, the distribution is now more standardized. "Firm size" is measured using the number of employees that the firm employs full-time. We are able to use the number of employees classify the firm size into three categories: small, medium and large. A small firm employs between 2 and 49 individuals, a medium firm employs between 50 and 249 individuals and a large firm employs more than 250 individuals. We expect a positive relationship between the size of a firm and the investment. Much like age where the relationship is heavily driven by the productive capabilities of a firm, a large firm is going to need to invest more heavily because the more resources a firm has, the higher the returns for that firm will be. However, the relationship could also be reversed. A firm that invests more could be more able to grow and

[1] The summary statistics and frequency histograms for each variable can be found in the Table 1 of the Appendix

become a larger firm. Regardless of the causality, there should be a positive relationship between firm size and investment.

Profitability also determines the amount that a firm will invest. In this model, there are three measures of profitability: belonging to a business association or chamber of commerce, profit margin and the number of local competitors. These three measures represent two different components of profitability—business association and profit margin measure firm-level profitability and the number of local competitors are indications of market-level profitability. The relationship between belonging to a business association or a chamber of commerce and investment is ambiguous. If a firm belongs to a business association, this could create a larger opportunity to collude among firms to keep prices unusually high and keep out potential entrants into the industry which could decrease the incentive to invest. However, it could also be argued that there could be a positive relationship because a firm that belongs to a business association would be more profitable and thus would have more funds to invest. In addition to belonging to a business association, firm-level profit margin is also used to assess the profitability at the firm level. At the market level, the number of local competitors is used as a determinant of profitability. The predicted relationship could be positive or negative. It could be negative because the larger the number of competitors, the closer the firm is to a perfect competition scenario. With more local competition, the firm will achieve normal profits in the long run and will not be able to invest because there will be no profits. However, it could also be positive because the more local competition, the larger the incentive is to invest to differentiate a product and attract market power.

Ownership is also an important factor when determining the level of investment. We control for four different kinds of ownership: individual and family, government, domestic and

foreign. We combined the individual and family together that was privately held. This variable is supposed to represent a more locally owned firm and we predict that the more likely a firm is to be locally owned, the more it will invest. A firm is government owned if it is owned by a government entity. A firm is domestically owned if it is owned by a domestic company. In considering the relationship between government ownership and investment, it stands to reason that a firm that is owned by the government will be less willing to invest. This relationship mainly manifests because a firm that is owned by the government will not be as likely to have as much competition. For example, using a natural monopoly like a water company that is government owned, the company can make use of its economies of scale and thus will not have competition and will be less likely to invest because it has no incentive to produce a new product or improve current operations. A firm that is domestically owned is more likely to invest because it has inside information into the market and will potentially be more profitable. On the other side of that relationship is the negative relationship between foreign owned firms and investment. A firm owned by a foreign company will not have the same amount of internal knowledge of the firm and will face barriers and restrictions that local firms will not be subjected to. This will cause them to not have as many opportunities to invest.

We also include the firm-level decisions to pay for security equipment and professional security services. Theoretically, the security variable could have either a negative or positive relationship. It would make sense that the more likely a firm is to pay for security personnel, the more likely it is to invest because it would want to secure the returns from its investment. Like a few of the variables previously discussed, this variable is subject to potential reverse causality. It is unclear if the relationship is one of increased security payments creating a safer environment in which to invest, or if the increased investment is necessitating a security payment. In a sense,

this relationship between investment and security payments is similar to the relationship between investment and bribery. On the other side, this could also be a negative relationship if property rights are not controlled for. If a firm has to pay more in security, there are fewer resources for it to invest. In this case, the relationship could be negative.

The final firm-level decision is its decision to export directly. Exports are measured as the amount of a firm's sales that are exported directly abroad not through a distributor. It would make sense that if a firm has higher exports, then it there would be a positive impact on investment because of the increased competition. Moreover, with more exports, there will be an increase in demand.

Now turning to the market-level determinants of investment, we will be considering government accountability and property rights in addition to the local competition explained above. At the market-level we will be controlling for the macro-level variables. Government accountability refers to the checks and balances that officials have in the government and if one official is accepting bribes. Namely, the question asks if it is possible to go to a superior official to report the illegal behavior. It would make sense that there would be a positive relationship between accountability and investment. We finally include property rights as a measure of overall business environment. We speculate that the more secure property rights are, the more a firm will invest. Well defined property rights create a secure environment for a firm to invest and make the investment a less risky decision. To take this property rights interpretation a step further, we create an interaction variable between property rights and bribery. Because property rights will theoretically mitigate the effect of the bribe on investment, we predict that this variable will be positive.

An ordinary least squares regression is run in order to quantify the effect of each of these variables on investment and ultimately deduce the relationship between investment and bribery.

V. Empirical Estimation

In order to capture the complexity of the relationship between bribery and investment, the empirical methodgy proceeds in two steps: first examining the effects of bribes on individual firms' investment decision without considering country-industry averages and secondly the relationship between bribery and investment taking into account the average bribe across country and industry.

We model the general relationship between investment and bribery using the robust Ordinary Least Squares regression with heteroscedasticity adjusted standard errors. We controlled for a variety of explanatory variables as well as industry and country dummy variables. The following equation relates investment and bribery:

$$y_i = f\left(B, A, S, P, \Pi, \mathrm{O}_{\mathrm{P,G,D,F}}, S, X, C, D\right) + \xi$$

In this case, the y_i represents the percent of sales that a given firm invests, B is the bribe paid to a government official, A is the age of the firm, S is the size of the firm measured as the number of employees the firm employs, P is if the firm belongs to a business association, Π measures the profit margin , $\mathrm{O}_{\mathrm{P,G,D,F}}$ is a measure of ownership, S is the security payment, X is the amount a firm exports, C is the number of local competitors, D measures the overall market obstacles that the firm has to deal with such as paying for security, government accountability, and property rights, and ξ measures the error term.

V.1 Investment decision without Country-Industry Averages

First we run our regression without taking into account the Country-Industry averages. Because we are not taking these into account, we are not entirely sure what direction the

causality flows—the existence of bribery affecting investment or investment necessitating bribery. Regression (1) in Table 4 represents this relationship.

We can see from equation (1) that that the bribe variable is not significant at the 10% level. This means that we cannot draw any conclusions on the relationship between bribery and investment from this regression. However, there are a number of explanatory variables that are significant in this relationship. In our analysis, we will consider the magnitude, significance and sign of each coefficient.

First we examine the age variable. We natural log of age is significant at the 5% level. First looking at the direction, the relationship between age and investment is negative. This confirms our prediction from earlier and that the older a firm is, the less likely it is to invest. However, we can go beyond just looking at the direction. We can determine the magnitude of the change. Because this variable is transformed with a natural log, the interpretation is different from the other variables. With a one percent increase in the age of a firm, there will be a corresponding .002 percentage point decrease in the amount a firm invests.

The coefficient for employees is not significant at the 10% level and we cannot deduce anything from the coefficients in terms of magnitude or direction. However, it is important to note that the firm size is split up into medium and large firms and comparing their change with the base level, small firms.

Looking at the two measures of profitability, we see that belonging to a business association is significant at the 1% level, but the coefficient for profit margin is not significant at the 10% level. Firms that belong to a business association will invest 6.125 percentage points more than a firm that does not belong to a business association. We were not sure what

direction the causality would go before. Now we see that the association is a highly significant positive relationship.

Next, we have our four measures of ownership: individual and family, government, domestic and foreign. Looking at regression (1) in Table 4, we can see that individual and family ownership is not significant at the 10% level, government ownership and domestic ownership are significant at the 5% level, and foreign ownership is significant at the 10% level. First considering government ownership, a firm that is owned by the government will invest 6.917 percentage points less than a firm that is not owned by the government. This negative relationship reflects what we predicted to happen. On the other side, a firm that is owned by a domestic company will invest 6.601 percent more than a firm that is not owned by a domestic company. This also follows along with our prediction from earlier. Finally, looking at foreign-owned firms, a firm that is foreign owned will invest 6.424 percentage points less than a firm that is not foreign-owned.

Next we consider the firm-level decisions of a firm to pay for security and its decision to export its products directly abroad. Both of these coefficients are significant at the 1% level. First looking at security payments, a firm that pays for security will invest 5.016 percent points more than a firm that does not pay for security. We were not sure about the relationship between security payments and investment. After running the regression, we have realized that the relationship is positive. Looking at exports, a firm that exports directly will invest 8.746 percent more than a firm that does not export directly. This follows along with what we predicted the relationship would be.

Next we look at the market-level indicators. Looking at the number of competitors and government accountability, we see that the relationship is not significant at the 10% level so we

cannot make any conclusions about the magnitude or direction. Just like we did with the employees variable, we compared the 1-3 competitors and the 4 or more competitors with no competitors variable. However, because the coefficient is not significant at the 10% level, we cannot make any conclusions about the relationship between local competition and investment. Finally, we consider the property rights variable. The property rights variable is supposed to give us an indication of the security of the general business environment. The coefficient shows that with a one unit increase in the confidence in the legal system to protect property rights, investment will decrease by 0.914 percentage points. This does not make much intuitive sense. We predict that with a safer legal environment and a more secure environment in which to do business, a firm will invest more. We believe that this relationship could be not significant when adding in additional controls. When there are not appropriate legal parameters set around property rights, people will inherently not feel safe to invest in any type of investment if they are limited to domestic investments. When they have to use their profits in some way, it is unclear where a firm will spend it when it does not feel safe in investing in anything from internal investments to investing in the financial markets. Thus, we do not expect to see a relationship between the legal environment and firm-level investment decisions measured as a percentage of profits. Though there is a significant relationship in the regressions in Table 4, the relationship is only marginally significant at the 10% level. We believe that by adding in additional controls, we are able to mitigate for this effect. We also control for an interaction variable between bribery and property rights and we see that this variable is not significant.

Though we have found that some of the explanatory variables are significant, we cannot conclude anything about the main relationship that we are looking to measure because the coefficient on bribe is not significant. Though it could be feasible that there is no relationship,

the bribe variable could be subject to some biases or the relationship could be subject to endogeneity. As a result, we will use country-industry averages to control for these effects and see if there is a relationship.

V.2 Investment Decisions with Country-Industry Averages

Though the same bribery and investment variables are used in the following regressions, there is a key change that has been made. We take the average country-industry bribe. By doing this, we are able to control for endogeneity and individual sampling bias. By splitting the bribe variable into country-industry averages, we are able to get rid of the bias that comes from the unobservable variables that are correlated to bribery but not to a country or industry (Fisman, 2000). Our results are reflected in regression (2) in Table 4.

The first thing we notice is that when we take the country-industry averages is that the relationship is now significant at the 1% level. When there is a one percentage increase in the average bribe paid, there is a corresponding decrease in investment by 6.941 percentage points. This variable follows the same relationship that we predicted earlier when we first introduced the variables. Here we can quantify the significant negative relationship.

Looking at the explanatory variables, all of the variables that were significant in regression (1) are still significant in regression (2). We will consider age, business association, government ownership, domestic ownership, foreign ownership, security payments, exports, and property rights. Because employees, profit margins, individual and family ownership, local competition, and government accountability are not significant, we will not discuss them. First looking at age, with a 1% increase in the age of a firm, the investment will decrease by .003 percentage points. Looking at business association, a firm that belongs to a business association will invest 5.507 percent points more than a firm that is not a part of a business association.

Considering the variables for ownership, a firm that is owned by the government will invest 6.360 percentage points less than a firm that is not owned by the government. A firm that is owned by a domestic firm will invest 6.483percentage points more than a firm that is not owned by a domestic firm. A firm that is owned by a foreign firm will invest 6.370 percentage points less than a firm that is not owned by a foreign firm. A firm that pays for security will invest 5.563 percentage points more than a firm that does not pay for security. A firm that exports directly will invest 7.453 percentage points more than a firm that does not export directly.

Just like with regression (1), the only market level explanatory variable that is significant is the property rights variable. When a firm has more confidence that the legal system will protect its individual property rights, it will invest 0.822 less in investment. Though this is not what we originally predicted, this relationship is negative and significant just like in regression (1). Though the variable is significant at the 5% level here, we believe that with additional controls, the effect will become insignificant.

Though regression (2) gives us the significant relationship between bribery and investment, there are two large factors that we have yet to control for—country and industry.

V.2.a Additional Controls for Country and Industry

Equations (1) and (2) in Table 4 show the relationship between bribes and investment, and they control for the effects of the explanatory variables. However, there are variations beyond the explanatory variables—namely differences in country and industry. By controlling for industry and country, we are able to see the effect of bribery on investment.

First examining the industry variables, the variable is coded so that each firm is split into the industry where it draws the most (more than 50%) of its sales. The industry variable has 8 different categories: manufacturing, retail, mining, construction, transportation, real estate, hotel,

and other. Because the industry variables are coded based on the base level, "other" industry, the relationship does not explain the effect of each individual industry in investment, but rather each dummy variable relative to the base and how that affects investment. The industry dummy variables are not the focus of this study, and they are not included in Table 4.

Looking at regression (3), the average bribe variable is still significant at the 1% level. With a one unit increase in the average bribe, there will be a 7.653 percentage point decrease in investment. This coefficient is larger than the coefficient in regression (2), suggesting that when a firm controls for the industry, there is a larger effect of bribery on investment.

The coefficients for the explanatory variables are very comparable to the explanatory variables in regression (2). Age, business association, government ownership, domestic ownership, foreign ownership, security payments, exports, and property rights are all significant, but employees, profit margins, individual and family ownership, local competition, and government accountability are not significant. A 1% increase in the age of a firm will result in a .002 percentage point decrease in investment. A firm that is a part of a business association will invest 5.453 percentage points more than a firm that is not part of a business association. A firm that is owned by the government will invest 5.920 percentage points less than a firm that is not owned by the government. A firm that is domestically owned will invest 6.750 percentage points more than a firm that is not owned domestically. A firm that is owned by a foreign company will invest 6.685 percentage points less than a firm that is not owned by a foreign entity. A firm that pays for security will invest 5.575 percentage points more than a firm that does not pay for security. A firm that exports directly will invest 8.050 percentage points more than a firm that does not export directly. These variables are all consistent with what we predicted at the beginning of this discussion and all are very similar to the coefficients in regression (2). Just like

with regressions (1) and (2), we see that the coefficient on property rights is significant and negative. Though we are not sure about this relationship, the predicted cause is discussed above.

Equation (4) estimates the regression controlling for country broken up into income groups. The groupings follow the same groupings that De Rosa, Gooroochurn and Görg used in their analysis and the income levels are reflective of World Bank Classification in 2005. The World Bank classifies each country into four categories by using a country's Gross National Income per capita: high income, upper middle income, lower middle income, low income (UNCTAD, 2005). More than $9,386 is high income, upper middle income is $3,306-$9,385, lower middle income is $766-$3,305 and low income is less than $765 (UNCTAD, 2005). The distribution of income is presented in Table 2 in the appendix. With a fairly wide range of different income levels, we are able to control for country-level specifics such as development level (De Rosa, 2010). Looking at regression (4) in table 4, all the income levels are compared to the base level, high income. Looking at the results after controlling for country, the coefficients are very similar to those in regression (3) with the same variables as significant and at the same levels of significance.

The bribe variable is again significant at the 1% level and with a one percent increase in the average bribe, there is a corresponding 4.456 percentage point decrease in investment. This magnitude is significantly smaller from the magnitude in equation (3) meaning that the countries by income variable is controlling for more difference than the industries variable. Just like regression (3), the employees, profit margins, individual and family ownership, local competition, government accountability, and bribe-property interaction variables are not significant and will not be discussed.

A 1% increase in the age of a firm will result in a .003 percentage point decrease in investment. A firm that is a part of a business association will invest 5.043 percentage points more than a firm that is not part of a business association. A firm that is owned by the government will invest 5.718 percentage points less than a firm that is not owned by the government. A firm that is domestically owned will invest 5.834 percentage points more than a firm that is not owned domestically. A firm that is owned by a foreign company will invest 6.057 percentage points less than a firm that is not owned by a foreign entity. A firm that pays for security will invest 5.868 percentage points more than a firm that does not pay for security. A firm that exports directly will invest 6.584 percentage points more than a firm that does not export directly. These variables are all consistent with what we predicted at the beginning of this discussion and all are very similar to the coefficients in regression (3). Just like with the other regressions, the coefficient on the property rights is significant and negative.

Finally, in regression (5), we control for both industry and country sorted by income and we have our best fit model. Because this equation has the most controls and is the most specific, we believe that this model is the most accurate representation of the relationship between investment and bribery. The magnitude, direction and significance of each coefficient follow along with regressions (2) through (4). A 1% increase in the age of a firm will result in a .003 percentage point decrease in investment. A firm that is a part of a business association will invest 5.020 percentage points more than a firm that is not part of a business association. A firm that is owned by the government will invest 5.249 percentage points less than a firm that is not owned by the government. A firm that is domestically owned will invest 5.950 percentage points more than a firm that is not owned domestically. A firm that is owned by a foreign company will invest 6.556 percentage points less than a firm that is not owned by a foreign entity. A firm that

pays for security will invest 5.888 percentage points more than a firm that does not pay for security. A firm that exports directly will invest 6.980 percentage points more than a firm that does not export directly. Just like before, the more confident a firm is that there are proper legal controls to protect its property rights, there will be a decrease of 0.805 percentage points in investment. Because employees, profit margins, individual and family ownership, local competition, government accountability, and bribe-property interaction variables are not significant, we cannot make any conclusions about the relationship between each of these variables and investment.

After multiple rounds of testing and different controls on our variables, we find that our results are consistent. Also, because the variable is significant and negative, we believe that the country-industry average on the bribe variable is doing a good job of controlling for perception bias. In order to double check that this is an appropriate measure, we will be running instrumental variable analysis.

VI. Additional Robustness Checks

Because endogeneity is a concern when dealing with investment and bribery, we must make sure that we have chosen the best variables to specify the model and we have controlled for endogeneity effects so that the model is accurately representing the relationship between investment and bribery. Though we have already controlled for endogeneity issues using the country-industry averages, it is possible that either the averages did not control for the entire problem or that there may be another and more comprehensive way to control for the endogeneity issue. We perform a second check of our model by using instrumental variable testing and two-stage least squares regressions.

VI. 1 Methodology

In order to make sure that our model is properly specified, we will be running instrumental variable testing and the two-stage least squares method. Endogeneity occurs when one of the explanatory variables is correlated with the error term. The effect of this endogeneity would result in omitted variables that are correlated with both the dependent variable and an explanatory variable. The effect of the bribe is measured with the errors, and the decision to invest and bribe are simultaneously determined (Yamano). In order to test for endogeneity, we must develop an instrumental variable. This variable is uncorrelated with the error term and the dependent variable but strongly correlated with the potentially endogenous explanatory variable. By controlling for the effect of the instrumental variable, we are able to cut the correlation between the error term and the explanatory variable (Yamano). After specifying the instrumental variable, we are able to run the two-stage least squares regression. We will generate the residuals using the instrumental variable to control for the effect of the endogenous variable and use this value to predict the value of the endogenous variable. We will then use these predicted vales in place of the observed values of the endogenous variable and see the relationship between this new predicted variable in relation to the dependent variable controlling for all other exogenous explanatory variables.

Specifically for this experiment, we believe that bribery might be an endogenous variable. We will be using government accountability as our instrumental variable. Looking at Table 4, government accountability is not significant in any of the regressions we ran. This tells us that there is no significant relationship between investment and government accountability. Theoretically, government accountability makes sense as the instrumental variable. It makes sense that government accountability would be correlated with bribery, but not correlated with

investment because bribery is the intermediary between investment and government accountability. Because of this relationship, government accountability satisfies the criteria for an instrumental variable.

First, we use two stage least squares on our final model to see if the country-industry averages control for the endogeneity effects.

VI. 2 Checking the validity of the Country-Industry Averages

First, we begin by testing to see if the average bribe variable appropriately controls for the endogeneity problem. We will first run instrumental variable analysis and compute the Wu-Hausman F-test statistic and the Durbin-Wu-Hausman Chi squared test statistics in order to see if there is still an endogeneity issue.

After running the two-step least squares regression, we find that the coefficient on the bribe variable is not significant at the 10% level. From the two stage least squares model, we controlled for both industry and country income level. The p-value for the average bribe variable is 0.728. We then use the Wu-Haussman F-test and the Durbin-Wu-Hausman Chi-squared test the endogeneity. With both of these statistics, the null hypothesis is that the regressor is exogenous. We are able to calculate the F-statistic to be 0.204 with a p-value of 0.651 and the Chi-Squared test statistic to be 0.205 with a p-value to be 0.650. The test statistics are not significant at the 10% level. Because we fail to reject the null hypothesis, we cannot conclude that the average bribe variable is endogenous. Because we ran the tests on the average bribe variable that was coded using the country-industry averages, we can conclude that the model that we had previously used properly controlled for endogeneity.

VI.3 Controlling for Obstacles to Business

Finally, we run one last test of our model to ensure that the relationship between average bribe and investment is what we predicted by controlling for general obstacles to doing business. The BEEPS survey lists twenty-one different obstacles to business and firms are supposed to answer if each obstacle is a no obstacle, a minor obstacle, a moderate obstacle or a major obstacle. The obstacles to business include financing, telecommunications, electricity, transportation, access to land, tax systems, customs and licensing, labor constraints, macroeconomic instability, the judicial system, corruption and illegal activities, and contracts. We control for all of these obstacles to check the robustness of our estimate and examine more fully the general business environment.

We use our best fit model, Equation (5) from Table 4, and we first control for the reported values of the obstacles. After controlling for all of the 21 obstacles, our average bribe variable is still highly significant at the .1% level and a coefficient of -4.414. This means that with a one percent increase in average bribe, there will be a decrease in investment of 4.414 percentage points. It is also interesting to consider the coefficients of the obstacle variables in order to determine the relationship and significance of each of the obstacles. From the regression, we find that telecommunications, access to land, the tax rate, tax administration, the skills and education of the labor force, mafia activity and contract violations by customers and suppliers are all significant at the 10% level. It is also interesting to note that financing and macroeconomic instability are not significant at the 10% level.

Next, we consider looking at each obstacle as a binary variable. Any obstacle that was either a moderate or major obstacle is now an obstacle and an obstacle that was either a minor obstacle or no obstacle is now treated as not being an obstacle. Looking at these results, the bribe

variable is highly significant and has a negative coefficient still holds. When we examine which obstacles are significant, we see that telecommunications, land, tax rate, tax administration, education of the labor force, mafia activity and violating contracts are still significant at the 10% level. Also, when we break the obstacles variable into the binary variable, we see that corruption is now significant at the 10% level.

Finally, we consider the country-industry averages for each one of the obstacle variables. Just like with the bribe variable, there may be significant differences in the obstacles faced by different firms operating in different industries in different countries. When we take the country industry averages for the obstacles, the same highly significant negative relationship between average bribe and investment remains. However, many of the obstacle variables that were not significant at the 10% level before are now significant including infrastructure (electricity and transportation), customs and licenses, labor, uncertainty about regulatory policies, theft, and anticompetitive practices. These are now significant at the 10% level in addition to the variables for telecommunications, land, taxes, education opportunities for employees, mafia activity and firms violating contracts.

Though we have different results from each of the different ways we categorize the obstacles variable, we see that the bribe variable is consistently highly significant and negative throughout all of the testing. Additionally, no matter how we changed the obstacles variables, there were a few obstacles that were consistently significant—land, tax rate, tax administration, education availability, mafia activity, and contract violations. Of the obstacles that were consistently significant, land accessibility, tax rate, education and breaking contract variables all had positive signs. This means that when these variables are perceived as a greater obstacle, the

more a firm is going to invest. Of the same variables, telecommunications, tax administration and mafia activity have a negative sign.

VII. Concluding Remarks

These results provide very unique insights on the relationship between a bribery payment and investment. Overall, an increase in the amount paid in a bribe, has a significant negative effect on investment in a country. Using country-industry averages to measure bribes, we were able to control for the potential endogeneity problem and individual perception and self-reporting biases. Even with these controls, our coefficient for bribe still remained negative and significant at the 1% level. The key issue when dealing with the relationship between investment and bribery is controlling for endogeneity. We were able adequately control for their impact on our results. Even after multiple iterations, our results proved robust.

In addition, we have found that many of our explanatory variables are significantly related to investment in addition to the relationship between investment and bribery being robust. Furthermore, we were able to examine each of the different obstacles to doing business individually and were able to isolate several obstacles that were significantly affecting investment decisions.

For further study, we may need to control for other variables that could be subject to endogeneity—namely security payments. We also used government accountability as the instrumental variable for bribe. One of the biggest problems in instrumental variable analysis and in the two-staged least squares model is to find an appropriate instrumental variable. A different instrumental variable could potentially yield a different result. Additionally, we could also examine each industry individually. When we were controlling for the industry dummy variables, there were specific industries that were significant. It would be interesting to look at

the relationship between bribery and investment controlling for the different industries. There is much more work to be done in the field, but this paper establishes the framework for the work with this dataset and looking at the relationship between bribery and investment.

The purpose of this testing was not only to reevaluate our previous methods but also to make sure that we have an accurate picture of the determinants of investment. We confirmed the previous model by controlling for 21 obstacles to business. We have confirmed Paolo Mauro's empirical testing in 1995 and validated the effect of his studies in addition to those of Fisman, DeRosa and DeWaldemar. We have found a significant negative relationship between bribery and investment decisions.

VIII. Appendices

Table 1: Summary Statistics for All Variables that were used in regression analysis

Variable Name	# of Obs	Mean	Min	Max	Standard Deviation	Survey Question
Investment	7781	49.53	0	100	40.07	What percentage of your total profits in 2003 were invested in the firm in 2004?
Bribe	8462	1.034	0	50	2.445	On average, what percent of total annual sales do firms like yours typically pay in unofficial payments/gifts to public officials?
Average Bribe	9654	1.036	0	5	.6907	On average, what percent of total annual sales do firm's like yours typically pay in unofficial payments/gifts to public officials?
Ln(Age)	9647	2.407	1.386	5.192	0.740	2005-founding year
Firm Size	9654	2.39	2	4	0.66	How many permanent, full-time employees does your firm have now? (give an estimate number) Small: Between 2 and 49 Medium: Between 50 and 249 Large: 250 or more
Business Association	9655	0.40	0	1	0.49	Is your firm a member of a business association or chamber of commerce?
Profit Margin	8460	22.74	0	401	14.41	Considering your main product line or main line of services in the domestic market, by what margin does your sales price exceed your operating costs (i.e., the cost material inputs plus wage costs but not overheads and depreciation)
Ownership: Individual and Family	9655	.723	0	1	.447	Which of the following best describes the largest shareholder(s) in your firm? Individual and Family Other
Ownership: Government	9655	0.09	0	1	0.28	Which of the following best describes the largest shareholder(s) in your firm? Government Other
Ownership: Domestic	9655	0.05	0	1	0.22	Which of the following best describes the largest shareholder(s) in your firm? Domestic company Other
Ownership: Foreign	9655	0.05	0	1	0.23	Which of the following best describes the largest shareholder(s) in your firm? Foreign company Other
Security Payments	9636	0.50	0	1	0.50	Do you pay for security (e.g., equipment, personnel, or professional security services?
Exports	9655	0.23	0	1	0.42	What percentage of your firm's sales are exported directly?
Local Competition	8411	2.64	1	3	0.59	How many competitors in the local market do you currently face for your main product line or service? None 1 – 3 4 or more
Government Accountability	8744	3.05	1	6	1.58	How often is the following statement true? "If a government agent acts against the rules I can usually go to another official or to his superior and get the correct treatment without recourse to unofficial payments/gifts." Never Seldom

						Sometimes Frequently Usually Always
Property Rights	9144	3.527	1	4	1.394	To what degree do you agree with this statement? “I am confident that the legal system will uphold my contract and property rights in business disputes” Strongly Disagree Disagree in Most Cases Tend to Disagree Tend to Agree Agree in Most Cases Strongly Agree
(Bribe)(Property Rights)	8018	3.313	0	160	8.304	To what degree do you agree with this statement? “I am confident that the legal system will uphold my contract and property rights in business disputes” Strongly Disagree Disagree in Most Cases Tend to Disagree Tend to Agree Agree in Most Cases Strongly Agree
Obstacles to Business	—	—	—	—	—	Can you tell me how problematic are these different factors for the operation and growth of your business. Ranked on No Obstacle, Minor Obstacle, Moderate Obstacle, Major Obstacle Access to financing (e.g., collateral required or financing not available from banks) Cost of financing (e.g., interest rates and charges) Telecommunications Electricity Transportation Access to land Title or leasing of land Tax rates Tax administration Customs and trade regulations Business licensing and permits Labour regulations Skills and education of available workers Uncertainty about regulatory policies Macroeconomic instability (inflation, exchange rate) Functioning of the judiciary Corruption Street crime, theft and disorder Organised crime/mafia Anti-competitive practices of other Competitors Contract violations by customers and suppliers

Table 2: Distribution of Countries based on Income Level

Country	Income Group
Croatia	High income
Estonia	High income
Slovenia	High income
Czech Republic	High income
Hungary	High income
Slovak Republic	High income
Belarus	Upper Middle Income
Bosnia and Herzegovina	Upper Middle Income
Bulgaria	Upper Middle Income
Kazakhstan	Upper Middle Income
Latvia	Upper Middle Income
Lithuania	Upper Middle Income
Macedonia, FYR	Upper Middle Income
Montenegro	Upper Middle Income
Poland	Upper Middle Income
Romania	Upper Middle Income
Russian Federation	Upper Middle Income
Serbia	Upper Middle Income
Turkey	Upper Middle Income
Albania	Lower Middle Income
Armenia	Lower Middle Income
Azerbaijan	Lower Middle Income
Georgia	Lower Middle Income
Moldova	Lower Middle Income
Ukraine	Lower Middle Income
Kyrgyz Republic	Low Income
Tajikistan	Low Income
Uzbekistan	Low Income

Source: World Bank

Table 3: Correlation Matrix for all Variables

	Invest	Bribe	Avg. Bribe	Age	Emp	Bus. Assoc	Profit Marg.	Own: Indiv. Fam	Own: Gov	Own: Dom	Own: Foreign	Sec. Pay.	Export	Local Comp	Gov. Acct.	Prop. Rights	(Bribe) (Prop Rights)
Invest	1.000																
Bribe	-0.019	1.000															
Avg. Bribe	-0.124	0.285	1.000														
Age	-0.003	-0.085	-0.101	1.000													
Emp.	0.042	-0.059	-0.016	0.338	1.000												
Bus. Assoc.	0.097	-0.019	-0.089	0.201	0.218	1.000											
Profit Margin	-0.009	0.014	-0.033	-0.025	-0.024	0.007	1.000										
Own: Indiv Fam	0.010	0.051	-0.010	-0.255	-0.339	-0.113	0.012	1.000									
Own: Gov	-0.048	-0.028	0.021	0.294	0.257	0.030	-0.038	-0.464	1.000								
Own: Dom	0.042	-0.031	-0.009	0.068	0.119	0.055	0.003	-0.415	-0.058	1.000							
Own: Foreign	-0.012	-0.003	0.001	0.011	0.159	0.091	0.035	-0.387	-0.054	-0.049	1.000						
Sec. Pay	0.078	-0.009	0.038	0.126	0.242	0.153	0.022	-0.143	0.074	0.049	0.087	1.000					
Export	0.104	-0.048	-0.131	0.182	0.261	0.234	0.025	-0.108	0.022	0.039	0.137	0.119	1.000				
Local Comp	0.004	0.031	0.006	-0.086	-0.152	-0.036	-0.014	0.112	-0.110	-0.055	-0.046	-0.058	-0.124	1.000			
Gov Acct	0.000	-0.081	-0.052	0.064	0.065	0.064	0.018	-0.040	0.057	0.009	0.009	0.020	0.053	-0.009	1.000		
Prop Rights	-0.017	-0.122	-0.010	0.010	0.095	0.057	0.010	-0.072	0.051	0.043	0.024	0.048	0.020	-0.034	0.255	1.000	
(Bribe) (Prop Rights)	-0.020	0.883	0.285	-0.077	-0.044	-0.016	0.022	0.037	-0.011	-0.025	-0.007	-0.009	-0.049	0.018	-0.038	0.074	1.000

Table 4: Model Using Country-Industry Averages for Bribery

	VARIABLES	(1) Investment	(2) Investment	(3) Investment	(4) Investment	(5) Investment
	Bribe	-0.520				
		(0.462)				
	Average Bribe		-6.941***	-7.653***	-4.456***	-4.958***
			(0.834)	(0.856)	(0.927)	(0.992)
Firm Level	Ln(Age)	-1.994**	-2.520***	-2.336***	-2.866***	-2.663***
		(0.887)	(0.887)	(0.892)	(0.879)	(0.886)
	Employees					
	Medium Firm	1.596	1.913	1.892	2.340	2.375
		(1.521)	(1.510)	(1.521)	(1.509)	(1.524)
	Large	2.489	3.009	2.221	3.461	2.795
		(2.307)	(2.285)	(2.311)	(2.273)	(2.302)
	Business Association	6.125***	5.507***	5.453***	5.043***	5.020***
		(1.214)	(1.211)	(1.215)	(1.204)	(1.209)
	Profit Margin	-0.046	-0.059	-0.035	-0.065	-0.040
		(0.042)	(0.042)	(0.042)	(0.042)	(0.042)
	Ownership: Individual and Family	1.415	1.074	0.678	1.244	0.766
		(2.105)	(2.091)	(2.102)	(2.103)	(2.111)
	Ownership: Government	-6.917**	-6.360**	-5.920*	-5.718*	-5.249*
		(3.147)	(3.132)	(3.146)	(3.145)	(3.161)
	Ownership: Domestic	6.601**	6.483**	6.750**	5.834*	5.950*
		(3.219)	(3.192)	(3.216)	(3.185)	(3.210)
	Ownership: Foreign	-6.424*	-6.370*	-6.685**	-6.057*	-6.556*
		(3.451)	(3.401)	(3.402)	(3.402)	(3.406)
	Security Payment	5.016***	5.563***	5.575***	5.868***	5.888***
		(1.146)	(1.140)	(1.144)	(1.141)	(1.145)
	Exports	8.746***	7.453***	8.050***	6.584***	6.980***
		(1.507)	(1.509)	(1.529)	(1.506)	(1.532)
Market Level	Local Competition					
	1-3 Competitors	3.993	4.289	4.359	4.085	4.053
		(2.756)	(2.740)	(2.754)	(2.746)	(2.758)
	4 or More	3.951	4.022	3.799	3.206	2.984
		(2.605)	(2.590)	(2.613)	(2.612)	(2.631)
	Government Accountability	-0.009	-0.092	-0.054	-0.146	-0.102
		(0.395)	(0.393)	(0.392)	(0.393)	(0.392)
	Property Rights	-0.914**	-0.822*	-0.849**	-0.765*	-0.805*
		(0.464)	(0.427)	(0.427)	(0.427)	(0.427)
	(Bribe)(Property Rights)	0.078	0.089	0.085	0.089	0.084
		(0.144)	(0.064)	(0.064)	(0.064)	(0.064)
	Constant	45.635***	54.011***	49.130***	60.013***	55.170***
		(4.339)	(4.435)	(5.098)	(4.557)	(5.189)
	Observations	4,985	4,985	4,965	4,985	4,965
	R-squared	0.028	0.041	0.047	0.049	0.054
	F(16,)	8.449	12.90			
	F(26,)					10.74
	F(19,)				12.93	
	F(23,)			10.76		
	Controlling for Industry	No	No	Yes	No	Yes
	Controlling for Country by Income	No	No	No	Yes	Yes

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Figures

Figure 1: Bribe and Investment by Country

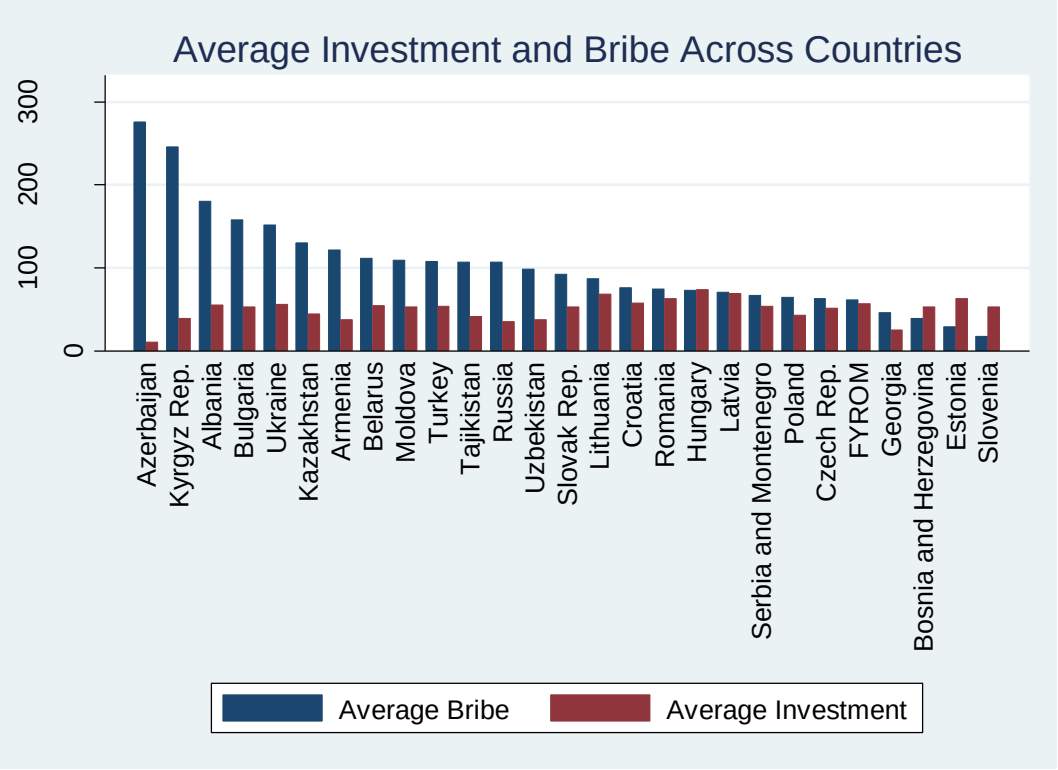

Figure 2: Age

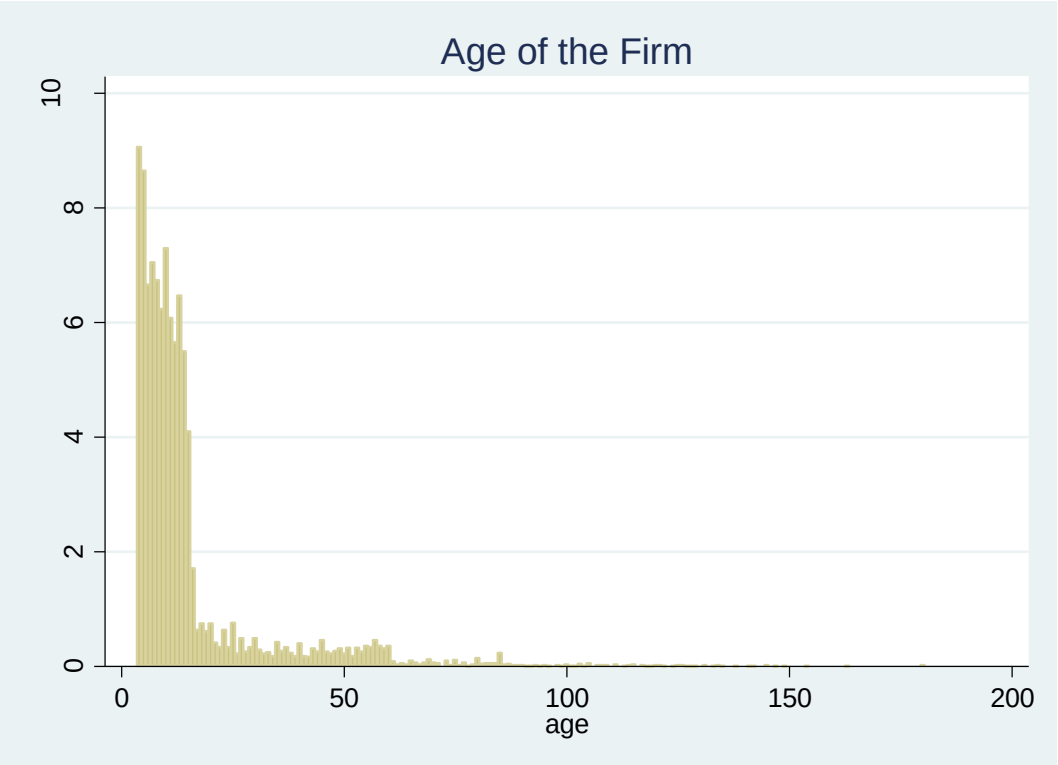

Figure 3: Natural Log of Age

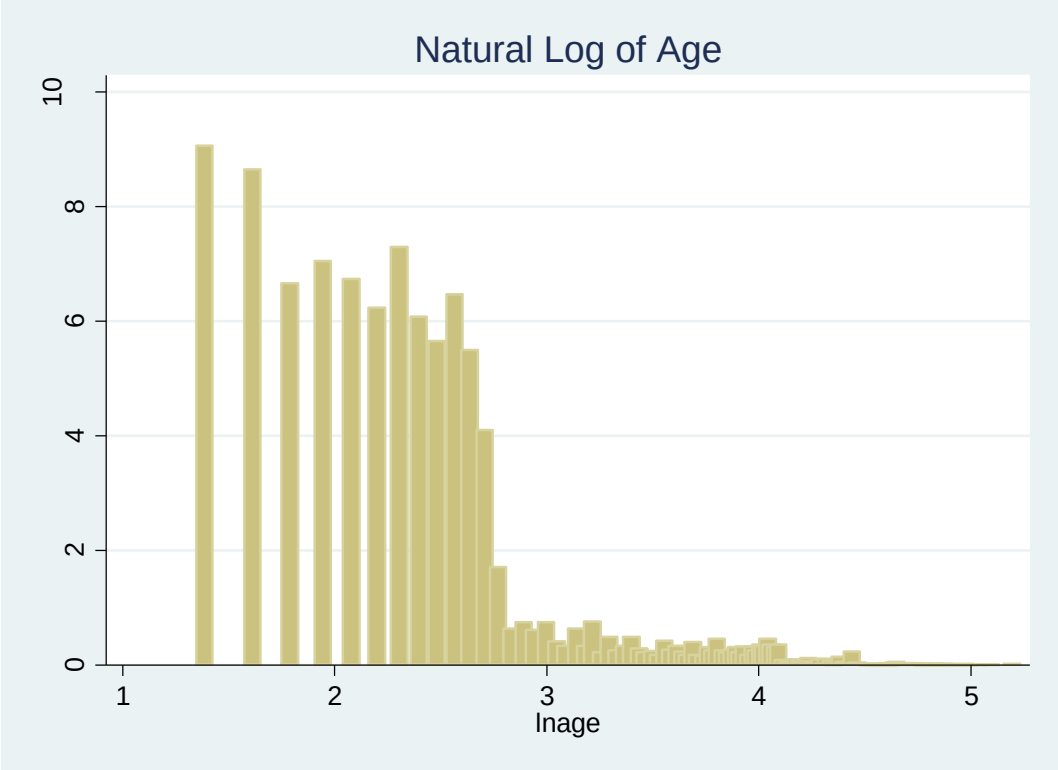

Figure 4: Employees

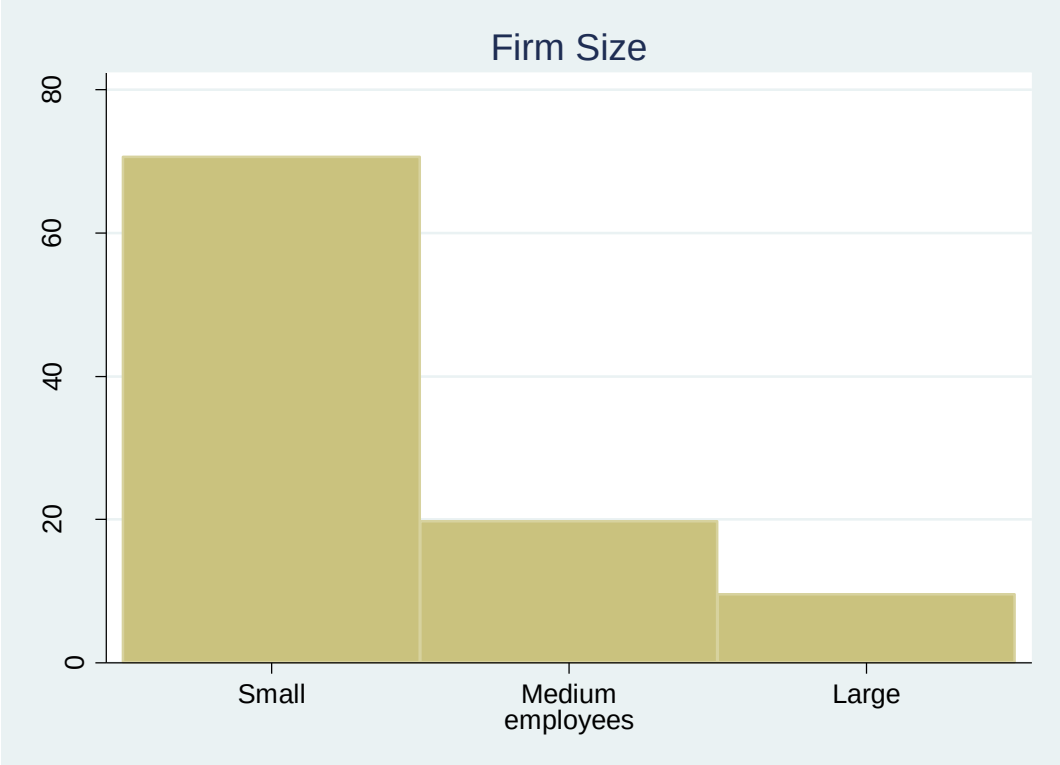

Figure 5: Business Association

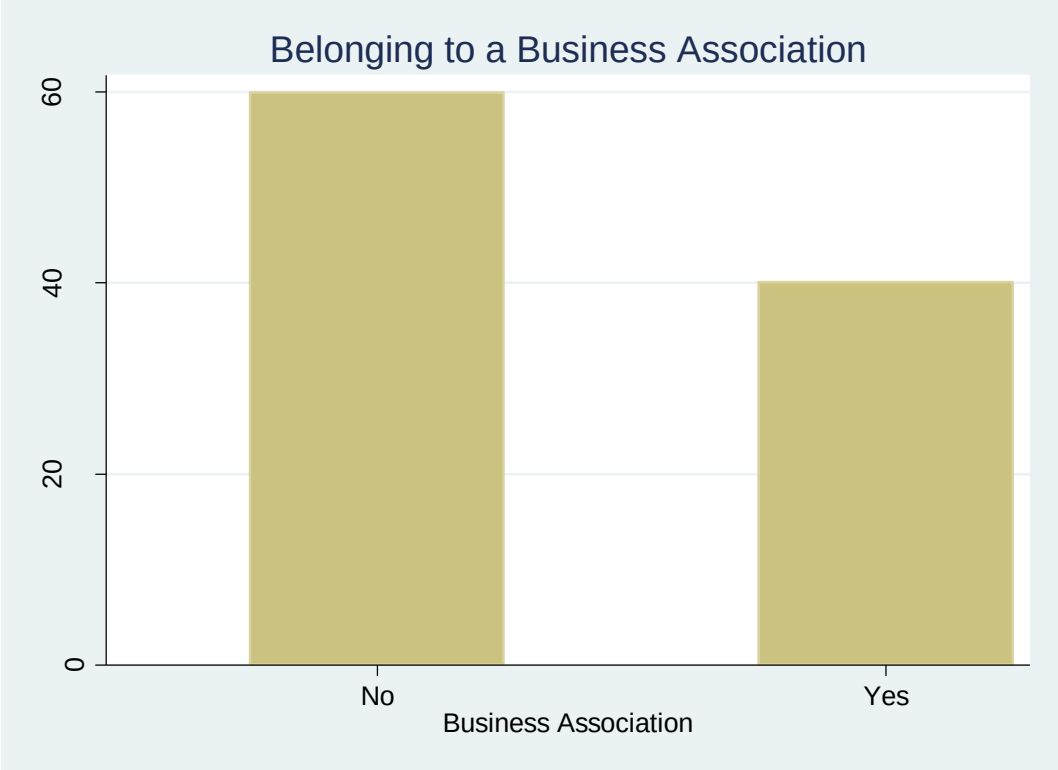

Figure 6: Profit Margin

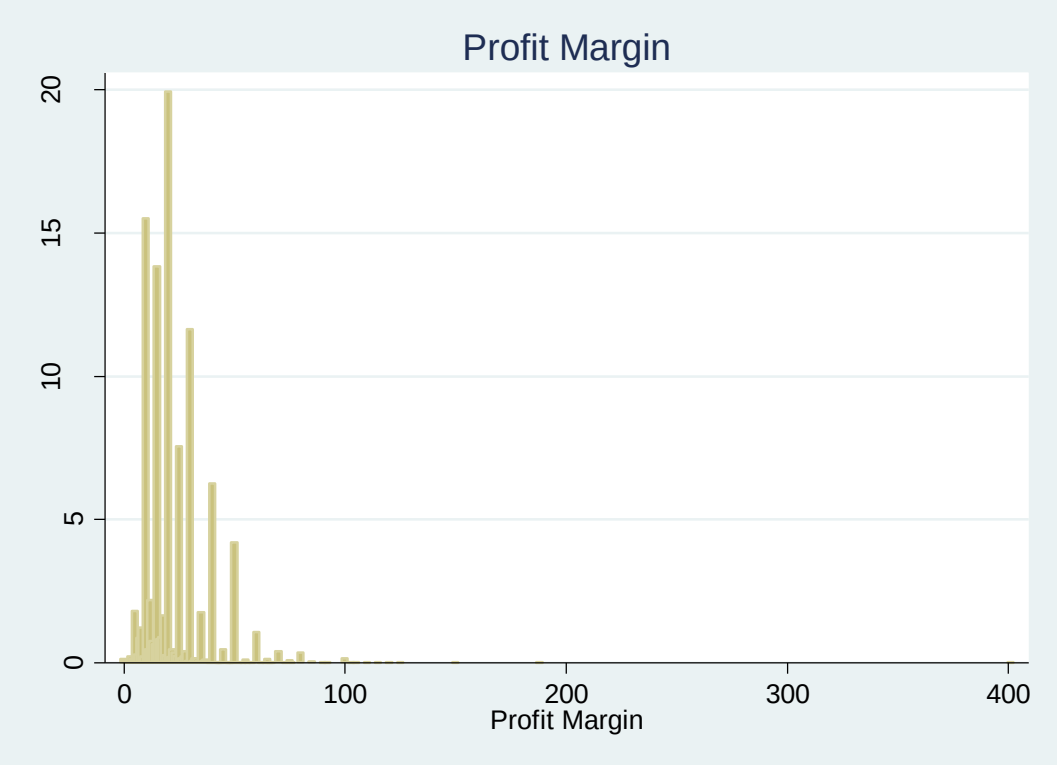

Figure 7: Ownership: Individual and Family

Figure 8: Ownership: Government

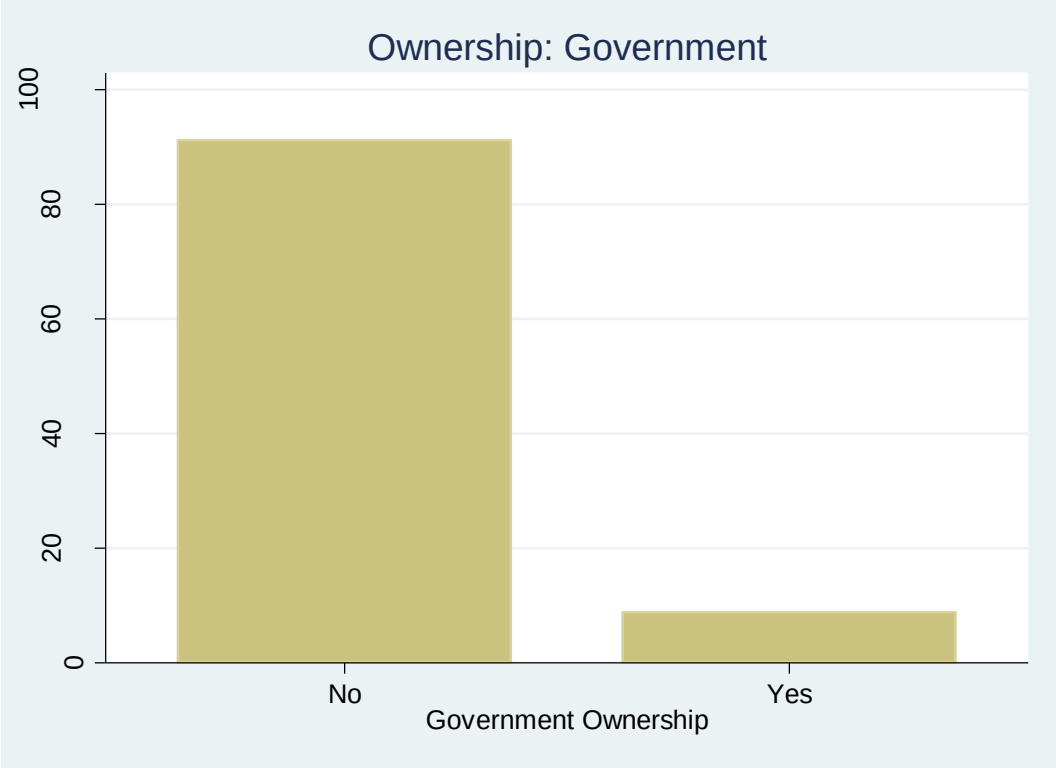

Figure 9: Ownership: Foreign

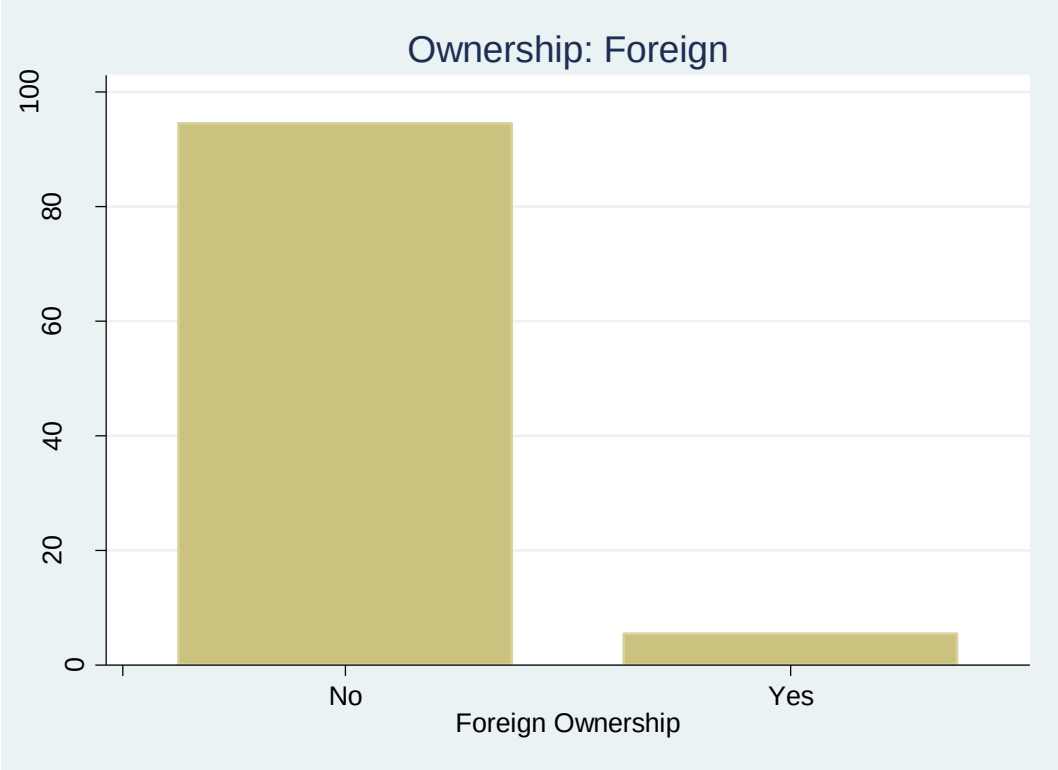

Figure 10: Security Payment

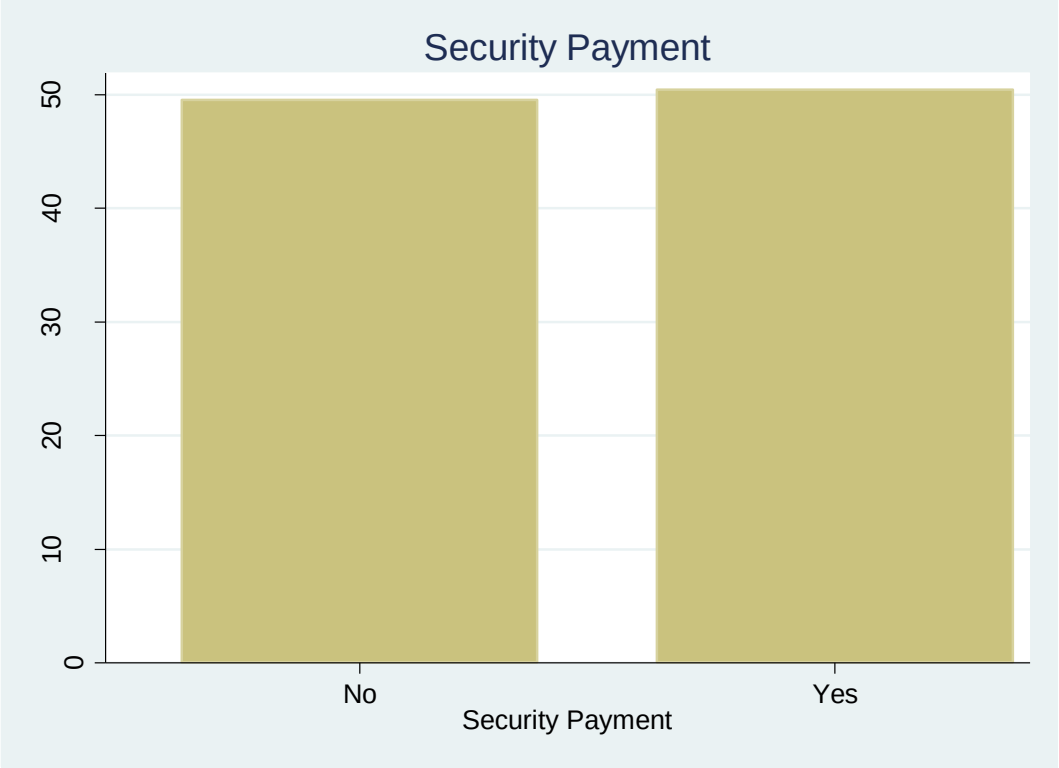

Figure 11: Exports

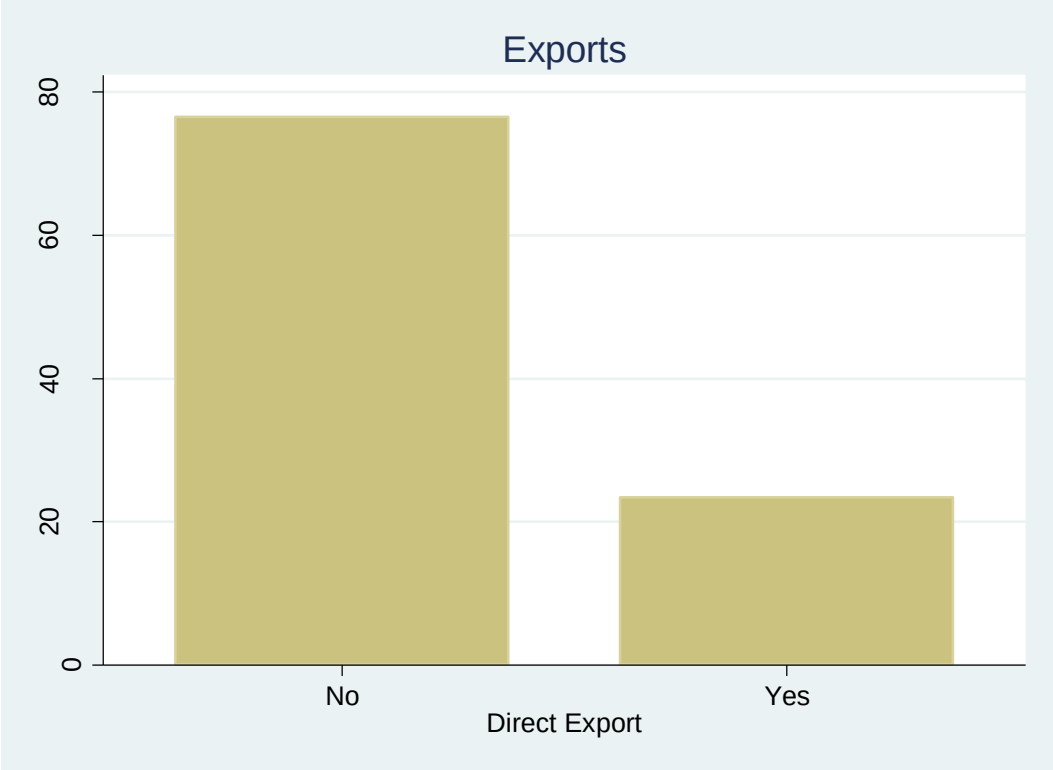

Figure 12: Local Competition

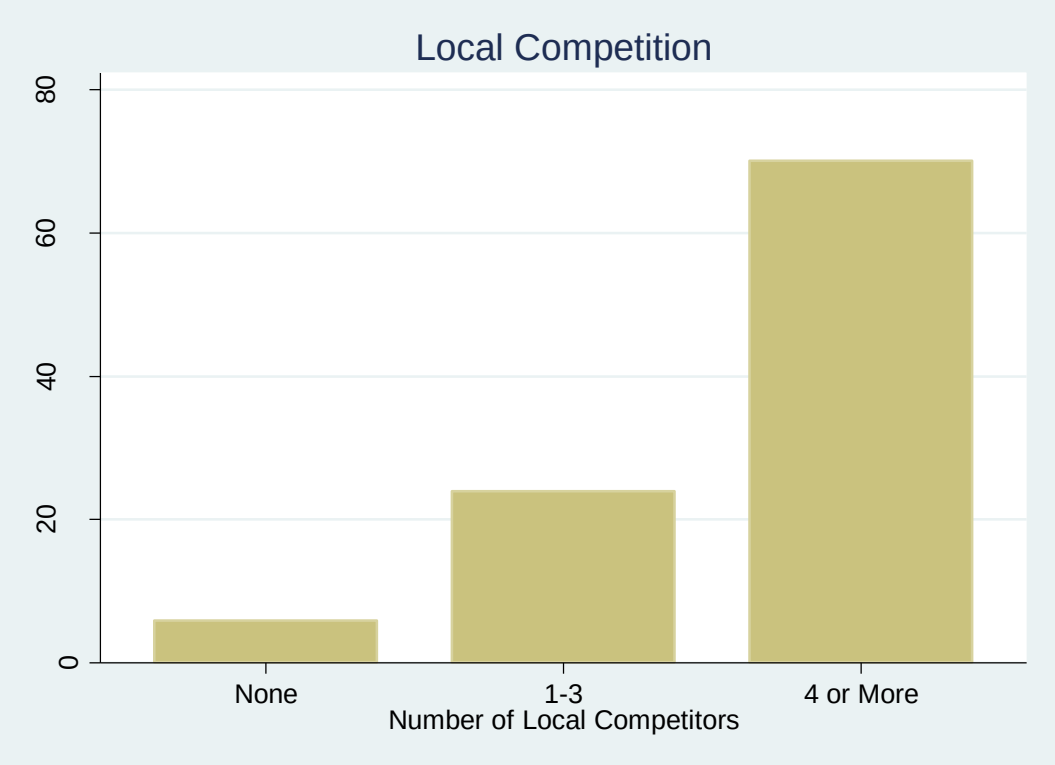

Figure 13: Government Accountability

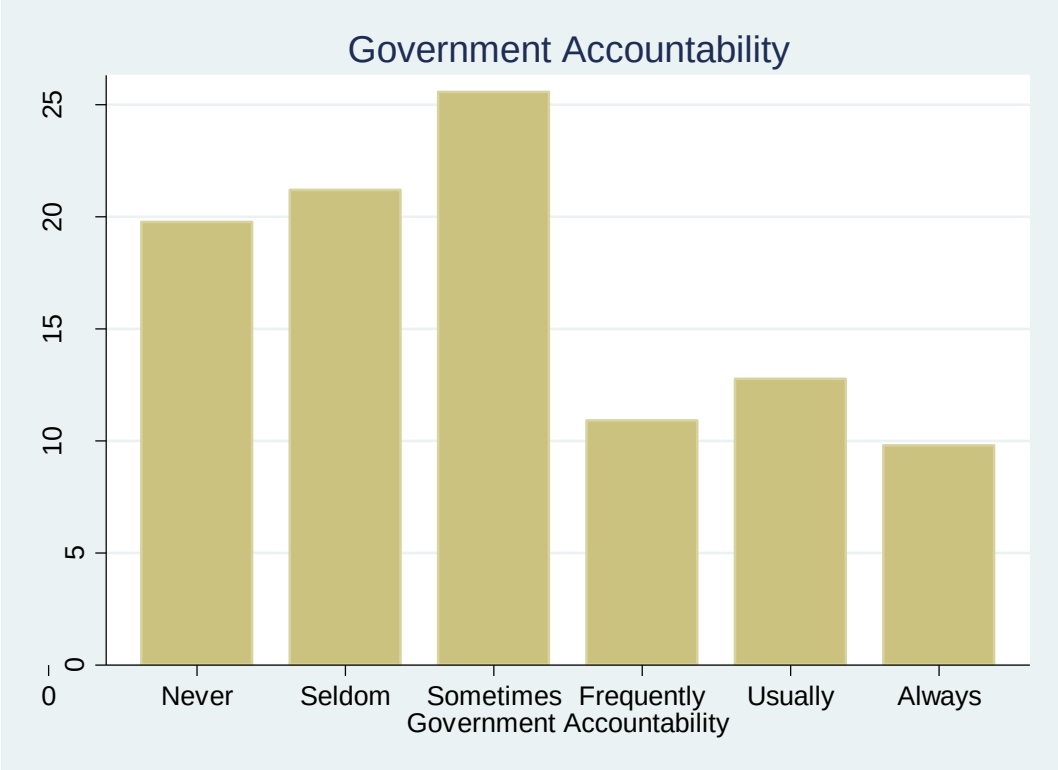

Figure 14: Property Rights

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