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**Article — Published Version**

## Is Agribusiness Different? Firm-Level Evidence of Perceived Corruption in Post-Soviet Countries

Eastern European Economics

**Provided in Cooperation with:**

Leibniz Institute of Agricultural Development in Transition Economies (IAMO), Halle (Saale)

*Suggested Citation:* Herzfeld, Thomas; Kulyk, Iryna; Wolz, Axel (2018) : Is Agribusiness Different? Firm-Level Evidence of Perceived Corruption in Post-Soviet Countries, Eastern European Economics, ISSN 1557-9298, Routledge, Abingdon, Vol. 56, Iss. 6, pp. 504-521, <https://doi.org/10.1080/00128775.2018.1503937>, <https://www.tandfonline.com/doi/full/10.1080/00128775.2018.1503937>

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# Is Agribusiness Different? Firm-Level Evidence of Perceived Corruption in Post-Soviet Countries

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We investigated firm-level perceptions of corruption, based on two enterprise surveys conducted across eight countries of the former Soviet Union. In addition to identifying the perceived major obstacles to business operations, the article looks at whether managers in the agribusiness sector perceive corruption differently than do managers in other sectors. The empirical analysis makes use of the most recent wave of the Business Environment and Enterprise Performance Survey (BEEPS) conducted between 2012 and 2013, complemented by our own survey conducted in 2016. The results paint a heterogeneous picture. One-fifth of the respondents to BEEPS agree that private payments or gifts to local officials have a moderate or high direct impact, whereas the rate of agreement declines when asked about parliamentarians or government officials. Results of a range of econometric models, however, do not reveal differences between agribusiness and other sectors at large. Only in two of ten specifications do respondents from agribusiness tend to perceive corruption as occurring less frequently than do respondents from other sectors. However, country effects seem to be more important than intersectoral differences in the perception of corruption.

Keywords: agribusiness, business obstacles, CIS countries, quality of institutions

JEL Classification: D22, D73, P37

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In the beginning of the 1990s, scholars began to realize that formal policies were not the only drivers of economic restructuring and growth, but the effects of a broader set of institutions were also at play. The business environment—as a combination of formal and informal institutions, physical infrastructure, human resources, and geographic features—wields great influence over the efficiency of firms and industries. It directly and indirectly shapes investment decisions and incentives. One central theoretical argument posits that, in countries with weak institutions, contracts among private economic actors and between private economic parties and public authorities tend to be incomplete; that is, it is uncertain whether a given contract will be fulfilled, and the fulfillment of the contract is often unenforceable by a third party. Common arguments assert that a poor business environment, unpredictable changes in policies, corruption, and capture of the state by the political and economic elite have a significant negative impact on FDI inflows and sales growth (Kaufmann, Kraay, and Mastruzzi 2003). Eifert, Gelb, and Ramachandran (2008) provide an empirical illustration by using data from manufacturing firms across developing countries in Africa and Asia. The authors demonstrate that indirect costs related to transport infrastructure and public services incurred by manufacturing firms account for a relatively high share of their total costs. Inappropriate policy and institutional frameworks are among the most common factors associated with poor performance of the agricultural sector in developing and transition economies (Chang 2012). Dethier, Hirn, and Straub (2010) provide a detailed review of the existing literature and analyze enterprise performance with business climate data.

With respect to corruption, two opposing arguments persist in the literature (Méon and Sekkat 2005). While some claim that corruption may act as a strategy to circumvent restrictive regulation (“grease the wheel of commerce”), others maintain that it only serves to increase transaction costs, by providing incentives to maximize regulation or undermine the enforcement of regulation at the cost of others (i.e., consumers, competitors, the general public). Based on cross-country analyses of indicators of perceived corruption, most authors conclude that corruption is often detrimental to economic development (Dreher and Herzfeld 2008). There is also microlevel evidence that higher levels of corruption direct investments into capital stock with a lower degree of reversibility and rent-seeking activities (Svensson 2005). Focusing on the predictability of corruption, Campos, Lien, and Pradhan (1999) conclude that predictable attempts at bribery are less harmful to investors than unpredictable environments.

Regarding transition economies, several studies provide empirical evidence of the relationship between bureaucracy and corruption as well as its consequences for firms. Analyzing the Western Balkan countries during the late 1990s, Minassian (2002) highlights a negative correlation between levels of corruption and macroeconomic indicators, such as foreign direct investment (FDI) inflow, the country’s credit rating, and general investment levels. However, microlevel analysis allows more precise measurement of an actor’s perception of corruption and resulting behavior. For repeated waves of the Business Environment and Enterprise Performance Survey (BEEPS), conducted in twenty-six transition economies between 1999 and 2005, Duvanova shows that excessive bureaucratic requirements are positively correlated with the level of corruption (Duvanova 2014). Furthermore, privately created firms report higher corruption costs and foreign owned firms report a lower level of corruption. However, the hypothesis that there is no correlation between the degree of economic reforms, measured by the EBRD transition indicator, and the cost of corruption cannot be rejected. Clarke and Xu (2004) analyze bribe-takers and bribe-payers in twenty-one transition economies in Europe and Asia. Their results indicate that de novo private firms and more profitable firms are more likely to pay bribes. Looking at the consequences of corruption on the performance of firms, Mera (2016)

analyzes the total factor productivity (TFP) of firms in thirty-two European and Central Asian (ECA) countries by using a dataset derived from the BEEPS panel data and covering up to eight years. The results suggest that the more corruption is reported as a major obstacle, the less productive firms are.

Furthermore, first empirical evidence shows that institutional quality impacts economic sectors differently. With the help of a theoretical model and U.S. import data, Levchenko (2007) shows that countries with a better institutional environment capture a larger share of more institutionally dependent industries. Similarly, analyzing industry-level trade shares, Nunn (2007) demonstrates that institutional quality has a bigger impact on the composition of trade than the sum of physical capital and skilled labor. A weak institutional environment favors institution-extensive sectors, such as processing of raw materials, compared to institution-intensive sectors like manufacturing of automobiles, aircraft, or electronic equipment. Looking more closely at transition economies, Schuler (2003) compares the composition of trade flows before and after the first economic and political reforms. His results show that a weak institutional environment has a greater negative impact on net exports of complex goods. However, less is known about differences in the perception of corruption as an obstacle for business activities across sectors within an economy.

Agriculture and food processing remain important sectors in several of the post-Soviet transition economies.<sup>1</sup> One of the major objectives of all of these countries is the establishment of a modern, efficient, and competitive agri-food sector that will contribute to export revenues. However, any development of the agricultural sector toward higher value products or export-oriented marketing channels requires an appropriate development of the whole supply chain from farmers to wholesale and processing to retail and international trade. Improvements in the quality of products and processes along the various levels of the food supply chain are constrained by the weakest element within this chain.

Against this background, this article analyzes the business environment for agribusiness firms in eight countries of the former Soviet Union. While agribusiness might cover a broad range of activities that are not always easy to demarcate (Edwards and Shultz 2005), due to data availability, we will focus in this contribution on food processing and food trade. More specifically, we look at whether the perceived prevalence of corruption differs between managers in food manufacturing compared to firm managers in other sectors. Agribusiness is often characterized by small- and medium-sized producers. Our core hypothesis is that these are especially vulnerable to the illegal extraction of fees and bribes by public officials. Consequently, we expect producers in this sector to perceive corruption as a larger obstacle for their business activities compared to their counterparts in other sectors. Empirically, the analysis makes use of insights from enterprise surveys across all seven countries of the former Soviet Union neighboring the European Union (viz., Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russia, and Ukraine) and Kazakhstan (CIS-8).<sup>2</sup> To gain more insights from other actors in agricultural trade, an additional survey was conducted in these eight countries. Binary and ordered probit models are used to analyze determinants of corruption and to test for differences across sectors and countries. The following section presents a short discussion of the attempts to quantify corruption and provides an overview of the situation in the eight countries of interest based on national-level indicators. Firm-level data

and our empirical strategy follow in the third section. We present results of the econometric analysis in the fourth section before providing some conclusions.

### MEASURING CORRUPTION IN CIS COUNTRIES

Corruption has been identified as “one of the main challenges in many post-Soviet countries” (Denisova-Schmidt and Prytula 2017, p. 325). Although there are differences in the use of the term corruption, most economists agree upon the general definition that corruption is “the abuse of power of public office for personal gain in a manner that contravenes the rules of the game” (Aidt 2003). While there is common agreement that corruption takes both monetary and nonmonetary forms, it is difficult to ascertain indicators that are easy to measure and allow international comparison. Since the mid-1990s, there have been several initiatives aiming at providing quantitative assessments of the prevalence of corruption within a certain country. Heywood and Rose (2014) provide a detailed discussion of the perception-based and nonperceptual corruption indicators available. The most prominent and widely used indicators are the Corruption Perceptions Index (CPI), published by Transparency International, and the dimension Control of Corruption from the World Governance Indicators (WGI), published by the World Bank. Both indicators represent composite indices derived from several sources including general opinion surveys and expert assessments. In its most recent version, the CPI draws from up to thirteen different sources. The WGI makes use of more than thirty individual sources, capturing in total six dimensions of quality of governance. The compilation should reduce the influence of single sources and provide a wider coverage of countries worldwide. The Global Competitiveness Indicator (GCI), published by the World Economic Forum, as a third example, is based on an annual survey of business representatives across 138 countries. Table 1 displays the most recent values (2016) of these three corruption indicators for the eight countries of interest. For all indicators, higher values indicate a lower level of corruption.

TABLE 1  
Comparison of Corruption Indices (2016)

Country	Corruption Perceptions Index (CPI)		WGI Control of corruption		World Economic Forum (GCI) subpillar corruption	
	Rank 2016	Score 2016	Rank 2016	Score 2016	Rank 2016/17	Score 2016/17
Armenia	113	33	141	-0.57	65	3.53
Azerbaijan	123	30	172	-0.87	54	3.82
Belarus	79	40	110	-0.29	—	—
Georgia	44	57	56	0.67	39	4.25
Kazakhstan	131	29	166	-0.80	45	3.99
Moldova	123	30	179	-0.96	130	2.34
Russian Federation	131	29	170	-0.86	75	3.35
Ukraine	131	29	168	-0.84	108	2.73

Sources: Transparency International, World Economic Forum, World Governance Indicators.

Notes: CPI for 176 countries (scale from 0 to 100—almost no corruption); WGI for 209 countries (scale from -2.5 to 2.5—strong performance); GCI for 138 countries (scale from 0 to 7).

Georgia is the country with the lowest level of corruption according to all three indicators. The ranking of the remaining countries, however, is not entirely consistent. Whereas Moldova ranks lowest according to the WGI and GCI, Kazakhstan, Russia, and Ukraine share the same lowest rank according to the CPI, due to the narrow differences in index values. Moldova ranks joint second lowest. Interestingly, Belarus and Azerbaijan appear to be the most difficult to assess. Whereas Azerbaijan can be found in the upper half of the GCI ranking, the WGI places the country in the lower third. Belarus' rank fluctuates around the median; it was not covered by the GCI.

National-level highly aggregated indicators, however, do not allow for any conclusions to be drawn at the level of selected sectors. For any assessment of the cost of corruption for entrepreneurs or the development of successful combating strategies, it is crucial to quantify measures of corruption at a more disaggregated level. Ideally, such measures capture corrupt behavior at the level of economic sectors or regions.

Little has been undertaken to this extent. Svensson (2003) uses firm-level survey responses from Uganda and demonstrates a high variation of the prevalence of corruption within the same institutional setting. Firms with meaningful threats are able to refuse requests for bribes, which underlines the discriminatory power of public officials. Comparing the physical quantity of public investments with the cumulated public spending on investment projects across Italian provinces, Golden and Picci (2005) provide evidence of strong regional differences in the measured gap between public spending and the externally assessed value of the respective public investment. By using an alternative approach, Jensen and Rahman (2011) compare actual and hypothetical costs of construction projects in Bangladesh. Any costs exceeding the estimations based on plans, or any deviations from the projected quality of materials are attributed to corruption. All these attempts cover just one country, and cannot serve cross-country comparisons. Furthermore, they focus on the construction sector, and do not allow for any conclusions to be drawn with respect to agriculture and food processing.

Here we use a different dataset, which was collected across all CIS-8. The World Bank regularly conducts a series of surveys currently covering up to 139 countries called the Enterprise Survey. The Business Environment and Enterprise Performance Surveys (BEEPS) form a subset of the Enterprise Surveys jointly conducted by the World Bank and EBRD in Eastern Europe and Central Asia. Regarding the CIS-8, survey waves were conducted in all eight countries in the years 2002–2003, 2005, 2008–2009, and 2012–2013. All data are publicly available at <http://www.enterprisesurveys.org>. Based on a stratified random sampling procedure following the strata firm size, business sector, and geographic regions within a country, a varying number of manufacturing firms per country are selected. Data for sampling are generally derived from business directories. Thus, informal establishments are excluded from the survey. Furthermore, only establishments with more than five employees are included in the sample. The survey covers a wide range of business environment topics including general business characteristics, infrastructure and services, sales and supplies (imports, exports, supply and demand conditions), access to finance, degree of competition, crime (extent of crime and losses due to crime), business-government relations, investment climate constraints, labor, and productivity. In the following, we use data from the most recent wave (2012–2013) for the CIS-8.

TABLE 2  
Characteristics of BEEPS Sample

Country	Year of interview	Total observations	Food manufacturers		Share in real economy (%)
			Number	Share in national BEEPS sample (%)	
Armenia	2013	360	27	7.5	26.1
Azerbaijan	2013	390	47	12.1	24.5
Belarus	2013	360	13	3.6	16.0
Georgia	2013	360	45	12.5	35.3
Kazakhstan	2013	600	37	6.2	—
Moldova	2013	360	43	11.9	26.5
Russia	2012	4220	130	3.1	12.1
Ukraine	2013	1002	162	16.2	13.5

Sources: BEEPS, National Statistical Service of the Republic of Armenia (2016, p. 264); State Statistical Committee of the Republic of Azerbaijan (2015, p. 216); National Statistical Committee of the Republic of Belarus (2016, p. 47); National Statistics Office of Georgia (2016); National Bureau of Statistics of the Republic of Moldova (2016); Federal State Statistics Service (2016, p. 137); State Statistics Service of Ukraine (2016, p. 55).

Note: The last column displays the share of employment in the food, drink, and tobacco processing industry of total employment in the industrial sector for the year of the interview.

## INTRODUCTION OF THE DATA USED IN THE ANALYSIS

The BEEPS sample covers firms from various sectors such as manufacturing, wholesale, retail, construction, and service providers. Of the 7,652 firms interviewed in the sample, 504 (~6.5%) report to be food manufacturers. Table 2 presents the distribution of the BEEPS sample over the eight countries. The share of food manufacturers in the sample ranges between 3% and 16%. Compared to the relevance of the food sector in each country's manufacturing sector (last column), with the exception of Ukraine, food manufacturers seem to be underrepresented in the BEEPS sample. The surveyed food manufacturing enterprises engage mainly in the following International System of Industry Classification (ISIC) categories: manufacture of bakery products (24%); processing of meat, fish, fruit, vegetables, oils, and fats (20%); manufacture of beverages (14%); manufacture of grain mill products (10%); manufacture of dairy products (7%); and retail and wholesale activities (5%).

As an addition to the BEEPS, a further survey was conducted in all eight countries. The project AGRICISTRADe aimed at analyzing trade in agricultural products and biomass between the CIS-8 and the European Union. As such, agribusiness firms trading with grains, meat, and dairy products were approached in the survey. Empirical evidence for these actors is not available elsewhere. The sampling procedure was conducted by local research partners and had to be adapted to local conditions. Thus, it is not a random sample. Furthermore, the response rate was very low. Due to the small sample size and lack of data for two of the eight countries, the information will not be used in an econometric analysis, but nonetheless serves as an illustrative example.

Our survey aimed at collecting assessments of the quality of public services, obstacles for conducting business, characteristics of trade exchanges, and details about nontariff trade barriers.

In order to maintain some comparability, the list of public services and obstacles relied on the survey instrument of the BEEPS.

Of a total of sixty responses received, thirty-two firms operate in grain trade, eighteen in meat trade, and ten in the dairy sector. The highest number of responses came from Georgia (52%) and Russia (25%). When interpreting the results below, the nonrepresentative nature of the data must be kept in mind. The sample does not contain any response from Belarus or Moldova. Therefore, the sample allows for anecdotal evidence only, rather than statistically sound insights into the business environment for agricultural traders.

Most of the firms covered by our survey are in individual ownership (53%) or owned by a foreign company (18%). The overwhelming majority of them were established as private firms (86%). As displayed in [Figure 1](#), the median firm employs between twenty and ninety-nine permanent workers. Compared to the BEEPS agribusiness subsample, the share of micro firms (fewer than five workers) among the respondents of our own survey is much higher. Whereas the micro and small firms are almost exclusively located in Georgia, the group of large firms is constituted by one to four respondents from each country.

The majority of agribusiness firms covered by the BEEPS report their legal status as a shareholding company with nontraded shares (80%). Sole proprietorship applies for 10% of the respondents, and shareholding company with traded shares for 8%. Most firms (more than 90%) started operation after 1990. However, two firms report that they were formally registered in the nineteenth century. Across all countries, most firms in the BEEPS agribusiness subsample are small—they employ between five and nineteen employees, or of medium size (20–99 employees). The only exception is Belarus, where 62% of the surveyed firms employ more than 100 employees.

Among the trading companies covered by our survey, 39% export products, and 86% are engaged in import activities. Sixteen of the sixty firms (27%) are engaged in both activities; these are firms in Georgia, Kazakhstan, and Ukraine. The main export destinations are Armenia, Azerbaijan, and other non-EU destinations. Among the EU countries mentioned by three firms

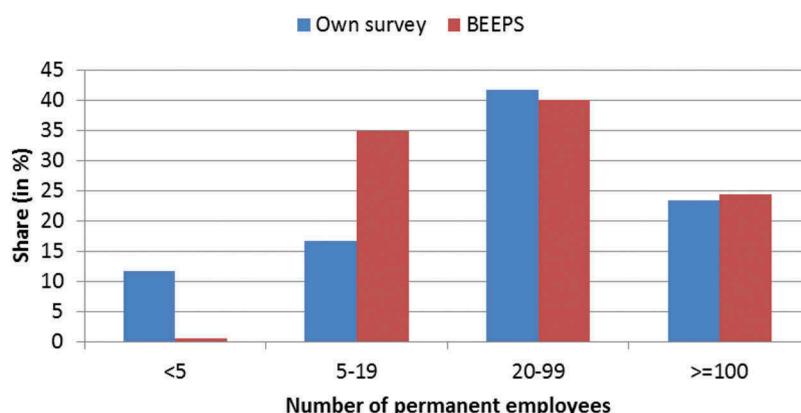


FIGURE 1 Distribution of Size of Establishments Across the Two Surveys.

Source: own survey, BEEPS

are Germany, Poland, and the Netherlands. Given the higher share of firms engaging in imports, the list of import origins is longer. In addition to Russia, Ukraine, and Kazakhstan, other non-EU countries figure among the most common countries of origin. Among the EU countries, Germany, France, and Poland are the main sources of imports.

In the BEEPS sample, enterprises were asked about the distribution channels of their sales. Here, domestic markets represent by far the most important sales platform ( $M = 82\%-97\%$ ). Across all countries, 14% of firms export products directly, and 9.5% of firms report the use of a third party to export products indirectly. More specifically, direct exports play an above-average role in Armenia (33%), Belarus (53%), Georgia (20%), Kazakhstan (16%), and Moldova (16%). Furthermore, relatively more Moldovan enterprises rely on indirect exports (28%). A similar situation can be observed in regard to international markets. Only a minority of managers surveyed agree that international markets are the primary market for their main product (4.5%).

To assess the relevance of corruption compared to other major obstacles perceived by the firms, Figure 2 presents a comparison across both samples. Both surveys included a list of items covering access to inputs and other aspects of the business environment. Respondents were asked to rate whether items represent an obstacle to business on a 5-point Likert scale. Combining the responses “major obstacle” and “severe obstacle” as one category allows the obstacles to be ranked for both samples. In our survey, traders most often refer to customs and trade regulations, certification requirements and permits, taxes, corruption, and political instability as major obstacles. Food manufacturers, covered by the BEEPS sample, place tax rates, corruption, political instability, electricity, and access to finance at the top of the list. Trade-related items appear to be more important in our survey. However, the magnitude of the responses is not directly comparable. One reason is

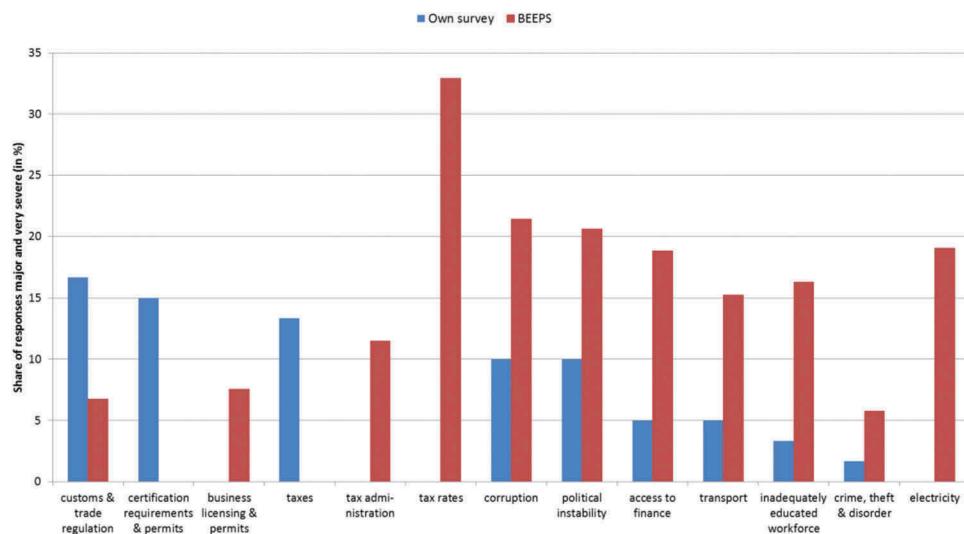


FIGURE 2 Response Items Perceived as Major or Very Severe Obstacle.

Source: own survey, BEEPS

a substantially higher share of respondents who did not answer this question in our survey (18%–28%) compared to the BEEPS survey (0.2%–13%).

## INCIDENCE AND DETERMINANTS OF PERCEIVED CORRUPTION

### Definition of Corruption Measures

The BEEPS questionnaire includes a range of questions related to aspects of corrupt practices. Here we use responses to three different questions to derive measures of the perception of corruption.

1. “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.” (*Frequency*): Originally, the question is accompanied by a six-item scale ranging from never to always. Answers to the categories frequently, very frequently or always are condensed into one category.
2. “To what degree is corruption an obstacle to the current operations of this establishment?” (*Obstacle*): In the questionnaire, respondents are offered a 5-item Likert scale from no obstacle to very severe obstacle. Here, answers to the categories major and very severe obstacle are condensed into a binary variable taking the value of one.
3. Finally, all answers mentioning corruption take the value of one for the variable *Biggest obstacle* in response to: “Can you tell me which of the elements of the business environment included in the list, if any, currently represents the biggest obstacle faced by this establishment.”

Before any multivariate analysis is made, the following graphs present the three corruption-related variables differentiated by country and sector. In order to focus on agribusiness, all other sectors have been aggregated into the categories: other manufacturing (ISIC 17–37), trade (ISIC 51–52), construction (ISIC 45), and other sectors (ISIC 50 & 55–72). With 2961 observations (38.7%), trade represents the biggest sector and agribusiness (6.8%) the smallest according to this classification.

Figure 3 shows the share of respondents’ agreement with the three corruption measures introduced above. Across all countries, respondents tend to consider corruption more often as an obstacle than a frequent phenomenon. With the exception of Moldova, fewer than one-fifth of the respondents perceive corruption as the biggest obstacle. Looking at differences across the eight countries reveals an inconsistent ranking. Based on responses to *Frequency*, Russia figures as the most corrupt country, whereas Ukraine leads the ranking according to the *Obstacle* measure. Georgia stands out as the country with the lowest share of responses to all three measures. Responses for Belarus and Azerbaijan stand in stark contrast to their position based on international corruption indicators presented in Table 1.

We observe a similar tendency across sectors: Respondents seem to be more likely to consider corruption as an obstacle than a frequent occurrence. Across all sectors, only between 5% and 11% of respondents consider corruption to be the biggest problem. Finally, agribusiness firms seem to perceive corruption as less of a problem compared to firms from other sectors, but

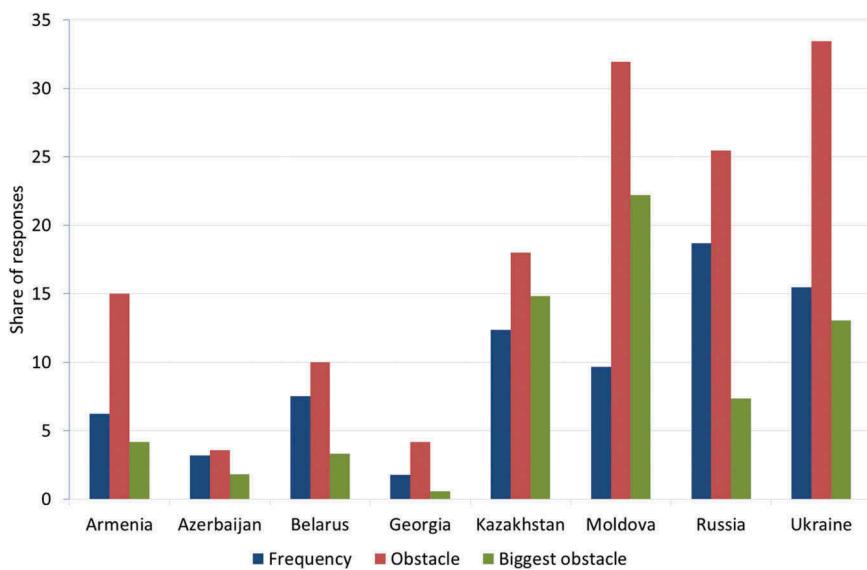


FIGURE 3 Frequency of Corruption and Perception as Obstacle by Country.

Source: BEEPS

the differences are rather modest. The differences across countries seem to be larger than the differences across sectors, as shown in Figure 4.

When it comes to more concrete examples (e.g., customs, courts, or tax collectors), however, the share of respondents perceiving corruption as a frequent occurrence falls. Figure 5 and Table 3 display the *Frequency* variable separated by type of public official across all countries and disaggregated. It is worth mentioning that with respect to customs and courts, more than 60% respond “never” and more than 10% “don’t know.” More than 50% do not believe that private payments to public officials have any direct impact. In Armenia and Azerbaijan, a higher share of managers claims to provide irregular payments frequently or always when dealing with customs, compared to the general question. With respect to tax administration, 11% of the respondents from Armenia report irregular payments as occurring frequently or always, which is above the rate of answers to the more general question “to get things done.” It is important to be aware of the very low number of absolute responses provided by food manufacturers disaggregated by country. Thus, only the values for Russia and Ukraine are based on more than 100 valid responses. Therefore, relative differences between the categories do not represent large differences in absolute numbers in the case of Armenia and Azerbaijan.

A positive result is the high share of responses in the category “never” for Georgia, which is in line with reports of the country’s successful attempts at reducing corruption (World Bank 2012). Surprisingly, corruption does not seem to be present in Belarus, which stands in contrast to the country’s ranking in international corruption indicators, where it is very close to its neighbors, Ukraine and Russia (see Table 1).

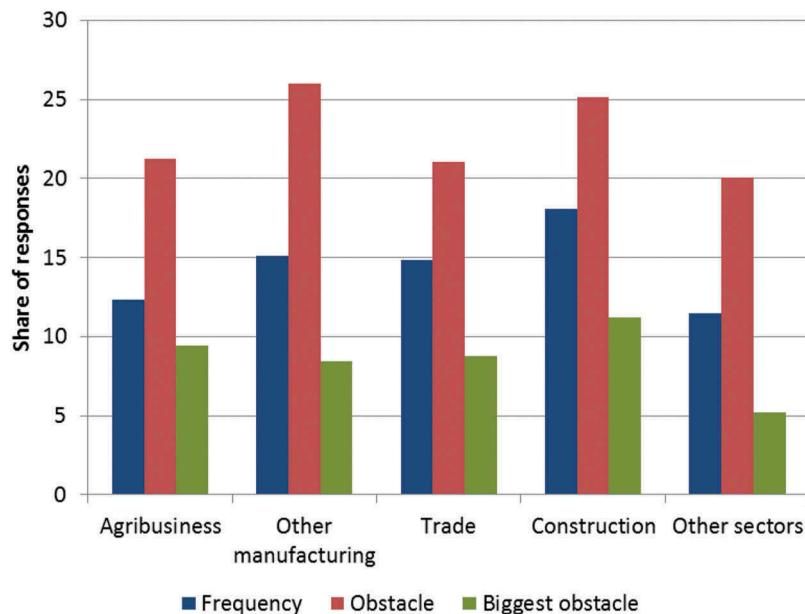


FIGURE 4 Frequency of Corruption and Perception as Obstacle by Sector.

Source: BEEPS

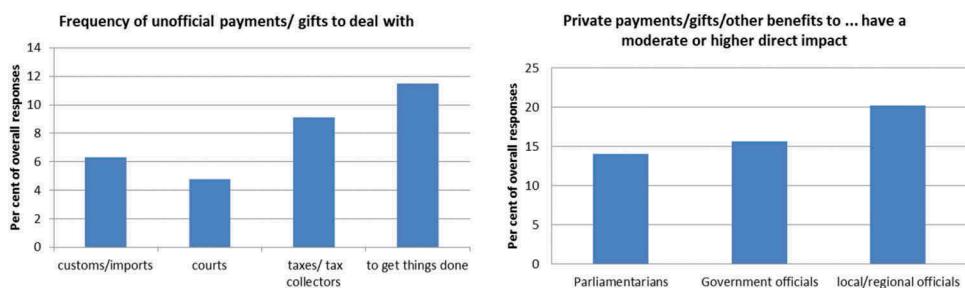


FIGURE 5 Incidence and Perceived Impact of Corruption.  
Source: BEEPS

In our survey, only 10% of respondents report corruption as a major or very severe obstacle. All of them are from Russia or Ukraine. Asked whether additional costs are expected when dealing with customs, 20%, all of them from Georgia, responded “very frequently.” Similarly, 20% again (all from Georgia) claimed that additional costs are “very frequently” expected when dealing with certificates, licenses, and permits. With respect to other procedures, such as inspection of economic and financial activity, taxes, fire safety, and worker safety inspections,

TABLE 3  
Incidence of Perceived Corruption Separated by Type of Public Official by Country (share)

Country	ARM	AZE	BLR	GEO	KAZ	MDA	RUS	UKR
<i>Frequency of irregular payments (%)</i>								
Cumulated answers in categories “frequent” or “always”								
Customs	7	6	—	—	14	—	7	8
Courts	4	2	—	—	14	—	5	7
Taxes and tax collection	11	2	—	—	14	—	8	17
Answers in category “never”								
To get things done	30	47	77	84	38	51	41	12

Source: BEEPS.

no respondents answered that they “frequently” or “very frequently” face expectations of additional payments.

### Determinants of Perceived Corruption

To learn more about the differences across sectors and countries, after controlling for additional determinants of the perception of corruption, two econometric approaches are used. First, we estimate a probit model explaining the three binary corruption measures introduced above. Thus, the dependent variable will be one for answers indicating corruption as at least a major obstacle or frequent occurrence. All responses naming corruption as the biggest obstacle are coded one in the third specification. Second, the responses to the questions *Obstacle* and *Frequency* are explained by using an ordered probit model. The five and six ordered classes correspond to the original answer categories, starting from answers “never” and “no obstacle” to “always” and “very severe obstacle,” respectively. Dummy variables for the different economic sectors represent the major explanatory variables of interest. The most common sector, trade, is treated as reference. In line with the model of Hellman and Schankerman (2000), additional firm characteristics such as size and business history are controlled for. All estimations apply survey weights.

Based on the estimated coefficients of the binary probit models, displayed in Table 4, we cannot reject the hypothesis that managers in agribusiness perceive corruption differently from managers in other sectors. Only in one specification (column 2) are managers in agribusiness significantly less likely to perceive requests for bribes or gifts as frequent. However, after controlling for country effects, the estimated coefficient drops substantially, and fails to be statistically different from zero. Similarly, estimated coefficients of other sectors decline once country controls are included. Construction stands out as an exception: In three of six estimated models, the coefficient is positive and statistically different from zero. Thus, it is safe to reject the hypothesis that managers in construction perceive corruption as frequent and a great obstacle as managers in trade. Controlling for country of residence and treating the most common case, Russia, as the reference country (columns 4–6), shows that respondents from Georgia are less likely to answer positively to the three corruption questions. For two of the three measures, the same conclusion holds for respondents from Armenia, Azerbaijan, and Belarus. Estimated

TABLE 4  
Determinants of Perceived Corruption: Binary Probit

Variable	Obstacle	Frequency	Biggest Obstacle	Obstacle	Frequency	Biggest Obstacle
	1	2	3	4	5	6
Small	-0.20** (0.08)	-0.26*** (0.09)	0.12 (0.11)	-0.14 (0.09)	-0.10 (0.10)	0.03 (0.10)
Startup	0.51** (0.24)	0.76** (0.35)	0.62*** (0.24)	0.19 (0.25)	0.54 (0.36)	0.35 (0.26)
Privatized	0.44 (0.30)	0.55 (0.37)	0.96*** (0.29)	-0.02 (0.30)	0.34 (0.39)	0.56* (0.31)
Agribusiness	-0.16 (0.12)	-0.34** (0.13)	-0.10 (0.14)	-0.03 (0.14)	-0.13 (0.14)	-0.19 (0.15)
Other manufacturing	0.01 (0.10)	-0.22** (0.10)	-0.22* (0.11)	0.01 (0.10)	-0.19* (0.10)	-0.28** (0.12)
Construction	0.19 (0.12)	0.29*** (0.11)	-0.02 (0.15)	0.19 (0.12)	0.30*** (0.11)	-0.09 (0.15)
Other sectors	-0.17 (0.12)	-0.32** (0.14)	-0.29* (0.16)	-0.13 (0.12)	-0.27* (0.15)	-0.28* (0.17)
Armenia				-0.56*** (0.13)	-0.99*** (0.22)	-0.20 (0.19)
Azerbaijan				-1.10*** (0.21)	-1.12*** (0.21)	-0.45 (0.32)
Belarus				-0.66*** (0.15)	-0.56*** (0.17)	-0.36 (0.22)
Georgia				-1.32*** (0.21)	-1.58*** (0.25)	-0.86** (0.38)
Kazakhstan				-0.35*** (0.11)	-0.51*** (0.13)	0.48*** (0.11)
Moldova				0.24 (0.20)	-0.43 (0.30)	0.65*** (0.22)
Ukraine				0.21 (0.14)	-0.24 (0.16)	0.45*** (0.16)
Constant	-1.02*** (0.24)	-1.45*** (0.35)	-1.93*** (0.24)	-0.64** (0.26)	-1.12*** (0.37)	-1.72*** (0.27)
<i>n</i>	6,803	6,258	6,803	6,803	6,258	6,803

Source: Own calculation based on BEEPS.

Notes: *n* = number of observations. Reference categories are firms with more than twenty employees, state-owned firms, firms in the trade sector, and firms in Russia.

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

coefficients for Moldova and Ukraine suggest that respondents from these countries show a higher probability to perceive corruption as the biggest obstacle compared to respondents in Russia. Although respondents from Kazakhstan show a lower probability to perceive corruption as an obstacle, they show a higher probability to perceive corruption as the biggest obstacle.

The results of the ordered probit model, displayed in Table 5, reveal similar insights. The managers of agribusiness firms show a significantly lower probability than managers do in the trade sector to perceive corruption interactions as frequent (column 2). However, after controlling for country effects, the size of the coefficient declines and is no longer significantly different from zero. Only managers in the construction sector show a higher probability to select response

TABLE 5  
Determinants of Perceived Corruption: Ordered Probit

Variable	Obstacle	Frequency	Obstacle	Frequency
	1	2	3	4
Small	-0.18*** (0.07)	-0.22*** (0.07)	-0.13* (0.07)	-0.13* (0.07)
Startup	1.00*** (0.25)	0.60** (0.23)	0.78*** (0.25)	0.41* (0.24)
Privatized	0.89*** (0.28)	0.55** (0.25)	0.47* (0.28)	0.24 (0.26)
Agribusiness	-0.18 (0.11)	-0.23** (0.10)	-0.04 (0.11)	-0.06 (0.10)
Other manufacturing	0.05 (0.08)	-0.08 (0.08)	0.02 (0.08)	-0.10 (0.08)
Construction	0.23** (0.11)	0.19** (0.09)	0.23** (0.10)	0.18* (0.10)
Other sectors	-0.16* (0.09)	-0.14 (0.09)	-0.12 (0.09)	-0.12 (0.09)
Armenia			-0.55*** (0.11)	-0.16* (0.08)
Azerbaijan			-1.24*** (0.13)	-0.76*** (0.10)
Belarus			-0.53*** (0.11)	-0.41*** (0.11)
Georgia			-1.44*** (0.14)	-1.60*** (0.14)
Kazakhstan			-0.29*** (0.09)	-0.27*** (0.09)
Moldova			0.17 (0.15)	-0.46** (0.23)
Ukraine			0.39*** (0.11)	0.23** (0.09)
<i>n</i>	6,487	6,258	6,487	6,258

Source: Own calculation based on BEEPS.

Notes: *N* = number of observations. Reference categories are firms with more than twenty employees, state-owned firms, firms in the trade sector, and firms in Russia.

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

at the upper end of the scale. Similarly, managers of privatized firms seem to be more likely to perceive corruption as an obstacle or to face more frequent requests for bribes. Again, estimated coefficients of country dummies are larger and statistically significantly different from zero. Firms in Georgia, Azerbaijan, Belarus, Kazakhstan, and—to some extent—Armenia, seem to be working in less corrupt environments than are companies in Russia. Respondents from Ukraine are more likely to choose higher categories. Firm managers in Moldova respond similarly to their Russian counterparts when asked about corruption as an obstacle, while choosing lower categories when asked about the frequency.

### Critical Reflection upon the Underlying Data

Generally, all results are based upon subjective assessments. There is considerable debate in the literature about the risk of capturing unobserved sentiments (e.g., Weber Abramo 2008). The high correlation among perceptions of institutional indicators leads scholars to assume that respondents demonstrate a latent dissatisfaction with existing conditions, instead of providing an effective assessment of the respective indicator.<sup>3</sup>

The limited sample size for most of the eight countries restricts an analysis of the regional heterogeneity of perceptions. Other studies using the complete BEEPS data suggest substantial differences in the perceived quality of public services between businesses in metropolitan centers and areas further away from the capital (e.g., Mera 2016 for Moldova). Despite these limitations, any research interested in how firm managers perceive corruption will have to make use of subjective measures derived from surveys. The inclusion of similar statements assessing the frequency of requests for bribes and the perception of corruption as an obstacle would allow better assessment of the consistency of responses.

### CONCLUSIONS

The BEEPS survey provides microlevel data on food manufacturers and their assessment of the business environment. Sample sizes, for Russia and Ukraine in particular, are of a useful size for further quantitative analyses. However, the dataset is limited to food manufacturers, and risks excluding micro enterprises. Corruption rates among the largest perceived obstacles in at least two of the eight countries investigated, and ranks high in the others. At the level of individual countries, the results highlight the efforts made by the Georgian government to reduce corruption. Among the food manufacturers, managers in Georgia are most likely to respond “never” when asked about the frequency of irregular payments. In the case of Belarus, it is unclear why there is such a discrepancy between the microlevel evidence of almost no corruption and the rather low rating by international corruption rankings.

Results of a range of bivariate and ordered probit models do not reveal differences between agribusiness and other sectors at large. Country effects seem to be much more important explanatory variables for the differences in managers’ perceptions. Our result underlines the importance of national effects in combatting corruption and improving the business environment for the benefit of firms across all sectors of the economy.

Our analysis of the BEEPS data as well as of our own survey data shows that managers in Georgia perceive corruption as a minor problem compared to their colleagues in the other post-Soviet countries in this study. Over the last several years, Georgia has worked to achieve greater transparency in its economic sector. The authors agree with Denisova-Schmidt and Prytula (2017) that governments in the region should be supported in providing a business environment that does not force participants to resort to corrupt practices in order to run their businesses effectively. Measures demonstrated to be successful in Georgia, earlier claimed to be one of the most corrupt Soviet republic, include a reduction in public administration, accompanied by a 15-fold increase in salaries and efforts to attract recently graduated employees (World Bank 2012). Tax and bureaucratic requirements were further simplified following the election of the government of Mikheil Saakashvili in 2004. Three of the eight countries in this study are currently working on further integrating into the

European Union. Efforts to reduce corruption are among the necessary conditions for achieving this (Onopriychuk 2017). However, as clearly demonstrated by Kupatadze (2017) in a comparison of four post-Soviet countries, the political will of the ruling actors and a radical break with the past ruling elite are two crucial determinants for effective anticorruption policies.

## ACKNOWLEDGMENTS

We gratefully acknowledge research assistance by Nadeshda Onofrei and Katerina Momcheva. We thank participants of the Second World Congress of Comparative Economics and the IAMO Forum 2017 and anonymous reviewers for their valuable feedback.

## FUNDING

This study was conducted with financial support from the European Union's Seventh Framework Programme for Research, Technological Development and Demonstration under grant agreement no 612755 (AGRICISTRADE).

### Notes

1. In Armenia, Azerbaijan, Georgia, and Moldova, in particular, agriculture accounts for a large share of employment (30% in Moldova; >50% in Georgia) (ILO). Similarly, employment in food manufacturing exceeds one-quarter of total manufacturing employment in these four countries (see Table 2).
2. The Commonwealth of Independent States (CIS), established in December 1991, is a regional organization composed of the former Soviet Republics, with the exception of the three Baltic States. Georgia (since 2008) and Ukraine (since March 2014) are no longer members of the CIS, but for the sake of simplicity, we retain the indication "CIS" for all eight countries analyzed in this article.
3. The analysis does not include an assessment of the impact of trade sanctions between Russia and the European Union on the agricultural sector. The BEEPS surveys were conducted before sanctions were introduced.

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