

Inward Foreign Investment, Corruption and Firm's Ability: Firm-level Evidence from the Transition Economies*

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Abstract

This paper presents role of information and corruption on the structure of ownership in the foreign invested enterprises (FIEs) and share-distribution among the local firm and the foreign investor. The local firm is modeled as an informed agent who possesses valuable knowledge about host government's policies (policy in local partner's country), and how to lobby and bribe effectively to change the formation or implementation of the policies. The theoretical model predicts that higher the ability of a local firm in these practices, greater the share the foreign investor is willing to provide to that agent. Local firm's share also increases with the increase in the proportion of high-ability agent in the population. A series of estimation procedures including ordinal regression analysis is applied to firm-level data from twenty-eight transition economies. Empirical evidence shows that local firm's ability in lobbying and having policy-related information attracts foreign investment. However, once the foreign investment relationship is established, ability to influence host government's policy by unofficial means plays a vital role in increasing local firm's share.

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I. The Issues

A firm that wishes to establish a cross-border investment might send a manager from the centre to establish and run their local operations in the other country or it might partner-up with a local firm*. If the local firm possesses superior ability to deal with host country-specific settings compared to other firms in the same line of business, this ability may increase the value of the business considerably. Here country-specific settings mean knowledge about host government's policy, how to lobby effectively and how to effect formation and implementation of government's policy by unofficial means. It is presumed that the foreign investor is unable to possess any such quality. In this regard, I wish to explore how these qualities of the local firm is affecting the choice of ordinary shares or voting stock that the foreign investor is willing to hold in a foreign invested enterprise (FIE).

The following intuitive illustration may help to depict one possible effect of the host country's corruption and policy-related information on foreign investor's strategic choice. If the authorities in a host country are corrupt and a low entree fee for any establishment of business-relation is their deliberate backdrop to earn a flow of unofficial payments in a frequent basis later on, a foreign investor may find himself in a trapping situation. Attractively inexpensive and easily accessible entry may only prove to be a set-up to encourage commitment from the foreign investor and once the commitment is there, the "popular" practice of transaction of unofficial payments would continue to take place and weak legal structure would further accentuate the situation for a foreign investor. In such a business environment if an investor can partner up with a local firm that can supply valuable information beforehand and knows how to bribe efficiently (knows rules and regulations and the "loopholes", knows how much to bribe, can bribe "to get things done" or at least knows how not to remain trapped), it can significantly improve its situation. Because there is this scope that the corrupt authorities are willing to increase their

* Throughout this paper, the investor is addressed as the foreign firm and the local firm's country of nationality is termed as the host country. This relationship is defined as direct foreign relationship if the foreign firm holds at least ten percent share in the foreign invested enterprise (FIE).

income from unofficial payments as well. The question I wish to address in this context is as follows:

If knowing about government policies and being able to affect them either legally (by lobbying) or illegally (by unofficial payments) are considered as an ability of a local firm, how likely it would be for the foreign firm to leave a particular amount of share to that local partner in recognition of that ability?

Relationship between cross border investments, host-country specific characteristics and partnership with local firms are by and large explored in a fairly large amount of published and ongoing research works. In this literature, political environment, corruption, governance and property rights tend to receive considerable importance among all host-specific factors. Focus of the researchers vary among good many aspects such as effects of transparency issues on foreign portfolio holdings (Gaston and Wei, 2005), political environment and institutional determinants of FDI (Henisz, 2000), effect of corruption on compositions of FDI (Smarzynska and Wei, 2000) and corruption appearing as a deterrence for FDI (Wei and Hall, 2001; Wei, 2000), only to name a few. *Part II* briefly presents further details of the existing literature in the present context. The current research offers a somewhat different and intriguing aspect by including a broad array of ability parameters at the firm-level that contribute in value-adding or cost-reducing activities. To my knowledge, this linkage of legal as well as illegal activities of the firm with foreign investment has not been addressed in other research work so far.

This paper addresses the role of influencing government's policy as an integrated part of the contractual structure in the international business activities without arguing whether these activities are a cause or an effect of corruption. Whether a local firm is engaged in corruption because it needs to survive in the corrupt political environment or whether it is the local firm's very practice of unofficial payments that is the cause of a corrupt business environment is not the question of concern. Rather the paper states that these activities quantify a distinct array of quality or ability parameters that we need to consider in interpreting the foreign

investor's strategic behaviour. In effect, the foreign investor is likely to leave higher shares to a local firm, which has better ability to deal with corruption and is better informed about policy changes and as opposed to another local firm who does not have such abilities. A model in *part III* to illustrates this theoretically.

To trace out empirical evidence for the theoretical proposition, a series of estimation procedures are carried out in *part IV* and *Part V* presents the summary findings from these estimations. The analysis utilizes firm-level responses from twenty-eight transition economies from survey conducted by the *World Bank* and the *Office of the Chief Economist* at the EBRD [*European Bank for Reconstruction and Development*] for the year 2002 and 2005. Whether or not these two years are reasonably good time-slots to reflect the issues, is also an important question to address. A very brief overview from the survey is presented in *part V* [and in *Appendix-A*] to illustrate how certain variables in the survey reflect quite different attributes among these two years. The note of explanation in this regard is: the transformation process in organizations that takes place to move away from centrally planned structure to market reliance also affects the firms' adjustment process to cope up with corrupt government officials and since the year 2002 is much closer to the time when actual policy changes took place, the two years might reveal different pattern of empirical evidence. It appears that these two years are a good time-slot as the starting point of the analysis, which could be extended in the future with the availability of newer surveys and panel components as the years proceed.

Empirical findings reveal that higher the number of firms that knows how much to bribe at the outset, higher is the probability that the foreign investor would wish to end up in a minority or majority owned relationship and lower is the probability of owning hundred percent shares in a FIE. While ability to lobby and to gather information appears to be a vital factor to attract foreign investment, the choice between wholly owned subsidiaries as opposed to minority or majority owned partnership is more affected by the ability to influence formation and implementation of local or regional government's rules and regulations through unofficial means. Perception of political risk, presented by the proportion of firms

agreeing that interpretations of government's rules and regulations are clear and predictable, leaves a weak positive effect in favor of sole ownership.

To summarize, the rest of this paper is organized as follows: *section II* briefly summarizes relevant research works, *section III* presents the theoretical framework, set-up and timing; *section IV* presents estimation procedures to draw empirical analogies to the theoretical part and *section V* concludes with some suggestive remarks.

II. Existing Literature: Review and Relevancy

The existing literature has noted intricate linkages between patterns of investment and ownership of a foreign firm and activities of the host country. Examples of major concerns include choice of entry, choice of mode of operation and dynamics of mode of operation. Noted explanatory factors affecting these choices includes taxes and subsidies, trade policies, labour market regulations, degree of development of financial market and most importantly security of contractual and property rights affected by risks of political opportunism, improper legal systems and other political risks.

Smarzynska and Wei (2001) shows the effect of corruption on firm-level FDI in their paper and depicts how corruption reduces inward FDI and shifts the ownership structure towards joint ventures. Schiffer and Weder (2000) dissects the perceived political risk of the investors into two categories: catastrophic political risks and risks of the creeping expropriation. Their summary findings are- while the private infrastructure investment for greenfield entry is related with most of the catastrophic political risks, this investment is not associated with the risks of creeping expropriation. Similar factors affecting foreign investment of the firms in developing countries (Chinese and Indian institutions) are noted in a discussion paper by Trefler (2005). The main relevancies are: i) the role of the government-

particularly state-owned enterprises and corrupt officials- in preventing the efficient reallocation of resources such as capital; ii) a weak financial system that leaves firms under-resourced; iii) a social safety net that leads to labor market inflexibilities; iv) lack of an endogenous capability to innovate, in part because entrepreneurs are hemmed in by the rent-seeking behavior of bureaucrats.

Among the papers that incorporated agency model for analyzing, a paper by Heinsz (2000) illustrates how contractual hazards are exemplified by political hazards. Wei (1997) provides an empirical estimation about how corruption is “more taxing than tax” on the MNEs’ choice for mode of operation. Analyzing bilateral flows between 14 source and 45 host countries in 1990 and 1991, Wei shows that when compared with the effects of an increase in the corruption level among two countries, Singapore and Mexico, increasing corruption is equivalent to raising the tax rate by over twenty percentage points.

Research paper by Hines (1995) illustrates how imposition of the Foreign Corrupt Practices Act (FCPA) might have influenced investors in US in locating their investment in countries that are less corrupt. Wei (1997) also shows that choice of mode of operation is different among US and OECD investors. Desai, Gompers, Lerner (2003) analyzes the issue of rates of entry, dynamics in firm size and fairness and protection of property rights. Specifically, greater fairness and protection of property rights is shown to increase rates of entry, decrease rates of exit, and lower average firm size. More recent trend includes literary works that incorporates the role of capital constraints and financial constraints in the picture. Antras and Desai and Foley (2006) offers capital constraints and financial constraints as an explanation for the share of ownership held by parent MNEs in their affiliates, financed by the parent, in the presence of risk of expropriation, weak property right and degree of underdevelopment of the credit system.

The above summary shows how existing researches mostly portrays effect of corruption and political environment on magnitude of aggregate foreign investment and on choice of mode of entry of the foreign investors. This research

extends the focus from an aggregate picture to a firm-level analysis by analyzing individual firm's corporate strategic considerations.

III. Theoretical Set-up: Model and Propositions

The theoretical model depicts a situation where a foreign firm, who is the producer of an established product in its own country, is selling the product in a host country and hires a local firm to serve this purpose. This situation is analyzed within the framework of agency model where the foreign firm is the risk neutral principal, transacting with the local firm, a risk-neutral agent. Following the portrayal of corruption as "more taxing than tax" as noted in the previous section, agent's ability and effort are considered as the influencing factors for an uncertain stream of revenue where the uncertainty steams from the "tax", used as a metaphor to capture corruption and politico-economic risks, imposed on the sales. One reason for assuming that the product is an established one in foreign firm's country is that there is no added uncertainty in the process of realization of the revenue, that is, the uncertainty is due to the aforesaid factors and not from realization of the revenue itself.

Agent's ability i can be of two types:

$$i = \begin{cases} g & \text{with probability } \alpha_g \\ b & \text{with probability } \alpha_b \end{cases}$$

Type i agent who exerts effort e , enables principal to obtain post tax revenue: $\{T(\tau_i, e), R\}$ where $T(\tau_i, e)$ is the earning multiplier net of tax-payment. The private cost of effort to each agent is characterized by the cost function $\psi(e)$, with $\psi'(e) > 0$ and $\psi''(e) > 0$, $\psi(0) = 0$ and $\lim_{e \rightarrow 0} \psi'(e) = 0$ and $\lim_{e \rightarrow \infty} \psi'(e) = \infty$. It is also assumed that $T_\tau(e) \geq 0$; $T_{\tau\tau}(e) = 0$, $T_e(e) \geq 0$, $T_e(0) = 0$, $T_{\tau e}(e) \geq 0$ and $T_{\tau e}(0) = 0$, that is higher ability increases the post-tax earning multiplier.

The principal offers payment w_i , which is a linear function of fixed payment a_i and a state-contingent share of post-tax revenue b_i : $w_i = a_i + \{b_i(\tau_i.e + \varepsilon)R\}$.

Assuming a specific form for the post-tax earning multiplier, $T(\tau_i, e_i) = \tau_i.e + \varepsilon$ where $\tau_g > \tau_b$ with $\varepsilon \sim \varphi(\mu, \sigma^2)$, and a specific form for the private cost of effort, $\psi(e) = \frac{1}{2} ce^2$, the ex-post payment that an agent can possibly earn under such a contract can be expressed as: $\{a_i + b_i(\tau_i.e)R - \frac{1}{2} ce^2\}$. Maximization of this payoff with respect to effort yields:

$$e_i = \frac{b_i \tau_i R}{c} \quad (1.1)$$

Thus we have the optimal choice of effort as an increasing function of the share of revenue, $b_i R$, and as a decreasing function of the cost parameter c and independent of fixed share a_i . The maximum possible payoff for an agent then becomes:

$$\begin{aligned} a_i + b_i(\tau_i.e)R &= a_i + b_i \tau_i \cdot \left\{ \frac{b_i \tau_i R}{c} \right\} R - \frac{1}{2} c \cdot \left\{ \frac{b_i \tau_i R}{c} \right\}^2 \\ &= a_i + \frac{1}{2} \frac{(\tau_i R)^2}{c} b_i^2 \end{aligned} \quad (1.2)$$

The timing of the events can be summarized as follows:

- Nature chooses the ability parameter τ_i , which becomes private information of the agent.
- The principal offers a menu of contract $\{a_i, b_i\}$, $i = g, b$; to the agents such that each type self selects the respective contract intended for his/her type.
- The agent chooses and exerts effort e and sales revenue is realized.
- The agent is paid remuneration according to the specification of the contract.

The Results

The Benchmark case of Perfect Information

The first best solution that serves as a benchmark results from the situation where the principal can observe τ perfectly. In this case the optimal contract will not involve any extra surplus; only relevant constraint for the principal's problem of maximizing his expected profit is the individual rationality constraint of the agents:

$$(pc_i) \quad a_i + \frac{1}{2} \frac{(\tau_i R)^2}{c} b_i^2 \geq 0 \quad (1.3)$$

and the Principal's optimization problem can be represented as:

$$\begin{aligned} \text{Max}_b \quad & \alpha_g \cdot \left[\frac{(\tau_g R)^2}{c} (b_g - b_g^2) - a_g \right] + \alpha_b \cdot \left[\frac{(\tau_b R)^2}{c} (b_b - b_b^2) - a_b \right] \\ \text{s.t.} \quad & \\ (pcb) \quad & a_b + \frac{1}{2} \frac{(\tau_b R)^2}{c} b_b^2 \geq 0, \text{ and} \\ (pcg) \quad & a_g + \frac{1}{2} \frac{(\tau_g R)^2}{c} b_g^2 \geq 0. \end{aligned} \quad (1.4)$$

We have the following solution where hundred percent share is provided to the agent:

$$b_b^{fb} = b_g^{fb} = 1 \quad (1.5)$$

$$a_g^{fb} = -\frac{(\tau_g R)^2}{2c} \leq 0; \quad a_b^{fb} = -\frac{(\tau_b R)^2}{2c} \leq 0 \quad (1.6)$$

To summarize, in light of the above theoretical predictions, the propositions can be stated as follows:

[I] Good type (high ability) agent is given higher share than Bad type (low ability) agent

[II] As proportion of Good type (high ability) agent in the population (a_g) increases, Good type's share also increases.

IV. Empirics

Data Description

All of the firm-level statistics are obtained from datasets from surveys conducted jointly by the *World Bank* and the *Office of the Chief Economist* at the EBRD. The two questionnaires from The Business Environment and Enterprise Performance Survey (BEEPS) - performed in the year 2002 and 2005 are utilized to trace out the empirical evidences.* The survey was conducted on the basis of face-to-face interviews. Among the entire number of enterprises interviewed, approximately 9 percent to 10 percent are the foreign-invested firms (or Joint ventures). These datasets include, but are not limited to, information about individual firm's perception towards different aspects of petty corruption and bureaucratic corruption, infrastructural obstacles, other business or firm specific details such as total population of enterprises, ownership patterns, size of enterprises and geographic location (Capital, over 1 million, 1million-250,000, 250-50,000 and under 50,000) as well as details about sector specific information. The sector specific information allows to group firms into sub-sectors (for example identifying whether majority of the firms sales come from mining sector or construction sector or

*The cross-section datasets are available for the year 1999, 2002, 2004 and 2005. The reason for choosing the years 2002 and 2005 is that the setting of the questionnaire is similar among these two surveys while it is not exactly the same for the year 1999. Some specific questions and structure necessary for the construction of our ability parameters were not incorporated in the 1999 questionnaire. As for the year 2004, the survey covers different set of countries and therefore could not be utilized

retail business etc). Coverage for the countries and related variables for each survey (other than the dummy variables) are summarized in *Table I*.

The most advantageous feature of BEEPS data for the present analyses is that these are collected to investigate the magnitude of facilitating or hindering effect of government policies and public services that are being implemented for investment and business development. The survey is targeted for the countries in Central and Eastern Europe (CEE) (including Turkey) and the Commonwealth of Independent States (CIS). The dataset mostly includes the small and medium sized enterprises (SMEs). This specific focus towards SMEs in our analysis is not to circumvent the fact that large firms and oligarchs take part in shaping the politico-economic environment for business as well as taking part in changing the existing settings and thereby affecting the contractual relations. These practices by large firms are, perhaps, prevalent to a far greater extent in transition economies and developing economics compared to the developed or emerging economies. The goal of this research is, however, to stress the fact that focusing on SMEs enables us to portray a more general trend of the effects of policy changes perceived by the business sector. During the transformation process, changing the monopolistic central-planner oriented industrial structure and establishing a private enterprise sector that includes SMEs has been prioritized by the policy-planners (d'Andrea Tyson et al., 1994). The transformation process experienced by the SMEs share some general features and any trends we might observe among these features, are likely to portray the general trend of adaptation beyond the realm of experience of any individual organization. An obvious short-coming of these datasets are that these are not panel data. Pooling the data for the two years to try to observe common trend is not an alternative to this because of the following reasons. Although the basic structure is similar to both surveys, some of the explanatory variables that I wish to include in the model appear only for each specific year.

Parameter Specification

In this empirical part, the propositions state in Chapter-I are examined by translating the ability parameter in the population in the following manner.

Quality of the Agent

As outlined briefly at the beginning of this section, the quality of the agent is defined according to the criteria how “good” is an individual firm in all the practices that are supposed to be successful strategies in terms of doing business in a country among all the firms in similar business. I do not use the term “good” according to any moral judgment. An agent is a “good” one, loosely speaking, one who is a better survivor in respective business environment be it more corrupt or less corrupt. As the traditional public choice literature points out, faced with a prospect of differentially unfavorable tax treatment by government, which is, again analogous to corruption in our analysis, a person or a group may (1) engage in lobbying effort and/ or (2) engage directly in politics or in other activities for the following: secure access to decision-making power and make plans to shift into or out of the affected activity [Buchanan, 1980]. In this context, the ability is represented as follows:

- (1) the firm have access to a lobby group or business association and this access provides value addition to the firm’s main line of business by lobbying the government or by providing valuable information about government’s rules and regulations; and/or
- (2) the firm becomes part of other influential groups or activities and try to advocate their rights to the government with the following two types of activities: (a) firms may take part in shaping the politico-economic environment for business by providing unofficial payments to the parliament to elect or to affect votes and (b) firms may take part in changing the existing settings by providing unofficial payments to change government’s existing rules or verdicts or decrees.

The competency in the both practices as well as their ways of practicing these activities are based on each firm’s own assessment.

Ability Type-I

To reflect the ability about the first quality (which is considered as a legal activity), a category variable is created ranging from 1 to 13 that reflects whether the firm can have access to ministry or executives or legal authorities and to what degree the firm has been benefited due to these activities. Here benefit refers to critical value addition to the business and degrees of effectiveness from information gathering and lobbying are categorized in the survey in chronological order from lowest benefit to highest benefit as: minor impact, moderate impact, major impact and decisive impact. The minimum value 1 is assigned if the firm does not belong to any business associations or trade association or lobbying group, 2 is assigned if the firm belongs to an association, but could not obtain any benefit either in terms of lobbying or information gathering. In a likewise fashion, value 12 is assigned if the firm could obtain highest benefit from either lobbying or information gathering activities and value 13 is assigned if maximum benefit is obtained from both those activities.

The general idea behind constructing the categorized variable can be summarized as follows:

Given that a is the value assigned to Ability-I for not exceeding achieved benefit for either activities in $(j-1)^{\text{th}}$ category:

- Ability-I assumes value $(a+1)$ if firm's achieved benefit is at least as great as category j in either lobbying or information gathering and
- Ability-I assumes value $(a+2)$ if firm's achieved benefit belongs to category j for both lobbying and information gathering.

Ability Type-II

To reflect the ability about the second quality, degree of influencing (which is rather associated with unofficial payments and activities), analogous to the practice of state

capture, a *category variable* is created in the same fashion as described above. This category variable has a scale range from 1 to 11. Minimum value, 1, is assigned if the firm was not engaged in any state capture activities at all. Value 2 is assigned if the firm was engaged in influencing the government by paying unofficial payment but failed to gain any benefit at all (benefit refers to critical value addition to the business). From there on, categorizing is proceeded in the same fashion as explained for constructing ability type-I. Whichever value the variable assumes if the firm's achieved total benefit is obtained from one of the two following activities, 2(a) or 2(b), a higher value is assigned to the variable if that degree of benefit is obtained from both of these activities:

- a) to what extent firm was able to be benefited by providing unofficial payments to the local or national government officials/ Parliamentarians to affect their vote and
- b) to what extent firm was able to be benefited by providing unofficial payments or gifts to the government officials to affect the content of existing government decrees or verdicts.

Degrees of effectiveness from these activities are categorized in the survey in chronological order from minor impact to moderate impact to major impact and finally to decisive impact. For instance, to illustrate it more, value 7 indicates that the firm obtained major benefit from either 2(a) or 2(b) and value 8 indicates that the firm obtained major benefit from both 2(a) and 2(b).

To summarize, ability of agent is reflected by

- *Type I Ability*: Lobbying, how much benefit the agent can obtain from belonging to a lobby group
- *Type II Ability*: Influence, how much benefit the agent can obtain from the practice of state capture.

Higher the abilities, higher should be the share*.

Political Risks and Corruption

To reflect the host-specific political risk and corruption as perceived by the individual firms, a number of indexes are constructed from firm-specific and country-specific characteristics (summarized in Table II for year 2002 and year 2005)

Iz_C (Corruption index) is constructed from how many firms in the population are engaged to a certain degree in administrative corruption (as opposed to bureaucratic corruption reflected by ability type-II). These are the percentage of firms in each country that are “always” or “almost always” engaged in bribing activities for accessing essential goods and services from the government for the business such as i) getting connected to electricity, telephone and other public services ii) accessing government contracts iii) getting certified from Occupational Health & Safety Inspection, Fire and Building Inspection and Environmental Inspection iv) dealing with tax payment and so on. These are termed as *administrative corruption* and an index is calculated from firms in each country that reports about paying unofficial payments for the most activities.

Iz_B (Bribery Index) is constructed from how many firms in the population have the knowledge beforehand about how much to bribe and how frequently to bribe”. Percentage index of number of firms which agree that “always” or “almost always” bribing activity is a frequent phenomenon among firms in their line of business to get things done with regard to customs, taxes, licenses etc. and they are well informed in advance about the amount of the unofficial payment or gift.

* It should be noted that for both types higher ability represents a “good” agent. That is, type-I and type-II do not distinguish “good” or “bad” type.

Iz_P (Predictability Index) is constructed from how many firms in the population are confident to a certain degree that the interpretation of policies and laws and regulations implemented by government are consistent and predictable and available to a typical firm in the industry. These are percentage index of number of firms, which “strongly agree” or “agree in most cases” that they can predict the interpretations of the laws and regulations affecting their firm and these interpretations are consistent.

Other Explanatory Variables

Other firm-characteristics that could possibly be relevant are: firm’s size, age, profitability and market power. The firms are categorized according to their number of employees into *small-sized* (less than 50), *medium-sized* (50 to 249) and *large-sized* (more than 250) category. Considering the impact of age on foreign shares, it would have been more relevant if firm’s age could be calculated since the time it has been engaged with the foreign investors. However, as the data does not provide us with that information, *firm-age* is calculated since it’s year of establishment and included in the model in log forms.

As a measure of *profitability* that is not biased with the firm-size, I consider the profit margin of the respective firm. Instead of considering profit margin, if we included gross profit level or total sales without adjusting for the number of employees, profitability would be highly correlated with the firm size. Hence the percentage by which sales price of a firms exceeds the operating costs (i.e., the cost of material inputs plus wage costs but not overheads and depreciations) is used as a measure of profitability. In 2005 survey, a number of firms (around 240) did not report this information but they reported of having no profit during the previous year. Hence the missing values of these particular firms are replaced with zero value for the profit margin (albeit the shortcoming is that profit margin of these firms might as well be negative). These numbers of non-response is very high in 2002, almost 20 percent. Due to the large number of missing observations, the data on past profitability and approximated future profitability is used. To represent past profitability, I use the data for the share of profit

of total sales revenue in the year 1998/99. To approximate future profitability, the ideal proxy would be ratio of capital resale value to replacement value [Svenson 2005], higher the value, less future profitability is reflected. However the survey does not provide and information about the resale value of firm and hence only the capital replacement value of the firm is used as a proxy, after removing the age-effect.

Market power of the firms is measured by elasticity of demand determined by firm's perception of consumers' response towards a hypothetical 10 percent price increase for the major product. Highest power is assigned when customers would continue to buy the products in the same amount as before even though the firm's price is higher than before while the competitors maintain their previous price. A set of dummy variable is constructed to reflect these. Dummy for Medium power would imply lower quantity is consumed and in the same fashion minor power (baseline dummy) would take value 1 if the firm is going to loose all or almost all of its customers as the customers would switch to buy from substitute providers.

Export propensity is represent by the ratio of share of sales in international market and share of sales in domestic market. Share of sales in international market implies sales exported to other countries either directly or through some indirect sources. Again, there are large numbers of missing observation in 2002 and therefore we can use this regressor only for the year 2005.

Among the country level parameter, log of *Gross National Income* per capita (GNIP) and growth rate of GNIP are included to reflect income. Control for country specific major *policy changes* are used as dummies and degree of *economic freedom* is used from data provided by Heritage Foundation Survey. The last one is a composite index reflecting the effect of following indexes: Business Freedom, Trade Freedom, Fiscal Freedom, Government Size, Monetary Freedom, Investment Freedom, Financial Freedom, Property Rights, Freedom from Corruption and Labor Freedom.

A series of variables are include to correct selection bias in the regression procedure, which is elaborated in the next section. These regressors are used mostly to capture

their effect on the foreign investor's participation decision. The most problematic part in identifying the factors contributing towards the achievement of foreign investor's participation is that- this data set is not a panel data set and hence we do not have the structural characteristics of a particular local firm before the foreign investment took place. As a proxy of the initial characteristics, past information for a firm for certain variables such as size, profit and age are used, given the availability of data. The following additional set of explanatory variables is also considered to reflect skill intensity and progress in quality accreditation.

Skill intensity, which is captured by labor skill intensity and technological skill intensity. Labor skill intensity is represented by percentage of skilled labor in the workforce. Technological skill intensity is captured by including a indicator variable that assumes the value one if the firm relies on intense technological features and zero otherwise. Finally an indicator variable is included to represent progress in quality accreditation status, which takes the value one if the firm has achieved any progress in the method of quality accreditation during past three years.*

Dependent Variable

The dependent variable is categories of $S_i = 1 - b_i$, the share of the foreign firm in the foreign invested enterprises (FIEs), where b_i refers to share of local firms among the FIEs, as illustrated in the theoretical model. Since the form of foreign direct investment includes: i) associates (enterprises in which the investor owns 10–50 percent); ii) subsidiaries (enterprises in which the investor owns more than 50 percent); and iii) branches (wholly or jointly owned unincorporated enterprises) either directly or indirectly owned by the direct investor, for modeling purpose, the following four categories: $m = 0$ to 3 are considered:

* For instance whether the firms included any new method such as GAAP, ISO 9000, 9002 or 14,000, AGCCP, etc.

m = category for percentage of foreign ownership held in the local firm

$$= \begin{cases} m_0 = 0 & \text{if } 0 < \text{percentage of foreign ownership} < 10 \\ m_1 = 1 & \text{if } 10 < \text{percentage of foreign ownership} \leq 50 \\ m_2 = 2 & \text{if } 50 < \text{percentage of foreign ownership} < 100 \\ m_3 = 3 & \text{if percentage of foreign ownership} = 100 \end{cases}$$

Estimation

The following section explains the justification of the chosen estimation techniques in conjunction with some basic econometric issues and examples and briefly illustrates the estimation procedures.

We wish to examine the effects of the explanatory variables on different categories of share and ordinary least squares regression procedure can not be used for estimation purpose as the results would be inconsistent. The assumption of conditionally normal distribution of dependent variable and the assumption of linearity of expectation function, which are crucial to OLS regression, is violated in this case. There are several conventional extensions for regression analysis for such situation that incorporate categorical dependent variable such as ordinal Probit, ordinal Logit and Multinomial Logistic model. The categories of shares are ordinal in nature by construction, so we can not use multinomial Logistic model. An ordinal Logit or ordinal Probit model seems to be the appropriate choice.

Ordinal category for the dependent variable is specified from categorizing observed variable, share (S_i), rather than being derived from an unobserved continuous dependent variable z . If we had the later situation, the observed discrete responses in m categories could be related with a latent variable, say I^* , through some threshold specifications where I^* is modeled through a regression analysis of observed

explanatory variables and S_i is categorized based on whether I^* lies within its domain, that is, within the intervals defined by the thresholds. Example of such analysis would be modeling letter grades from a mathematics class as an indicator of the unobservable proficiency level of a student in math. The present circumstances however require modeling a somewhat different structure, albeit preserving the basic idea, which is used in recent health economics research works, explained as follows.

An example of analysis with categorical dependent variable constructed from observed data analogous to present context could be found in Fahrmeir and Tutz (1994) where observation about relative tonsil size of children is used to classify the children into three categories to test whether or not they are carriers of a certain disease. Another example could be the use of observed health risk factor scores using common factors that include cigarette smoking, risky drinking of alcoholic beverages, physical inactivity, and overweight to categorize the individuals and estimate the proportional odds ratios for the demographic and health/healthcare covariates to explain chronic disease prevalence among the population [Fine et al., 2001]. In a likewise fashion, the categorical dependent variable is generated from the percentage of share of the foreign firms held in FIEs and I seek to explain the effect of explanatory variables on the probability of a firm attaining each category of share.

With ordered logit or ordered probit model we can compute the magnitude of predicted probability for each outcome or category, that is, prediction for each category would be the outcome with highest probability. Since quantitative meaning is assigned to the dependent variable, share, the expected value of s (share category held by foreign firm) is meaningful in the following fashion [Wooldridge 2002]:

$$E(s | x) = m_0 P(s = m_0 | x) + m_1 P(s = m_1 | x) + m_2 P(s = m_2 | x) + m_3 P(s = m_3 | x)$$

where $m_0 < m_1 < m_2 < m_3$ are the values taken on by share, as explained before and \mathbf{x} is the set of explanatory variables.

There is the possibility of a further violation to the validity of usual assumptions, which is the violation of the assumption of independently and identically distributed (i.i.d.) errors. Measures to take care of the possibility of having heteroscedasticity (non-constant error variance) need to be incorporated since as Long and Ervin (2001) notes, the decision to correct heteroscedasticity should not be based on a screening result for the presence of the problem. Robust regression analysis provides a solution to this problem. The basic idea of robust analysis is to trim the influential outliers, which bias the prediction and distort the significance of parameter estimates, and obtain consistent estimates. The regression package in STATA for analyzing ordinal dependent variables allows robust analysis and the results are presented in Table III. However robust regression analysis in principle follows the idea that the dependent variable is unbounded and the underlying distribution is continuous. Computing a robust covariance matrix for inconsistent estimators in ordinal Logit or ordinal Probit may not necessarily satisfy these and hence may fail to solve the problem.

To further address the issue of heteroscedasticity and to provide partial solution to a probable selectivity problem, I proceed with robust estimation with Interval regression model. For the ordinal response analysis a sample of firms are utilized among the dataset that has foreign shares. But the dependent variable in essence comes from a much bigger set of data which include all the enterprises with or without foreign investment. An interval regression method utilizes these facts and with incorporation of the entire dataset (larger dataset, higher degrees of freedom), allows to enter the country dummies to capture country-specific effects. I also present a censored Tobit model in this regard, albeit without using robust standard errors. Explanation of further details regarding all these regression techniques is presented in Chapter IV. A brief intuitive structure is also provided in this chapter and further explanation can be obtained from Long (1997) Long & Freese (2005) and Wooldridge (2002).

Tobit model posits a latent variable that is censored at 0 and 1. The threshold level is when foreign shareholding is at least ten percent, which is, by definition the criteria for direct foreign investment. The similar intuition is used for the Interval regression method. The intervals are constructed with lower bound consisting of firms which are not defined to have any direct foreign investment and an upper bound consisting of hypothetical firms in which percentage of foreign share exceeds the percentage of foreign share in FIEs with sole ownership. The benefit for interval regression as opposed to Tobit estimation is that, we can apply the robust regression analysis techniques for the former. Moreover, we can proceed to interpret the estimated parameters in the same way we would have done for the interpretation of the benchmark OLS regression. In this particular situation, the model needs to be modified further by taking logs of the interval points due to the nature of data.*

Apart from correcting for any possible selection bias in our ordinal regression and tobit estimation and interval regression estimation, these estimations allow us to supplement the analysis from previous regressions. That is, whichever explanatory variable was identified to pose a significant positive (negative) effect on foreign shares should show negative (positive) impact on local firm's share in these estimations.

To summarize the following set of alternative regression analysis are considered to complement the theoretical predictions:

- (i) OLS regression for a initial estimate;
- (ii) Ordinal regression;
- (iii) Ordinal regression with robust standard errors;
- (iv) Tobit regression with censoring; and
- (v) Robust estimation with Interval regression analysis.

* Estimations would provide similar results with ordinal probits if non-FIEs are included as one of the category as well. The ordinal analysis in not presented in that way here since based on the theoretical propositions to be illustrated, including non-FIEs as a category would imply little theoretical relevance. A background checking revealed that the ordinal probit constructed in the aforesaid manner produces the same results. Also, the ordinal probit and the ordinal logit model fits equally well and preserves the same nature of outcomes (probability; sign and significance). These findings strengthen the validity of using alternative frameworks for the estimation procedure. The issue of selection bias is taken care of in Chapter IV.

The following linear specification is used for *interval regression* and *Tobit estimation* as well as for ordinary *linear regressions*:

$$\begin{aligned} share_i = & \rho_0 + \rho_1*(age) + \rho_2*(size) + \rho_3*(profitability) \\ & + \rho_4*(market\ power) + \rho_5*(ability\ I) + \rho_6*(ability\ II) + \rho_7*(Income) \\ & + \sum_1^3 \rho_j*(proportion\ index) + \text{country dummies} + \text{sector dummies} \end{aligned}$$

Where,

$share_i = 1 - b_i$ = Percentage of share owned by the foreign firm

b_i = percentage of share owned by the local firm

$j = 1, \dots, 3$ indexes (Corruption, Bribery, Predictability)

As the estimated OLS coefficients are of limited interest, the explanations are omitted, but results are present the results in Table VI (for 2002) and Table VII (for 2005).

For the ordinal logit and ordinal probit regressions, the depended variable is:

$$\begin{aligned} S_{ij} &= 1 - b_{ij} \\ &= \begin{cases} 1 & \text{if foreign firm holds share} \\ & \text{of category m in firm i} \\ 0 & \text{otherwise} \end{cases} \end{aligned}$$

where,

i stands for firm

j stands for category of share holding

I wish to elaborate a bit further about the probabilities in ordinal response model using the framework of ordinal Logit. The ordinal logistic regression model is expressed as:

$$\ln(S_j) = \ln\left(\frac{\pi_j(x)}{1 - \pi_j(x)}\right) = \eta_j + (-\beta_1 X_1 - \beta_2 X_2 - \dots - \beta_k X_k)$$

And the probability is:

$$\Pr(s = m_j | \mathbf{x}) = F(\eta_j - \mathbf{x}\beta) - F(\eta_{j-1} - \mathbf{x}\beta)$$

where η_j and η_{j-1} relates to the threshold parameters or "cut points" for the different categories, \mathbf{x} is the matrix of k explanatory variables, F is the logistic CDF and m are the categories. Thus an estimated coefficient from an ordinal response models (presented in Table III), as itself, is not much meaningful. It is the marginal response probabilities, that is: $P(s = m_j | x)$ that should be considered. Table IV and Table V summarizes the marginal change in the probability from the estimation computed as:

$$\frac{\partial P(s = m_j | x)}{\partial x_k} = \frac{\partial F(\eta_j - x\beta)}{\partial x_k} - \frac{\partial F(\eta_{j-1} - x\beta)}{\partial x_k}$$

Thus the right hand side is essentially the slope of the curve F , relating x_k to $P(s = m_j | x_k)$, holding all other variables constant.

Table III presents the results from using the categorical dependent variables and Table IV and Table V shows the marginal probabilities for year 2005 and 2002 respectively. The results for interval regression, tobit and OLS for year 2002 are summarized in Table VI and results for 2005 are summarized in Table VII.

V. Descriptive Summary of Estimation and Conclusion

Before we proceed to observe the estimated results, perhaps it is worth noting the distribution of the ability parameters summarized for the entire sample in graph I (year 2002) and graph II (year 2005). For each country, I present the distribution of ability

categories where the number of categories appears in the horizontal axis and frequency for each category appears in the vertical axis. Further I present the kernel density for ability type-I and type-II for the FIEs in graph-III (year 2002) and in graph IV (year 2005). From the summary from BEEPS survey [Appendix A] and from the graphical representation, it is evident that firms in certain countries, such as in Tajikistan and in BIH were rather reluctant about reporting in 2002, pertaining to the information regarding ability-type, corruption and bribery, being afraid that the information they provide could fall into the hands of criminal elements or the “intelligence service”. Interpretation attached to the survey questionnaire (not reported) explains that questions regarding corruption, bribery, “unofficial payments” and employment levels did not receive enthusiastic response from the participants from these countries.

The ability report from association with influential group, type-II is almost absent for Tajikistan in 2002 [graph I and III. BIH and Armenia has only a few firms reporting both for type-I and type-II as shown in Graph I. For Tajikistan and BIH, a good number of managers report verbally the discomfort due to the discretionary power of tax authorities to impose taxes under patronage of the government and the resulting corruption due to party-politics, but they do not report how their business has been affected by this. In one way this can be translate as: these firms are hiding the truth. Another way of explanation however would be (and which may be more plausible as well as more consistent with the existing literature on *crony bias* [Hellman and Kaufmann, 2002]) that, these firms felt excluded from the *networking* of influencing. The opposite is the situation for Latvia; information regarding ability type-I is absent for this country.

The estimations from the censored regression model presented in Table VI and Table VII shows strong significant effects of local firm’s ability parameters. Ability type - I shows positive effect in all censored model analysis both in 2002 and 2005. This is mostly attributable to the fact highlighted from the selectivity analysis. The ability to know and to affect government’s rules and regulations by belonging to a lobby group is vital for foreign firm's entry decision. Bribery index however shows opposite trend in year 2002 and 2005, for the former year this appears to impose negative effect on foreign

share while its effect becomes positive for the later year. This trend is also observed from the selection equation models. This might be a hint regarding the adjustment process of the firms during the transition. During the initial year, when policy changes were rather fresh and sudden, it was very important how many local firms are "good" bribers in terms of knowing the amount of unofficial payments beforehand. In later years, however, this knowledge came to reflect the practice of paying unofficial gifts as a widespread phenomena rather than being an individual firm's perception and therefore ceased to leave any positive impact on local shares. Another reason could be that the foreign firm also acquired some experience of bribing and opts for increasing investment based using its experience. The dataset is in truth insufficient to capture any dynamic effect and we can at the best get some hints about the possibilities.

Regarding the ordinal analysis, again in 2002 none of the ability types leave any effect on foreign shares most possibly due to the facts regarding survey responses as summarized in the opening paragraphs of this section. Bribery index is significant, albeit weakly. An increase in bribery index reduces the probability of sole ownership (category 3) of a foreign firm by 81 percentage points (not percent) while an increase in the predictability index increases the probability by 41 percentage points. Increase in income and economic freedom explains almost 6 percent and 4 percent increase in the probability of having a hundred percent owned foreign firm. Entirely opposite trend is observed for majority owned FIEs (majority owned enterprises are those where foreign share is at least as high as fifty percent, but below hundred percent) and minority owned (foreign share is positive, but less than fifty percent) FIEs. An increase in predictability index reduces the probability of owing minority share and the probability of owing majority share by a foreign firm by 18 and 20 percentage points respectively, while bribery increases these probabilities by 36 and 39 percentage points respectively. To summarize, in countries with higher income and more economic freedom and less unpredictability in policy changes, probability of overall foreign investment increases, albeit most of these increase probably comes in terms of owing a wholly owned firm. This implies, not surprisingly, that in countries with more economic freedom and less political risk, foreign investors are more willing to establish

enterprises with sole ownership. Individual firm's ability indexes fail to leave any impact in 2002.

Year 2005 offers a more precise picture, perhaps mostly due to the nature of the data revealed in this year's survey as explained before. While income is highly significant and a higher national income secures higher share for the local firms (negative coefficient in category 0, 1 and 2), a foreign investor's choice for whole ownership is likely to increase in wealthier nations. Almost all other significant parameters show reverse trend of effects. That is, higher the local firm's age, ability and market power and higher the number of bribery index, the investor seems more willing to increase their share but they are not willing to leave the local partner entirely in favor of choosing sole ownership. Thus while almost for all the parameters foreign firms are choosing to invest more as the local firms are appearing to be "good", a significant share is always being secured for the good local firms as the probability of a foreign firm choosing hundred-percent ownership decreases significantly for all these factors. This is evident from the sign reversal for the categories of share for ability type-II in year 2005. There is a significant probability (3 percent for category three) that the foreign firm would cease to choose hundred-percent ownership or majority ownership if the local partner has ability in influencing formation or implementation of government's policies in favor of adding critical value to the firm's business performance.

To summarize, it appears that there is significant evidence on effects of the magnitude of local firm's engagement in corruption and local firm's attempt to influence the political and business rules and regulations as summarized below.

- (i) Bribery index and corruption index leaves opposite effects for Year 2002 and year 2005 on the flow of foreign investment as represented by effect of covariates on percentage of foreign shares. For 2002, higher the bribery index, that is, higher the number of firms that knows how much to bribe, higher the share of local firms. In the later years this property ceased to be a positive factor at the country level as evident from the censored Tobit, interval

regression and selectivity analysis. The ordinal analysis, however shows that, in both 2002 and 2005, for marginal changes, bribery index remains a positive factor for increasing the probability of minority-owned FIEs and joint ventures, while high score in this index reduces the probability of establishing wholly owned subsidiary. Increase in the predictability index hardly leaves any effect. Administrative corruption fails to leave any impact on the marginal probabilities of choice between different categories of share by the foreign investor. It appears that it is not the number of administrative obstacles that exist in a certain country or firm-specific setting that are important at the margin but rather the knowledge of “how to bribe” and “how much to bribe” that plays a significant role.

- (ii) Ability-type I (ability to lobby and gather information; legal activities) appears to be a vital factor for foreign firm's participation decision. Higher the ability of the local partner, more willing the foreign firm is to be engaged in foreign investment relationship and to increase its investment.
- (iii) Ability-type II (ability to influence government's votes and decrees) has the similar kind of effect as the bribery index on different categories of share. Higher the ability, higher the probability that a foreign firm would opt for acquiring minority shares of joint-venture. But at the margin, the foreign firm is not willing to achieve sole ownership. That is, higher the ability of a local partner it is less likely that a foreign firm would wish to leave the partner and establish sole ownership.

A notable limitation to the present analysis however, is that, a comparison with some parallel analysis and estimation based on established country-specific indices independent of the individual-level opinion data would could be incredibly illuminating since in that way any survey-bias could have been disclosed and in case the findings were similar, the conclusive remarks could have been reinforced. In future we hope to extend and modify our analysis in this regard.

Table I: Data Coverage and Summary Statistics

Year / Type of Data	Countries				
2002 & 2005	28 countries: 16 from CEE [Albania, BIH (Bosnia and Herzegovina), Bulgaria, Croatia, Czech Republic, Estonia, FR Yugoslavia, FYROM				
Cross- section	(Macedonia), Hungary, Latvia, Lithuania, Poland, Romania, Slovak				
Data Obs:	Republic, Slovenia and Turkey) and 12 from the CIS (Armenia,				
2002: 6552 (uncensored)	Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova,				
2005: 9665 (uncensored)	Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan]				
Summary Statistics for FIEs: Year 2005					
Variable	Obs	Mean	Std.	Min	Max
Foreign Share (%)	1152	75.1	27.9	1	100
Age	1152	14.4	17.6	4	180
Profitability (profit margin)	1124	23.4	14.3	0	120
Labor Skill (%)	1132	45.1	29.7	0	100
Export Intensity (%)	1084	2.6	10.5	0	99
Iz_P: Predictability Index	1152	20.8	7.6	9.51	44.4
Iz_B: Bribe Index	1152	7.2	5.8	0	25.5
Iz_C: Corruption Index	1152	13.4	7.4	2.3	35.8
Economic Freedom (out of 100)	1152	56.9	7.3	43.5	75.1
<i>Share</i>	1152			0	3
<i>Share</i>		Freq.	Percent	Cum.	
<i>Category 0</i>		30	2.6	2.6	
<i>Category 1</i>		217	18.84	21.44	
<i>Category 2</i>		414	35.94	57.38	
<i>Category 3</i>		491	42.62	100	
Summary Statistics for FIEs: Year 2002					
Variable	Obs	Mean	Std.	Min	Max
Foreign Share (%)	1077	45.9	48.2	0	100
Age	1077	11.2	15.6	3	202
Profitability (profit share in Sales)	971	32.0	1.4	10	70
Capital Replacement Value (\$)	1077	40.2	528.5	0	10215.5
Iz_P: Predictability Index	1077	18.3	8.9	6.7	36.4
Iz_B: Bribe Index	1077	7.3	5.2	0	19.2
Iz_C: Corruption Index	1077	37.2	12.9	9.1	58.8
Economic Freedom (out of 100)	1077	54.9	9.3	37.4	77.6
<i>share</i>	1077			0	3
<i>Share Category</i>		Freq.	Percent	Cum.	
<i>Category 0</i>		22	2.04	2.04	
<i>Category 1</i>		163	15.13	17.18	
<i>Category 2</i>		451	41.88	59.05	
<i>Category 3</i>		441	40.95	100	

Table II: Index for Perception of Political Risk and Corruption

Proportion						
Index (%)	Predictability	Corruption	Bribery	Predictability	Corruption	Bribery
Country	Year 2002			Year 2005		
Albania	23.8	50.0	19.2	41.7	41.7	16.7
Armenia	30.7	22.2	3.7	17.1	8.3	2.8
Azerbaijan	30.8	37.0	11.1	28.6	17.7	15.7
Belarus	10.2	40.8	2.0	9.8	16.7	7.1
Bosnia and	15.0	20.8	8.3	11.5	3.2	0.0
Bulgaria	14.6	52.4	2.4	11.4	31.4	5.7
Croatia	9.1	17.7	2.9	14.3	13.6	4.6
Czech Rep.	12.5	31.0	2.4	11.8	8.8	0.0
Estonia	20.7	41.9	0.0	25.6	2.5	2.5
FYR Macedonia	36.4	39.1	13.0	8.6	16.7	2.8
Georgia	15.4	38.5	15.4	25.9	10.3	3.5
Hungary	25.7	39.0	6.8	23.2	8.4	3.2
Kazakhstan	13.5	29.7	10.8	23.1	25.9	7.4
Kyrgyz Rep.	16.7	45.2	16.1	2.9	47.1	25.5
Latvia	25.0	57.1	3.6	24.0	16.0	0.0
Lithuania	12.1	9.1	0.0	19.9	16.0	4.0
Moldova	6.7	33.3	10.0	20.0	17.0	8.5
Poland	15.4	34.6	3.9	9.5	6.4	2.6
Romania	30.4	30.4	10.9	19.4	11.0	9.6
Russia	7.2	36.9	11.9	22.4	14.7	11.5
Slovak Rep.	10.3	53.3	16.7	36.4	4.4	0.0
Slovenia	20.7	13.8	0.0	20.0	0.0	0.0
Tajikistan	12.5	25.0	12.5	5.0	5.0	0.0
Turkey	34.4	34.4	9.4	17.4	17.4	13.0
Ukraine	8.8	58.8	6.3	28.8	20.0	8.6
Uzbekistan	25.5	55.3	10.6	16.7	27.8	15.3
Serbia & Mont.	25.0	19.1	0.0	17.8	13.0	8.7

Source: Calculation from survey data

TABLE III: Estimated Results for Foreign Share category*

Dependent Variable Share		I-A	I-B	II-A	II-B
Independent Variables		Yr: 2002	Yr: 2002	Yr: 2005	Yr: 2005
Age			-0.0112 (0.005)		
	Age squared		0.0000 (0.000)		
	Log of age	-0.3161 ^a (0.097)		-0.3237 ^a (0.091)	-0.2133 ^a (0.053)
Size		-0.0682 (0.088)	-0.0457 (0.052)	0.1419 (0.086)	0.0906 (0.051)
Profitability	Profit margin			0.0012 (0.004)	0.0008 (0.003)
	Past Profit	-0.2330 ^c (0.123)	-0.1599 (0.073)		
Market power (low, minor)	High	0.0639 (0.172)	0.0213 (0.101)	-0.2060 (0.164)	-0.1418 (0.097)
	Medium	0.4173 ^b (0.143)	0.2277 (0.084)	-0.1763 ^a (0.141)	-0.1154 (0.083)
Export Intense				0.0184 ^a (0.007)	0.0111 ^a (0.004)
Skill Intense	Labor Skill			-0.0085 ^a (0.002)	-0.0049 ^a (0.001)
Capital Mobility Ability	Type-I	-0.0002 ^a (0.000)	-0.0001 (0.000)		
	Type-II	0.0213 (0.022)	0.0128 (0.013)	-0.0011 (0.020)	-0.0037 (0.012)
Ability	Type-II	-0.0250 (0.031)	-0.0160 (0.018)	-0.1177 ^a (0.033)	-0.0657 ^a (0.019)
Proportion Index	Predictability	0.0171 ^b (0.007)	0.0117 (0.004)	0.0118 (0.008)	0.0069 (0.005)
	Bribery	-0.0339 ^b (0.014)	-0.0161 (0.008)	-0.0358 ^c (0.017)	-0.0216 ^c (0.010)
	Corruption	-0.0042 (0.005)	-0.0024 (0.003)	0.0194 (0.014)	0.0120 (0.008)
Income	Log Income	0.2486 ^b (0.099)	0.1338 (0.058)		
	Growth rate			0.0572 ^a (0.020)	0.0333 ^c (0.012)
Economic	Freedom	0.0177 ^b (0.009)	0.0100 (0.005)	0.0096 (0.009)	0.0054 (0.005)
Year	Dummy	No	No	No	No
Observation		953	953	986	986
Prob > chi2		0.000	0.000	0.000	0.000
	Log likelihood	-1004.17	-1007.2	-1077.88	-1078.26

* Method of regression analysis: Ordinal logit, robust estimation for I-A, II-A, III-A; Ordinal probit, robust estimation for I-B, II-B, III-B. Superscripts a, b and c denotes significance at 1%, 5% and 10% level respectively.

TABLE IV: Estimated Results for Marginal Effects (for 2005)*

Dependent Variable Share Category		Category 0	Category 1	Category 2	Category 3
Independent Variables					
Age	Log age	0.0065 ^b (0.002)	0.0455 ^a (0.013)	0.0267 ^a (0.008)	-0.0787 ^a (0.022)
Size		-0.0029 (0.002)	-0.0199 (0.012)	-0.0117 (0.007)	0.0345 (0.021)
Profitability	Profit margin	0.0000 (0.000)	-0.0002 (0.001)	-0.0001 (0.000)	0.0003 (0.001)
	Past Profit				
Market power (low, minor)	High	0.0044 (0.004)	0.0299 (0.024)	0.0153 (0.011)	-0.0495 (0.039)
	Medium	0.0037 (0.003)	0.0252 (0.020)	0.0138 (0.011)	-0.0426 (0.034)
Export Intense		-0.0004 (0.000)	-0.0026 (0.001)	-0.0015 ^b (0.001)	0.0045 ^b (0.002)
Skill Intense	Labor Skill	0.0002 ^a (0.000)	0.0012 ^a (0.000)	0.0007 ^a (0.000)	-0.0021 ^a (0.001)
Ability	Type-I	0.0000 (0.000)	0.0002 (0.003)	0.0001 (0.002)	-0.0003 (0.005)
Ability	Type-II	0.0024 ^b (0.001)	0.0165 ^a (0.005)	0.0097 ^a (0.003)	-0.0286 ^a (0.008)
Proportion Index	Predictability	-0.0002 (0.000)	-0.0017 (0.001)	-0.0010 (0.001)	0.0029 (0.002)
	Bribery	0.0007 ^c (0.000)	0.0050 ^c (0.002)	0.0030 ^c (0.001)	-0.0087 ^c (0.004)
	Corruption	-0.0004 (0.000)	-0.0027 (0.002)	-0.0016 (0.001)	0.0047 (0.003)
Income	Growth rate	-0.0012 ^c (0.000)	-0.0080 ^b (0.003)	-0.0047 ^b (0.002)	0.0139 ^a (0.005)
Economic	Freedom	-0.0002 (0.000)	-0.0013 (0.001)	-0.0008 (0.001)	0.0023 (0.002)
	Observation	986			
	Prob > chi2	0.000			
	Log likelihood	-1077.88			

* Method of regression analysis: Ordinal logit, robust estimation. Superscripts a, b and c denotes significance at 1%, 5% and 10% level respectively. Standard errors are in parenthesis.

TABLE V: Estimated Results for Marginal Effects (for 2002)*

Dependent Variable Share Category		Independent Variables			
Variables	Description	Category 0	Category 1	Category 2	Category 3
Age	Log of age	0.0057 ^b (0.002)	0.0362 ^a (0.011)	0.0334 ^a (0.011)	-0.0753 ^a (0.023)
Size		0.0012 (0.002)	0.0078 (0.010)	0.0072 (0.009)	-0.0162 (0.021)
Profitability	Profit share of sales	0.0042 (0.002)	0.0267 ^c (0.014)	0.0246 ^c (0.013)	-0.0555 ^c (0.029)
Market power (low, minor)	High	-0.0011 (0.003)	-0.0072 (0.019)	-0.0069 (0.019)	0.0153 (0.041)
	Medium	-0.0071 ^b (0.003)	-0.0459 ^a (0.015)	-0.0473 ^a (0.018)	0.1003 ^a (0.034)
Capital Mobility	Replacement Value (\$)	0.0000 (0.000)	0.0000 ^c (0.000)	0.0000 ^c (0.000)	0.0000 ^c (0.000)
Ability	Type-I	-0.0004 (0.000)	-0.0024 (0.003)	-0.0022 (0.002)	0.0051 (0.005)
Ability	Type-II	0.0005 (0.001)	0.0029 (0.004)	0.0026 (0.003)	-0.0060 (0.007)
Proportion Index	Predictability	-0.0003 ^c (0.000)	-0.0020 ^c (0.001)	-0.0018 ^c (0.001)	0.0041 ^c (0.002)
	Bribery	0.0006 (0.000)	0.0039 ^c (0.002)	0.0036 ^c (0.002)	-0.0081 ^c (0.003)
	Corruption	0.0001 (0.000)	0.0005 (0.001)	0.0004 (0.001)	-0.0010 (0.001)
Income	Log Income	-0.0045 ^c (0.002)	-0.0284 ^c (0.011)	-0.0262 ^c (0.011)	0.0592 ^c (0.024)
Economic	Freedom	-0.0003 ^c (0.000)	-0.0020 ^c (0.001)	-0.0019 ^c (0.001)	0.0042 ^c (0.002)
	Observation	953			
	Prob > chi2	0.000			
	Log likelihood	-1004.17			

* Method of regression analysis: Ordinal logit. Superscripts a, b and c denotes significance at 1%, 5% and 10% level respectively. Standard errors are in parenthesis.

TABLE VI: Estimated Results for Foreign share holding (for 2002)*

Dependent Variable: Share (percentage)		Censored Tobit	Interval Regression	Ordinary Least Sq.
Independent Variables				
Age	Log of age	-1.711 ^a (0.185)	-1.568 ^a (0.124)	-4.693 ^a (0.440)
Size		0.981 ^a (0.171)	1.081 ^a (0.115)	3.044 ^a (0.574)
Profitability	Share of Profit in sales	-1.034 ^a (0.243)	-0.731 ^a (0.185)	-3.860 ^a (0.923)
Market power (low, minor)	High	0.012 (0.317)	-0.113 (0.220)	-0.041 (0.844)
	Medium	0.865 (0.258)	0.496 ^b (0.189)	2.442 ^a (0.847)
Capital Mobility	Replacement Value (\$)	0.000 ^a (0.000)	0.000 ^a (0.000)	0.000 ^b (0.000)
Ability	Type-I	0.192 ^a (0.042)	0.175 ^a (0.030)	0.647 ^a (0.155)
Ability	Type-II	-0.003 (0.059)	0.032 (0.040)	0.047 (0.162)
Proportion Index	Predictability	-0.054 (0.037)	-0.051 ^c (0.027)	-0.176 (0.117)
	Bribery	-0.097 (0.063)	-0.058 (0.050)	-0.470 (0.292)
	Corruption	0.062 ^b (0.023)	0.043 ^b (0.018)	0.252 ^c (0.106)
Income	Log Income	-0.041 ^c (0.020)	-0.040 ^b (0.017)	-0.125 (0.082)
Economic Freedom		-0.009 (0.038)	0.024 (0.031)	-0.004 (0.120)
	Policy Dummies		Included	Included
	Country Dummies		Included	Included
	Sector Dummies		Included	Included
	Observation	5442	5442; uncensored = 950	5442
	Prob > chi2	0.000	0.000	NA
	Prob > F	NA	NA	0.000
	Log pseudo Likelihood	NA	-3857.15	NA
	Log Likelihood	-2115.24	NA	NA

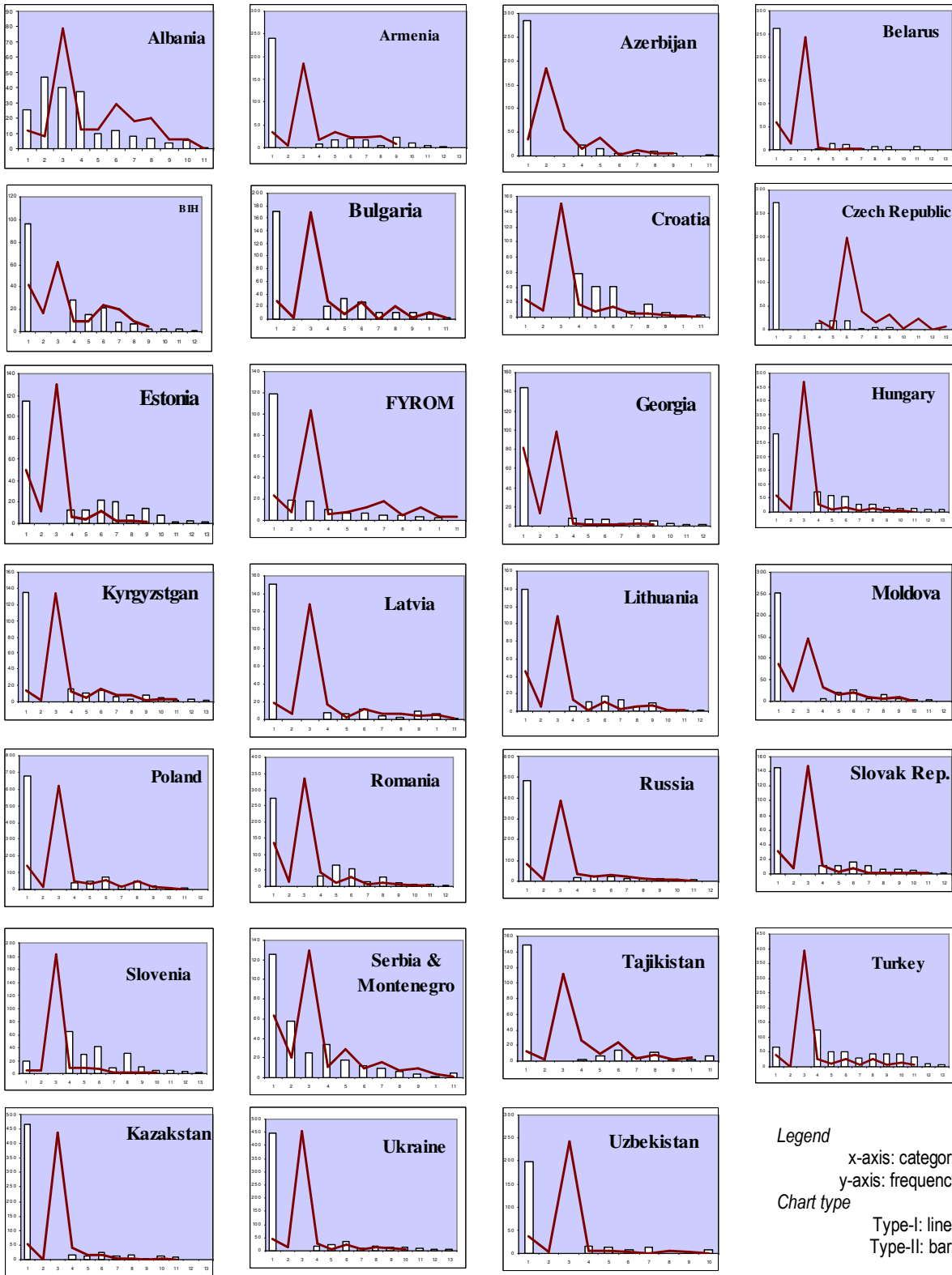
* Method of regression analysis: TOBIT; robust regression for both OLS and Interval regression. Superscripts a, b and c denotes significance at 1%, 5% and 10% level respectively. Standard errors are in parenthesis.

TABLE VII: Estimated Results for Foreign shares (year 2005)*

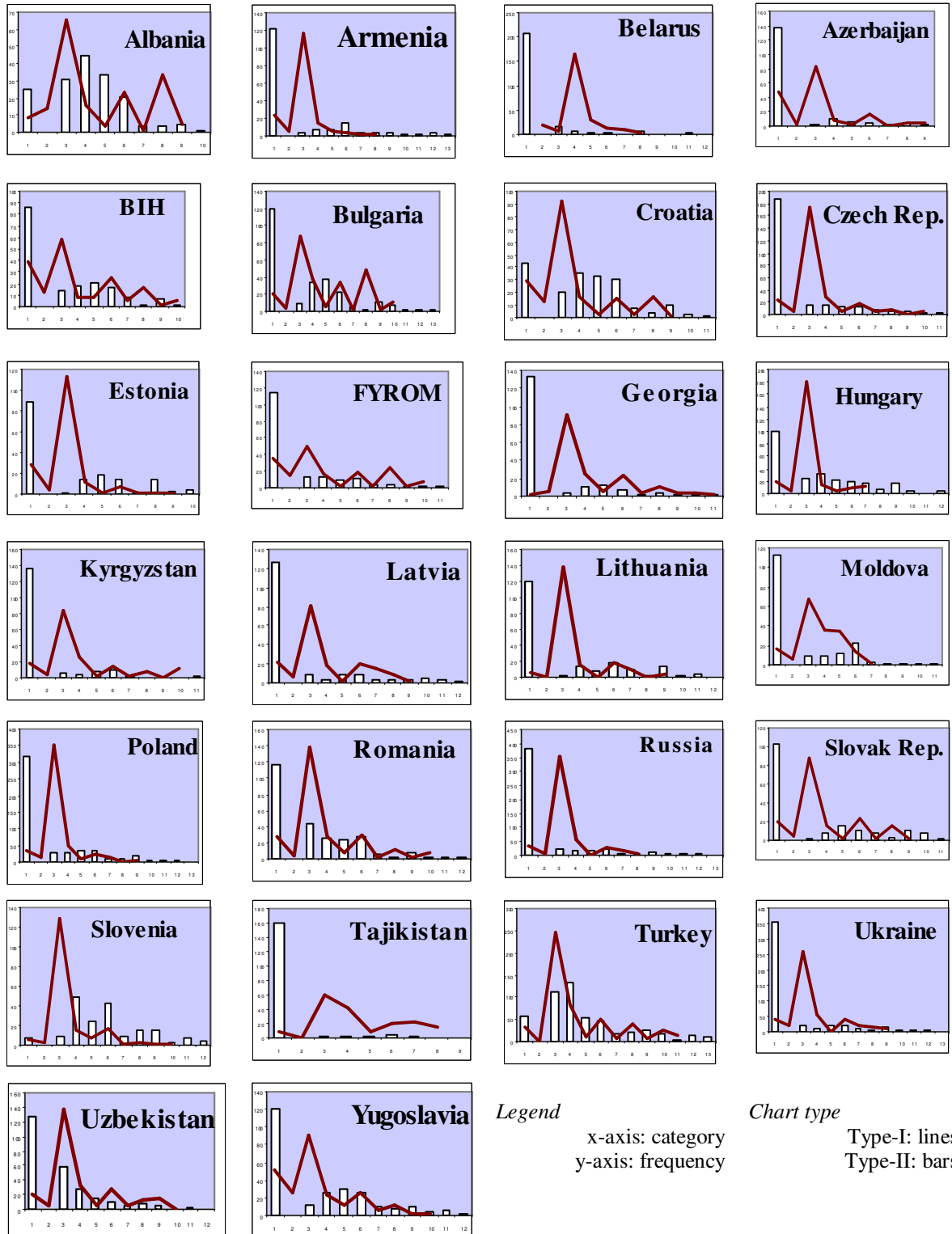
Dependent Variable: Share		Censored Tobit	Interval Regression	Ordinary Least Sq.
Independent Variables				
Age	Log age	-0.928 ^a (0.096)	-1.826 ^a (0.187)	-4.553 ^a (0.405)
Size		1.554 ^a (0.100)	3.099 ^a (0.170)	7.917 ^a (0.576)
Profitability	Profit margin	0.017 ^a (0.004)	0.033 ^a (0.009)	0.067 ^a (0.021)
Market power (low, minor)	High	-0.169 (0.164)	-0.341 (0.331)	-0.528 (0.683)
	Medium	0.136 (0.142)	0.278 (0.281)	0.535 (0.620)
Skill Intensity	Labor Skill	-0.014 ^a (0.002)	-0.027 ^a (0.004)	-0.066 ^a (0.009)
Export Intensity		0.061 ^a (0.008)	0.121 ^a (0.015)	0.491 ^a (0.099)
Ability	Type-I	0.146 ^a (0.021)	0.294 ^a (0.040)	0.696 ^a (0.112)
Ability	Type-II	0.034 (0.034)	0.073 (0.065)	0.030 (0.141)
Proportion Index	Predictability	-0.009 (0.020)	-0.019 (0.039)	-0.039 (0.094)
	Bribery	0.086 ^b (0.032)	0.167 ^b (0.061)	0.491 ^a (0.150)
	Corruption	-0.073 ^b (0.027)	-0.142 ^b (0.053)	-0.404 ^a (0.139)
Income	Growth rate	-0.031 (0.034)	-0.073 (0.064)	0.143 (0.143)
Economic Freedom		0.016 (0.014)	0.033 (0.027)	0.104 (0.076)
	Policy Dummies		Included	Included
	Country Dummies		Included	Included
	Sector Dummies		Included	Included
	Prob > F		NA	0.000
	Observation	8807; Left censored=7827; Uncensored= 980	8807; Uncensored= 980	8807
	Prob > chi2	0.000	0.000	NA
	Log pseudo likelihood	NA	-4992.89	NA
	Log likelihood	-4316.32	NA	NA

* Method of regression analysis: robust regression for both OLS and Interval regression. Superscripts a, b and c denotes significance at 1%, 5% and 10% level respectively. Standard errors are in parenthesis.

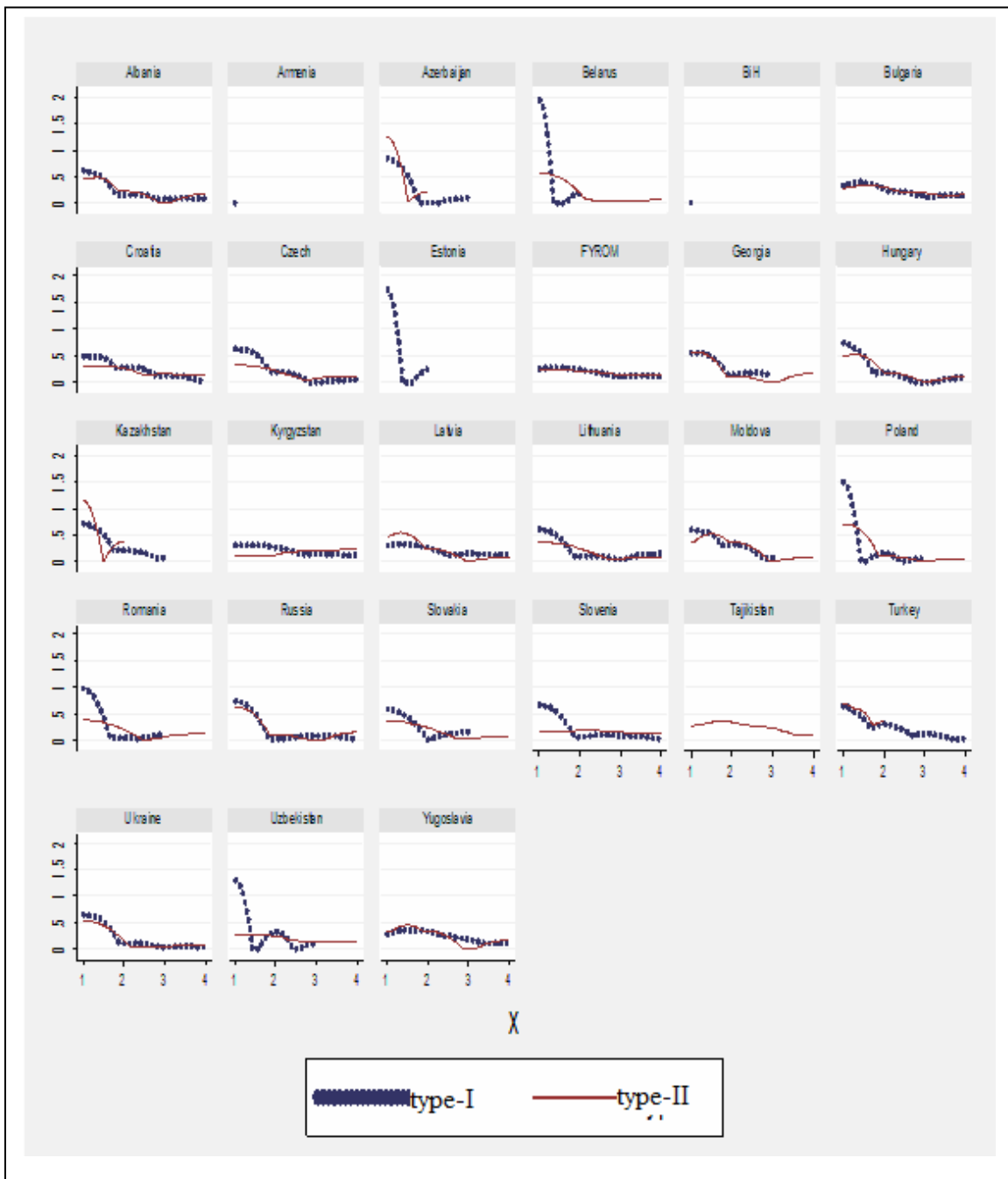
Graph I: Ability (Type-I & Type-II) Distribution in all Firms, by country (Year 2002)
[Representation: Frequency according to Category]



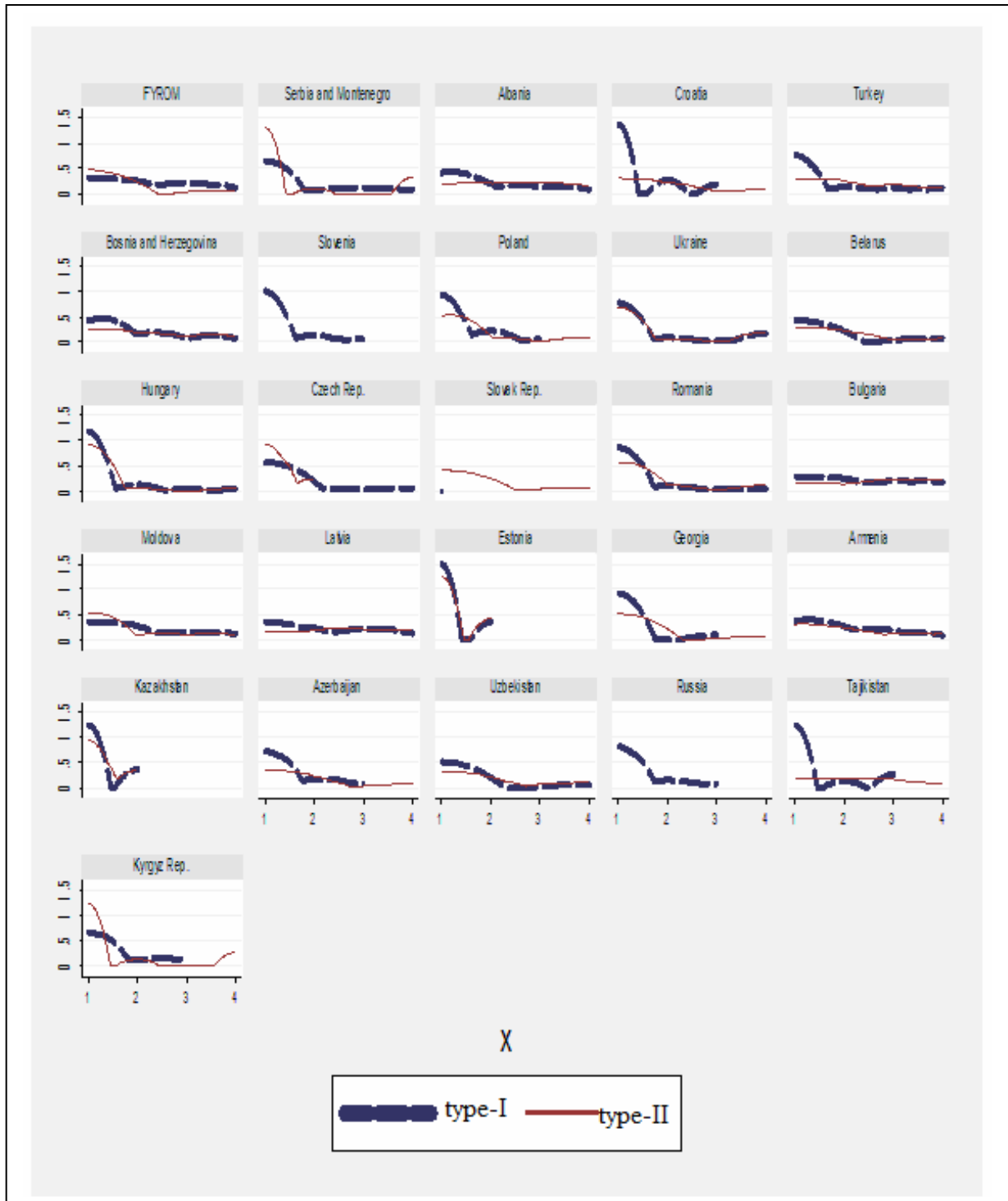
Graph II: Ability (Type-I and Type-II) Distribution in all Firms, by country (Year 2005)
[Representation: Frequency according to Category]



Graph III: Ability Distribution (Type-I & Type-II) among FIEs, by Country (Year 2002)
[Representation: Kernel Density]

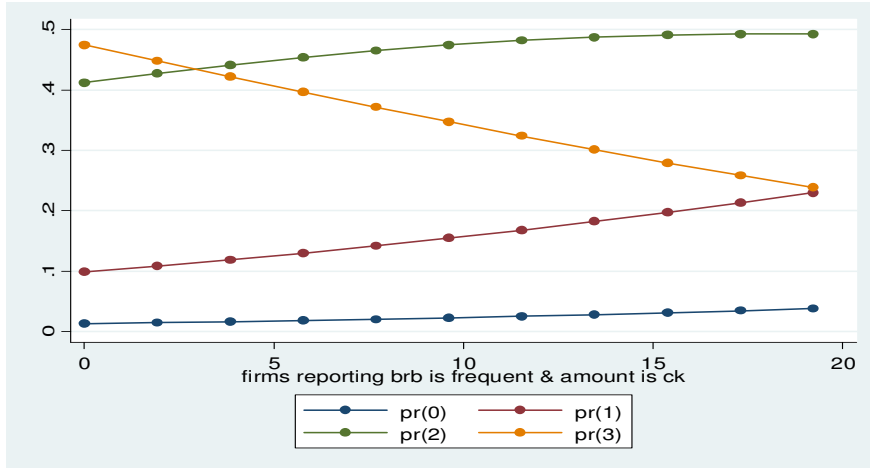


Graph IV: Ability Distribution (Type-I & Type-II) among FIEs, by Country (Year 2005)
[Representation: Kernel Density]

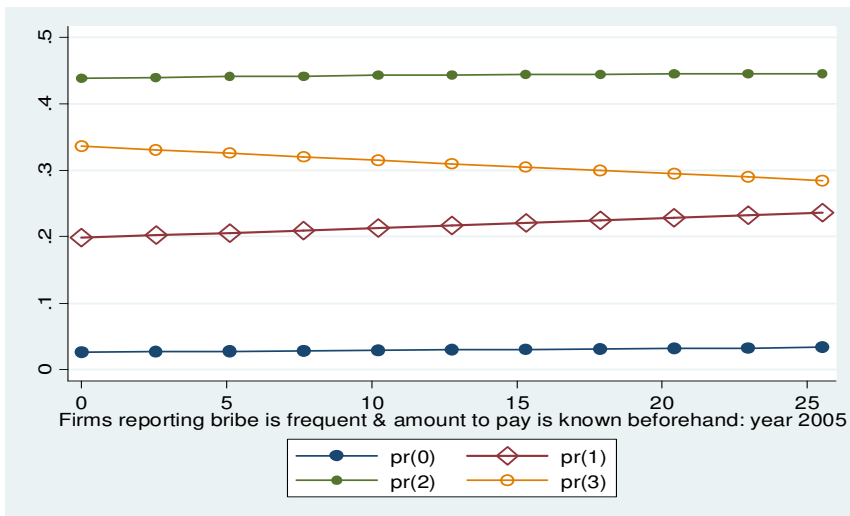


Graph V: Predicted Probabilities for Selected Variable

a. Predicted Probabilities for Share due to Iz_B (Bribe): year 2002



b. Predicted Probabilities for Share due to Iz_B (Bribe): year 2005



Appendix A: Major Disorder in Data and Policy change Summary

*Year 2002 **

Armenia, Bulgaria, Croatia, Estonia, Georgia, Kazakhstan, Lithuania, Moldova, Romania, Russia, Slovak Republic, Slovenia, Ukraine: No major or unusual political, social or business activities have occurred before or during the Survey. However in Croatian foreign-ownership pattern was hard to determine since the privatization process was ongoing and many companies have not had their ownership status resolved and many of them were bankrupt.

Albania: Higher presence of the illegal economy, illegal status of some businesses, tax evasion, the lower education level of senior managers compared to their employees, reluctance in response from large foreign-owned firms.

Azerbaijan: In June 2002, the President of the country met with local and foreign business leaders, in order to discuss the status of the economy as well as problems faced when conducting business such as taxation, customs, licensing regulation, infrastructure, etc. Since then, a number of decrees were signed and there may be a significant after-effect of these.

Belarus: Belarus is the slowest in switching towards a free market economy. Finding and interviewing foreign-owned and exporting enterprises was problematic. The share of overall foreign capital is very small and a significant number of foreign firms registered in the country conduct their activities through representative offices, which are not allowed by law to be engaged in commercial activities.

Bosnia and Herzegovina: Due to the undergoing process of privatization, some respondents were not fully aware or unwilling to disclose the current status of ownership of their companies. The universe of large companies was relatively small, while foreign enterprises were difficult to find (no information in the databases). Also, few foreign companies were established before 1999 (the civil war was ended in 1995).

Czech Republic

In the case of foreign -owned companies ownership status was not always specified and refusal rates were also very high, for the opposite reason of the state -owned companies, namely the fact that the company culture of foreign owned companies tended to be more fast-moving and production oriented and less likely to devote time to external requests.

FYROM

Macedonia was facing parliamentary elections in September. Hasty attempts by the authorities to privatise the remaining state -owned companies made certain companies difficult to interview, because all information related to their businesses was regarded as strictly confidential.

Hungary

Governmental elections took place in April and May. The new government placed major focus in investigating past government tenders that were suspected to be corrupt. The issue might influence some people's view on corruption, especially those who voted against the last government.

Kyrgyzstan: extreme skeptical attitude towards market research projects.

Latvia: A significant political event in Latvia will take place in October 2002; elections to the 8th Saeima (parliament of Republic of Latvia).

Poland: Although a slight economic growth was recorded in June, the Polish economy was still in Stagnation.

Tajikistan: There was apparent absence of law and order that made the survey difficult and less authentic.

Turkey: There was a climate of economic (started in February 2001) and political crises (started by the health problems of Prime Minister Bülent Ecevit).

Uzbekistan: According to various sources, the volume of the 'shadow economy' is estimated at between 50 to 80%. Many enterprises practice double-entry bookkeeping and it was not surprising that questions concerning taxation or bribes were received with hostility and evasiveness.

* Source: BEEPS and EBRD Survey

Yugoslavia

There was a major change in political situation and the lack of respondent confidence in the objectives of the project was a major problem.

Year 2005

Albania, Armenia, Azerbaijan, Bulgaria, Croatia, Georgia, Kazakhstan, Lithuania, Moldova, Romania, Russia, Slovak Republic, Slovenia, Turkey, Ukraine, Uzbekistan, Poland: no major or unusual political, social or business events occurred before or during the survey. Although normal business was disrupted in Poland by the period of mourning declared by the government following the death of Pope John Paul II.

Bosnia and Herzegovina: problems encountered during field work were not connected to the type of enterprises being surveyed or the political situation but rather to respondents' sincerity and willingness to give honest answers.

Belarus: The political situation in the country and the strong involvement of the state in the economy do not allow individual enterprises (except for government-owned and very large private ones) any possibility of influencing government decisions in any significant manner. The same can be said for the informal trade unions, associations, and the like.

Czech Republic: Czech Republic was in the midst of a government crisis caused by alleged property discrepancies engaged in by the Prime Minister. Also, some companies were still struggling to overcome the business changes caused by joining the EU in May 2004, particularly the significant increase of the Value Added Tax in some business sectors from 5% to 19%.

Estonia: During the survey the country experienced some political uncertainty when the government resigned and there was a 2-week political vacuum until a new government was appointed.

FYROM: FYROM was facing parliamentary elections at the time the study was conducted.

Hungary: Since September 2004 Hungary has had a new prime minister, which meant big changes in government personnel.

Kyrgyz Republic: Fieldwork was disrupted for two weeks by the revolution that took place in the Kyrgyz Republic after the parliamentary elections.

Latvia: Municipal elections took place in Latvia in March 2005 and some potential respondents who stood as candidates refused to participate in the survey.

Yugoslavia (Serbia): Serbia & Montenegro (FR Yugoslavia) is in a period of transition from having a state controlled economy to one based more on free market principles.

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