



Where Theory meets Practice:

**Empirical application of Large
Pan-European Firm-level Data**

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General description of Amadeus database (Bureau van Dijk)

- Citing -- “comprehensive” information on around 21 million companies across Europe, both Western countries and CEE.
- You can use it for market and academic research, study individual companies, search for companies with specific profiles and for analysis.

What information does Amadeus contain?

- Financials – standard format (comparable)
- Financial strength indicators
- Directors
- Ownership data

Details, optional:

- Images of report and accounts for listed companies, Stock prices for listed companies, Detailed corporate structures, Market research. Business and company-related news, M&A deals and rumors

Financials in Amadeus

- Many companies publish the company results in quarterly and annual statements.
- Depending on the size and scope of the company these statements can contain **consolidated** and/or **unconsolidated** *financial information*.
- A **consolidated** financial statement is the statement of a company integrating the financial information (/statements) of its subsidiaries.

Level of consolidation

- **C1**: a mother company integrating the statements of its controlled subsidiaries or branches. All with no unconsolidated companion,
- **C2**: statement of a mother company integrating the statements of its controlled subsidiaries or branches with an unconsolidated companion,
- **U1**: statement not integrating the statements of the possible controlled subsidiaries or branches of the concerned company with no consolidated companion.
- **U2**: statement not integrating the statements of the possible controlled subsidiaries or branches of the concerned company with an consolidated companion.

Shareholder types

A = Insurance company

B = Bank

C = Trade & Industry organization

D = Nameless private stockholders, aggregated

E = Mutual & Pension fund / Nominee / Trust / Trustee

F = Financial company

I = One or more named individuals or families

J = Foundation / Research Institute

L = Other named shareholders, aggregated

M = Employees/Managers/Directors

P = Private Equity firms

S = Public authority/State/Government

V = Venture Capital

Y = Hedge funds

Z = Public (Publicly listed companies)

Directors, Board members and Committees

- AdmDep (Administration Department)
- AudC (Audit Committee)
- BoD (Board of Directors)
- CoGoC (Corporate Governance Committee)
- HR (Human Resources dept.)
- NomC (Nomination Committee)
- OthBC (Other Board Committee)
- R&D (Research & Development)
- RemC (Remuneration Committee)
- SenMan (Senior Management)
- SupB (Supervisory Board).

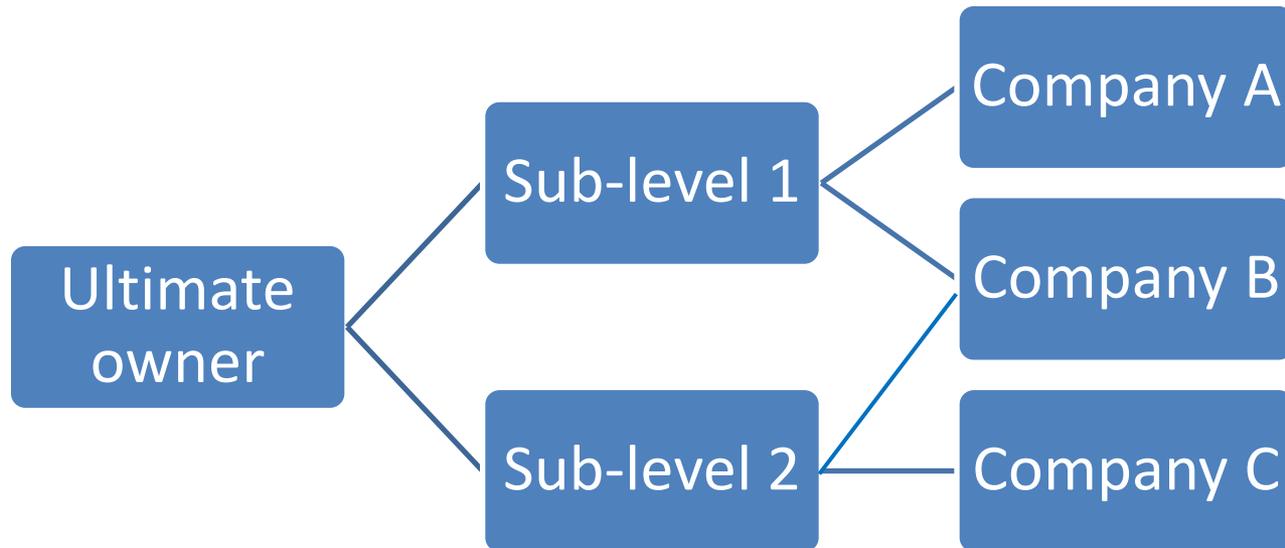
Be aware, several problems

- Coverage
 - Active companies with available data.
 - 10 years history
- Financials for (small) companies
 - Missing values, country specific missing values
- Ownership information
- Managerial data

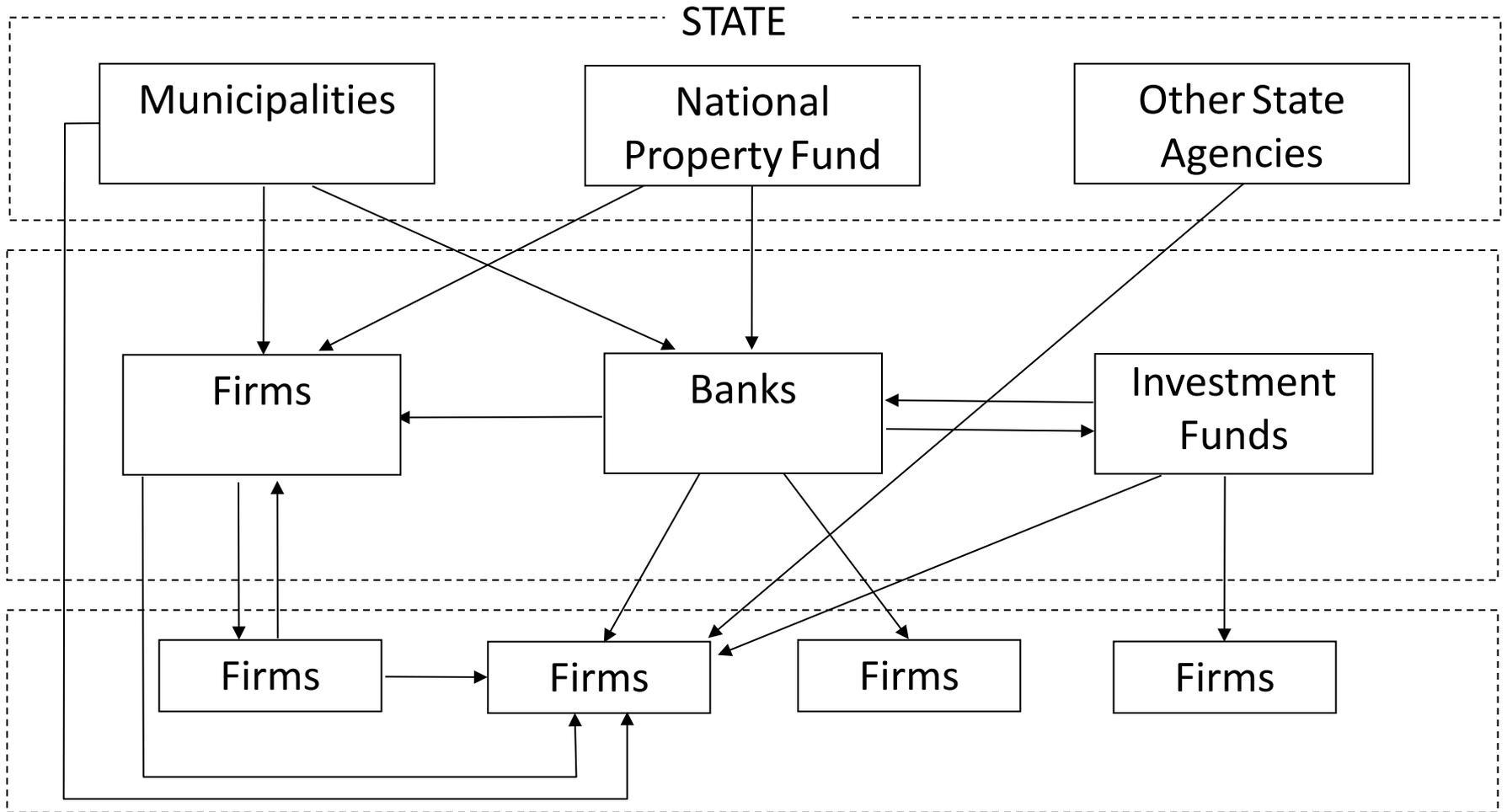
Ownership data

- Data and quality issues
 - Good coverage since 2002, deteriorate for smaller companies
 - Normal (standard) access does not give you the “historical” ownership data. [backups & tricks]
 - Primarily reported direct ownership, stake, starting period.
 - For limited companies also “ultimate” ownership
- When analyzing be aware of hidden effects. Interesting research questions related to the ownership pyramids.

Direct versus indirect (pyramidal ownership)



Privatization Corporate Pyramid



Problems

- Managerial data – presented in terms of “Reports”. Limited to download max. 15 reports, except of academic (converted) data in STATA format.
- Not unified names positions and formats in stored data. Quite demanding to work with..
- Unless direct and better access it is relatively hard to filter out categories.
- EXAMPLES: even “CEO category” has so many versions in historical data:

CEO - examples

- Executive chairman of the board
- Chairman of the board of directors, CEO
- Chief executive officer
- Chairman, executive board
- Chairwoman, board of directors
- Executive board, chair
- ... German, Dutch, French variants. Different order, subsets of words..

Hidden associated problems

Industry classification

You can lost quite some firms for your analysis, because “your” preferred industry classification key could be missing:

- NACE
- SIC
- NAICS
- ISIC

Different historical versions of Amadeus have different coverage, sometimes NACE dominates, sometimes NAICS or ...

Depends on version and country.

USE CORRESPONDENCE TABLES!!

Be aware of industrial classification systems changes

- **Standard Industrial Classification (SIC)** is a system for classifying industries by a four-digit code. Developed in the US in 1937, also frequently used in the UK
- The **North American Industry Classification System (NAICS)** is the system used by US Federal statistical agencies. Adopted 1997
- The NACE-code (**Nomenclature générale des Activités économiques**) is largely used in the European Union and its member states use it to classify commercial and non-commercial economic activities. Developed in 1990, first revision 1.1, 2002, second major (!) revision 2008.
- The **International Standard Industrial Classification** of all economic activities, abbreviated as ISIC, is a standard used by the United Nations Statistics Division (UNSD).

Examples

- **DIRECT USE OF AMADEUS DATA**
 - Company performance, efficiency
 - Survival, bankruptcy
 - Capital structure
- **INDIRECT USE**
 - Constructing ownership pyramids (and as above)
- **COMBINED WITH OTHER DATABASES**
 - Direct link using company ID (Compustat, local registry)
 - Industry level aggregation
 - Cluster approach

“Direct use” in my research agenda

EFFICIENCY, ownership, capital structure, competition

- Hanousek, Kocenda, Shamshur, 2015. Journal of Corporate Finance

CAPITAL STRUCTURE, stability, ownership

- Hanousek, Shamshur, 2011. Journal of Corporate Finance

PERFORMANCE, Corporate names

- Hanousek, Jurajda, 2014. Work in progress

“Several databases” in my research agenda

BEEPS & AMADEUS. Performance and bribery environment

- Hanousek, Kochanova, 2016, Under review

BEEPS & AMADEUS. Efficiency: Foreign firms and Female CEO in bribery environment.

- Hanousek, Shamshur, Tresl, 2015, Work in progress

AMADEUS (aggregation), EUROSTAT i-o tables, BACI(UNCTAD): FDI & Trade interactions.

- Hanousek, Kočenda, Vozárová, 2015, Work in progress. Effects of export spillovers, FDI, and ownership structures on firms' performance

Determinants of firm efficiency

- Seminal literature suggests: ownership and capital structures
- Firm, market, and cultural characteristics at play as well
- Existing empirical literature is fragmented
- Researchers analyze the effects:
 - in a single or a few countries,
 - limit their research on specific industries,
 - often cross-section data are used that prevent analysis from a time perspective
- Unclear whether the effects depend on the country, period studied or other factors

Firm name, survival & performance

- Do linguistic properties of corporate names, their content, or their alphabetical position affect corporate performance?
- Do firm names offer valuable information to customers and stakeholders?
- We answer this question using data on company names and their performance covering three major European language families during the last two decades.
 - We focus on several properties of firm names such as alphabetical order of the name, presence of a patriotic or English words or other linguistic characteristics.

Data – Names Properties

- **sub-families of the major Indo-European language**
 - Germanic: AT, DK, DE, NL, NO, SE, GB
 - Romanian: BE, FR, IT, PT, SP, RO
 - Slavic: CZ, PL, SK
- **alphabetical position of a company**
 - its quantile position in the alphabetic distribution of companies for a given country
 - indicator variable for the company name beginning with letter A, B, or C
- ‘national’ keywords (may be associated with patriotism)
- English words in names of the companies
- presence of plosives (B, C, D, G, K, P, Q, and T) at the start and inside a company name, separately for special plosives (K and P)

OLS Regressions Explaining Sales Growth - Germanic Languages

	AT	DK	IE	DE
Contains English word	0.8	0.0	-	-0.2
	(0.4)	(0.3)		(0.1)
Contains 'national' word	-0.3	1.1	1.0	1.3
	(0.7)	(0.7)	(0.3)	(0.1)
N	31,816	89,481	96,597	1,204,942
	NL	NO	SE	GB
Contains English word	0.5	-0.6	-0.3	-
	(0.2)	(0.2)	(0.1)	
Contains 'national' word	-0.5	1.8	1.1	0.3
	(0.3)	(0.4)	(0.1)	(0.1)
N	50,184	373,793	1,532,109	324,968

OLS Regressions Explaining Sales Growth - Romance and Slavic Languages

	BE	FR	IT	PT	ES	RO
Contains English word	-0.1	-0.3	-0.1	-0.7	-0.3	-0.3
	(0.1)	(0.0)	(0.0)	(0.1)	(0.0)	(0.1)
Contains 'national' word	0.6	0.8	0.9	0.6	1.2	-1.1
	(0.2)	(0.1)	(0.1)	(0.3)	(0.2)	(0.4)
N	166,585	8,801,575	3,386,529	1,088,945	4,646,249	3,049,837
	CZ	PL	SK			
Contains English word	0.3	0.5	0.4			
	(0.1)	(0.2)	(0.3)			
Contains 'national' word	0.4	3.7	1.7			
	(0.2)	(0.3)	(0.4)			
N	401,257	284,038	73,533			

Further Results

- presence of English words
 - significantly negative effects in Romance-language countries
 - significantly positive effects in Slavic-language countries
 - mixed evidence effects in Germanic-language countries
- presence of ‚national‘ words
 - positive and large effects in all Slavic and Romance-language countries (except RO) and in Scandinavia, IR, GE from Germanic-language countries
 - strongest in PO (almost four percentage points boost in sales growth)
 - weakest in AT and NL

Conclusion

- We have provided the first available evidence on the effect of alphabetical sorting on corporate performance.
 - Alphabetical sorting play an important role for multiple measures of corporate performance in several European countries, particularly in services.
 - The effect is stronger in Romance and Slavic-speaking countries and less pronounced in Germanic-language countries.
- ‚National‘ words are associated with substantially higher sales growth in, e.g., Poland, France, and Norway.
- English words have a positive impact on sales growth in Slavic-language countries and a negative one in Romance-language countries.

Impact of ownership and CEO gender on firms' efficiency in corrupt environments:

Is bread gained by deceit sweet to a man?

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Sample construction

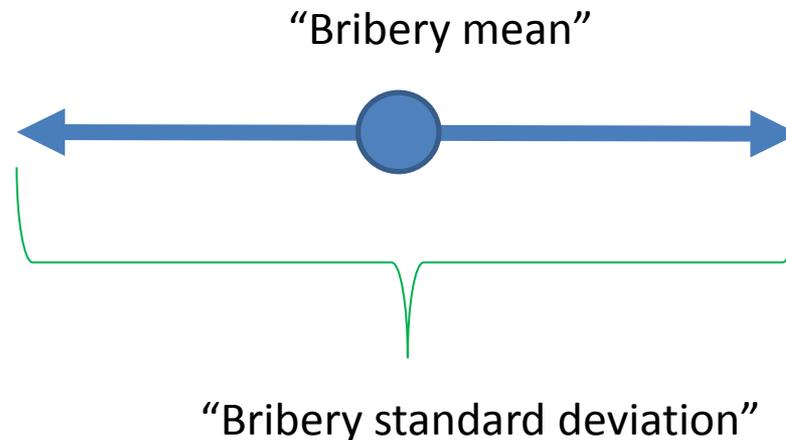
- Combine:
 - Business Environment and Enterprise Performance Survey (BEEPS)
 - Amadeus database by Bureau van Dijk
- Resulting dataset:
 - Central and Eastern European countries with over 76,000 firm-level observations
 - Time period: 2000 - 2013

BEEPS: Bribery measures

- In BEEPS, we extract the answers for the question
“It is common for firms in my line of business to have to pay some irregular “additional payments or gifts” to get things done with regard to customs, taxes, licenses, regulations, services etc.”
- The answers are on a scale from 1 (Never) to 6 (Always) which we normalize between 0 and 1.

CLUSTERED

- By survey wave, country, industry, firm size, and urban population size



Amadeus: Firm level data

- Firm-level financial data, ownership data, and CEO characteristics data
- Ownership:
 - Domestic majority control
 - Foreign majority control
 - Minority owners present without control
- CEO
 - Gender
 - (nationality)

Econometric model: Efficiency

- $\ln y_{it} = \sum_{j=1, \dots, J} [\beta_{0j} + \beta_{1j} \ln c_{it} + \beta_{2j} \ln l_{it}] \cdot ID_{itj} + \phi_t + v_{it} - u_{it}$
- y_{it} is sales
- $\ln c_{it}$ is log of the capital (total fixed assets plus working capital) of each firm i
- $\ln l_{it}$ is logarithm of the number of employees
- ID_{ijt} stands for a vector of industry (j) dummy variables
- v_{it} is the random error and
- u_{it} represents the efficiency of the company
 - Fully efficient firm $\rightarrow u_{it} = 0$
 - Any inefficiency $\rightarrow u_{it} > 0$.

Econometric model

$$\begin{aligned} u_{it} = & \alpha_0 + \beta X_{it} + \sum_{k=1}^2 \gamma_k^B \text{Bribery}_{jk}^k + \sum_{l=1}^L \gamma_l^E \text{BusEnv}_{jt}^l + \\ & + \sum_{m=1}^M \delta_m \text{OwnC}_{it}^m + \lambda_1 \text{FemaleCEO}_{it} + \lambda_2 \text{MissingCEO}_{it} + \\ & + v_1 \text{BriberyMean} * \text{ForeinC}_{it} + v_2 \text{BriberyDispersion} * \text{ForeinC}_{it} + \\ & + \mu_1 \text{BriberyMean} * \text{FemaleCEO}_{it} + \\ & + \mu_2 \text{BriberyDispersion} * \text{FemaleCEO}_{it} + \\ & + \tau_t + \eta_r + \varphi_s + \theta_c + \varepsilon_{it}. \end{aligned}$$

Firm Efficiency and Business Constraints

Independent Variables	Dependent Variable= Firm Efficiency	
	(2)	(8)
<i>Bribery environment</i>		
Bribery mean	0.065*** (0.006)	0.063*** (0.006)
Bribery std. deviation	-0.018*** (0.007)	-0.014** (0.007)
<i>Firm specific financial variables (not reported)</i>		
<i>Problematic factors for the operation and growth⁺</i>		
Access to financing ⁺	0.010**	
Tax rates	0.033***	
Custom & trade regulations	-0.013***	
Business licensing & permits	0.008*	
Labor regulations	0.020***	
Functioning of the judiciary	-0.097***	-0.079***
R square	0.315	0.314
N	76,479	76,542

Firm Efficiency, Ownership and CEO gender

		Dependent=Firm Efficiency		
Independent Variables		(1)	(2)	(3)
<i>Bribery environment</i>	Bribery mean	0.068 ^{***}	0.031 ^{**} *	0.034 ^{***}
	Bribery std. deviation	-	-0.013 [*]	-0.015 ^{**}
<i>Ownership control</i>	Foreign maj	0.014^{***}		0.013^{***}
	Domestic maj	0.002		0.002
	minority - no control	0.006		0.006
<i>Managerial data</i>	Female CEO		-0.000	-0.000
	Missing CEO		-0.003	-0.002
<i>Control variables</i>	Firm financials	YES	YES	YES
	Obstacles to growth	YES	YES	YES
	Constant	0.749 ^{***}	0.751 ^{***}	0.750 ^{***}
	R square	0.310	0.310	0.311
	N	76,542	76,542	76,542

Firm Efficiency: Ownership and CEO Gender Interacting with Corruption Environment

	Independent Variables	Dependent=Firm Efficiency		
		(1)	(2)	(3)
<i>Bribery environment</i>	Bribery mean	0.028 ^{***} (0.006)	0.029 ^{***} (0.006)	0.061 ^{***} (0.006)
	Bribery std. deviation	-0.013 [*] (0.007)	-0.012 [*] (0.007)	-0.019 ^{**} (0.008)
	Foreign maj	0.010^{***}		0.009 ^{***}
<i>Ownership control</i>	Domestic maj	0.002		0.002
	Minority - no control	0.005		0.005
<i>Foreign ownership control interacting</i>	Bribery mean	0.068^{***}		0.061^{***}
	Bribery std. deviation	-0.048^{**}		-0.034[*]

Firm Efficiency, Ownership and CEO Gender Interacting with Corruption Environment (contd.)

Independent Variables		Dependent=Firm Efficiency		
		(1)	(2)	(3)
<i>Managerial data</i>	Female CEO		-0.010	-0.011
	Missing CEO		-0.003	-0.001
<i>CEO gender interacting with</i>	Bribery mean		0.071^a	0.052^b
	Bribery std. deviation		-0.029	-0.006
<i>Control variables</i>	Firm financials	YES	YES	YES
	Obstacles to growth	YES	YES	YES
	Constant	0.751 ^a (0.014)	0.752 ^a (0.014)	0.777 ^a (0.014)
	R square	0.311	0.310	0.316
	N (number of observations)	76,542	76,542	76,479

Conclusion

- Higher bribery is associated with lower firm efficiency
 - 1% \uparrow in the average level of corruption leads to 2.04% \downarrow in average firm efficiency
- Higher heterogeneity in bribery perception stimulates firm efficiency
 - A 1% \uparrow in the corruption perception variation \uparrow firm efficiency by 0.61%
- In tough business environments, companies have to use their own resources more efficiently.
- **Female CEO:**
 - CEO gender per se does not affect firm efficiency
 - However, female CEOs at disadvantage in highly corrupt environments
 - a 1% \uparrow in the average level of corruption \downarrow the efficiency of firms with female CEO by 2.80%.

Conclusion

- **Foreign Ownership:**

- foreign owners are at disadvantage in environment characterized by high bribery
- a 1% ↑ in the average level of corruption leads to 3.16% ↓ in efficiency of foreign firms. The decrease in efficiency is even higher (4.53%) for firms that come from low-corrupt countries.
- When only some firms bribe, foreign ownership is beneficial for firm efficiency
- A 1% ↑ in the corruption perception variation is associated with 1.53% ↑ in firm efficiency of foreign firms, while the associated boost in efficiency of firms from the low-corruption countries is 4.29%.



Thank you for your attention!

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