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THE RESPONSIBILITY OF INVESTMENT CLIMATE AND STATE OF DEMOCRACY TO THE DETERMINANTS OF SECTORAL FDI IN EASTERN EUROPEAN AND CENTRAL ASIAN COUNTRIES: A QUANTITATIVE ANALYSIS USING A DYNAMIC SYSTEM GENERALIZED METHOD OF MOMENTS ESTIMATOR, FOR THE PERIOD 1994-2018

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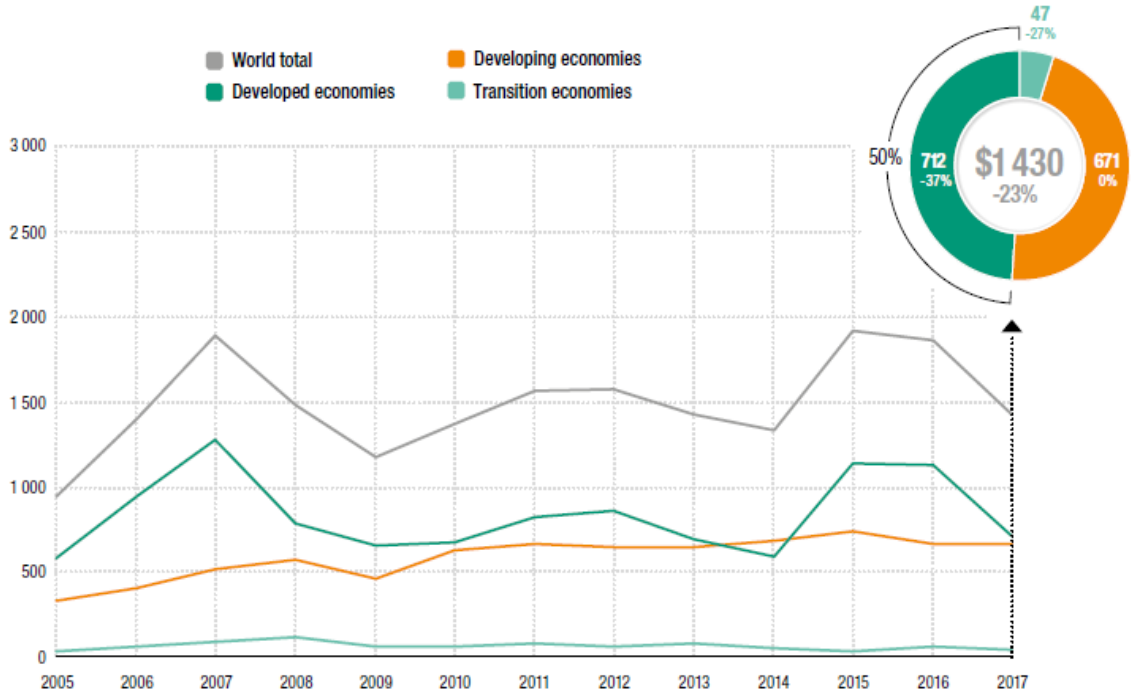
Abstract:

In order to study the responsibility of investment climate and state of democracy to the determinants of sectoral distribution of Foreign Direct Investment (FDI), this study attempts to examine the institutional determinants of the sectoral distribution of FDI in Eastern Europe and Central Asia, focusing on the investment climate and state of democracy. Using a dynamic system generalized method of moments estimator, the study examine twenty-one countries for the period 1994–2018. The analysis of these quantitative findings is that when human capital is controlled for, the host country investment profile has a positive effect on agricultural FDI and the host country state of democracy positively affects agricultural and manufacturing FDI. In addition, services FDI is attracted by educated labor, whereas FDI to other sectors is attracted by cheap labor. Moreover, natural resource endowments have a positive impact on FDI in the sectors of agriculture and manufacturing.

Key Words: Democratic Responsibility, Institutional Determinants, Investment Profile & Sectoral FDI

Introduction:



Source: UNCTAD, World Investment Report, 2018

Figure 1: FDI Inflows, global and by group of economies, 2005-2017 (Billions of dollars and percent)

The global financial crisis of 2008 did not spare foreign direct investment (FDI) flows. According to the United Nations Conference on Trade and Development (UNCTAD), in spite of a moderate increase, to $1.24 trillion in 2010, global FDI is still 15 percent below its $1.4 trillion to $1.6 trillion precris average (UNCTAD 2011). A prominent characteristic of this recovery, however, is the leading role developing economies play. For the first time, developing and transition economies together attracted more than half of global FDI flows

(UNCTAD 2018), while FDI to developed economies is still declining (Figure 1).Although multinational enterprises (MNEs) continued investing in these "new FDI powerhouses" in both efficiency- and market-seeking projects, the main concerns about the postcrisis business environment remain. One of the main risk factors, along with the risks of sovereign debt crises and fiscal and financial sector imbalances, is unpredictability of economic governance (UNCTAD 2018). Since the FDI recovery brought major sectoral differences, with only manufacturing FDI rising and services FDI still declining, the question about the sectoral implications of good governance and good institutions in particular, is a potentially important question for the postcrisis FDI recovery. Institutional and other determinants of FDI have been relatively well examined at the aggregate level, but there is a broad literature gap with respect to FDI determinants at the sectoral level, as there are almost no sectoral studies.1 This study investigate that such studies are particularly important for emerging market and developing economies since their institutional environments are typically weaker than those of developed countries. The study also argue that the sectoral level of analysis is of significance since different sectors are characterized by different FDI regulations.2 These differences are often guided by noneconomic reasons, such as national security concerns, causing market distortions that can be controlled for at the sectoral level of analysis. The purpose of this study is to examine the determinants of sectoral FDI at a regional level, focusing on the region of Eastern Europe and Central Asia (EECA), emphasizing the role of institutional determinants, such as investment climate and state of democracy, in this region. The study examine twenty-one countries for the period 1994–2018 using a dynamic panel Blundell–Bond generalized method of moments (GMM) estimator, following the methodology of Arellano and Bover (1995) and Blundell and Bond (1998).The GMM estimator allows us to exploit both the time series dynamics and the pooled country characteristics of the data while controlling for endogeneity and omitted variable biases. The study conduct the analysis in three sectors: agriculture, manufacturing, and services, controlling for the effects of the level of economic development, human capital, and natural resource endowments. The main findings support the hypothesis that when controlling for the endowment of human capital, institutional quality matters more for attracting agricultural and manufacturing FDI to the EECA region than it does for attracting services FDI. More specifically, a country's investment profile and democratic accountability, as defined by the *International Country Risk Guide* (*ICRG*) (PRS Group 2012) affect sectoral FDI differently: the investment profile has a significant positive effect only on agricultural FDI, whereas the state of democracy has a multisector effect on FDI: It positively affects the inward foreign direct flows to both agriculture and manufacturing. The institutional determinants become significant in the determination of services FDI only if human capital is excluded from the study, suggesting that it is in fact the true determinant. The estimates on human capital lead us one step further: they provide evidence FDI being attracted by cheap labor. Since this study is conducted at the sectoral level, it has been able to distinguish between effects on FDI in different sectors. The estimates of human capital suggest that foreign direct investment in services industries is attracted by educated labor, whereas FDI flowing to the other sectors is attracted by cheap labor. Natural resource endowments, however, are a stimulus for agricultural and manufacturing FDI, but not for services FDI.

Literature Review:

In spite of a large volume of studies, the interest in the determinants of foreign direct investment in developing countries is growing, not decreasing. FDI is considered a stable component of foreign capital inflows to developing countries and a vehicle for spreading technological innovations from more technologically advanced economies. As such, one of the most often scrutinized determinants of FDI inflows, especially in developing countries, is the quality of the local institutional environment. Well-governed institutions are supposed to exert a positive influence on investment in general since investors face a more stable, less risky environment and higher expected rates of return. Foreign investors in general dislike the uncertainty that results from governance inefficiencies, policy reversals, and lack of enforcement of the property rights. The quality of institutions is of a great importance especially for poor countries since their shares of FDI in gross domestic product (GDP) are large. For these countries, FDI represents a very important channel through which good institutions affect economic growth and development in general.

The literature on the impact of institutions on FDI starts in the 1990s. Some of the earlier studies attempt to study this effect with the help of an index. Wheeler and Mody (1992) create an index using the first principal component of thirteen risk factors, including bureaucratic red tape, political instability, corruption, and the quality of the legal system, but also including factors such as living environment of expatriates and inequality, which are not directly related to quality of institutions. They fail to find a significant impact of "good" institutions on the location of American foreign affiliates. Later studies by Stein and Daude (2001) and Wei (2000) discuss the effects of corruption on FDI and argue respectively for and against the finding that corruption is an impediment to FDI. At the same time, Kaufman et al. (1999) show that five out of six governance indicators tested matter for FDI. The significant indicators are: political instability and violence, government effectiveness, regulatory burden, rule of law, and graft; the no significant indicator is voice and accountability (Kaufman et al. 1999).Further studies by La Porta et al. (1998) show that risk of repudiation of contracts by government, risk of expropriation, and shareholder rights also matter. An argument is also raised

that quality of institutions matter equally for inward and outward FDI since well-governed institutions also create the regulatory environment in which multinational companies emerge (Globerman and Shapiro 2002).

Value and number of announced FDI greenfield projects, by sector and selected industries, 2016–2017

	Value (billions of dollars)			Number		
	2016	2017	%	2016	2017	%
Total	**833**	**720**	**-14**	**15 766**	**15 927**	**1**
Primary	54	21	-61	52	63	21
Manufacturing	295	338	14	7 703	7 678	0
Services	484	362	-25	8 011	8 186	2
Top 10 industries in value terms:						
Electricity, gas and water	129	95	-26	404	296	-27
Business services	96	80	-16	4 125	4 278	4
Motor vehicles and other transport equipment	56	62	12	1 077	1 103	2
Construction	126	62	-51	322	276	-14
Chemicals and chemical products	43	61	42	804	856	6
Electrical and electronic equipment	44	52	20	1 005	958	-5
Transport, storage and communications	56	41	-26	935	903	-3
Trade	27	32	21	902	1 001	11
Food, beverages and tobacco	24	29	17	596	664	11
Textiles, clothing and leather	28	28	1	1 558	1 476	-5

Source: UNCTAD, based on information from the Financial Times Ltd, fDi Markets (www.fDimarkets.com).

Source: UNCTAD, World Investment Report, 2018

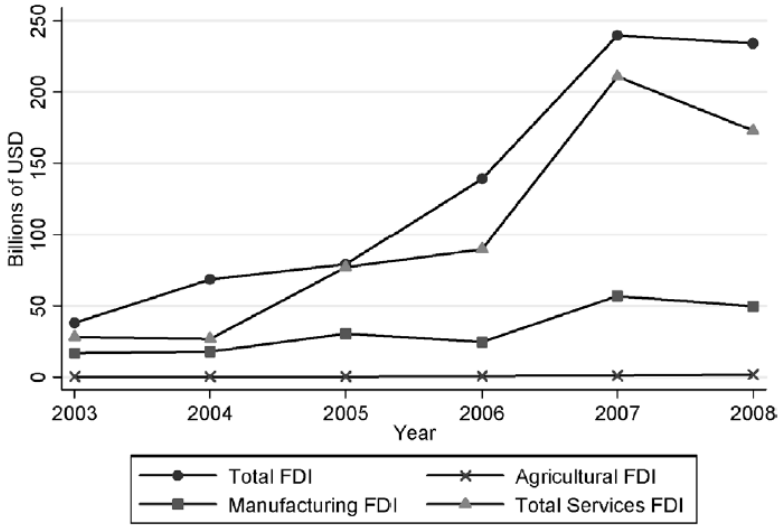
Figure 2

Another focus of the literature on the institutional determinants of FDI is the process of democratization. Earlier studies point out that the theoretical impact of democracy on FDI is unclear (Jensen 2003; Li and Resnick 2003). Democratic institutions are assumed to have a positive impact on the entire economy through the process of checks and balances on elected officials. They may, however, have a negative effect on FDI, since foreign investors may be in position to receive better incentives from autocratic regimes than from democracies. Several studies empirically demonstrate a positive effect of democratic institutions on FDI (Harms and Ursprung 2002; Kolstad and Tøndel 2002; Li 2009; North and Weingast 1989). They ascribe this effect to reduced arbitrary government interventions and lower risk of policy reversals, along with the strengthening of the protection of property rights. A more recent study by Asiedu and Lien (2011) examines whether the effects of democratization on FDI differ in countries endowed with or poor in natural resources. They find that democracy affects FDI positively in countries where the share of natural resources in total exports is low and negatively in countries where the share of natural resources in exports is high. Azman-Saini et al. (2010) investigate a link between economic freedom, foreign direct investment, and economic growth. Based on a panel of eighty-five countries, they find that FDI influences growth only if paired with economic freedom among the regional studies, Campos and Kinoshita (2003) and Méon and Sekkat (2004) find that in transition economies and Middle East and North African (MENA) countries, good governance attracts foreign investment. Harms and Ursprung (2002) illustrate further that a country's degree of political risk negatively affects inward FDI. Ok (2004) examines data collected through a survey of managers and expatriates of firms having foreign capital in Turkey, and describes economic and political instability as the most significant obstacle to foreign investment. In line with the above, Moskalev (2010) also finds that better governed countries (based on Kaufmann et al.'s [2005] worldwide governance indicators) attract more FDI. In addition, he finds that in a good institutional environment, foreign MNEs possess fewer business advantages than domestic firms.

More recently, the use of a gravity model has enabled testing for the impact on FDI of the institutional distance defined as the extent of similarity or dissimilarity between the regulatory, cognitive, and normative institutions of two countries (Xu and Shenkar 2002). In this respect, Bénassy-Quéré et al. (2007) find that institutional quality, as measured by bureaucracy, lack of corruption, information, banking sector, and legal environment, do matter for inward FDI. At the same time, weak capital concentration and employment protection have the opposite effect, and reduce inward FDI. No such general results apply to outward FDI.

Meanwhile a long list of studies examines the impact of corruption on inward FDI. Corruption, which is broadly defined as the misuse of power by public officials for private gain (Bardhan 1997), affects economic development in general and is a typical problem in low-income economies (Abed and Gupta 2002; Easterly 2001). Corruption has implications for economic growth (Ehrlich and Lui 1999; Mauro 1998, 2002; Shleifer and Vishny 1993), inequality (Gupta et al. 2002), inflation (Cukierman et al. 1992), real exchange rates (Bahmani-

Oskooee and Nasir 2002), and public goods (Mauro 1998, 2002; Tanzi and Davoodi 2000). In the 2000s, researchers began to focus more on the impact of corruption on inward FDI. Since corruption is a sign of an unfavorable institutional environment, studies hypothesize that high levels of corruption (the "grabbing hand" of domestic institutions) increases costs for multinationals and decreases the incentive to invest. Surprisingly, however, the empirical evidence is not so clear cut. Whereas Habib and Zurawicki (2002), Smarzynska and Wei (2000), and Wei (2000) find that corruption tends to impede FDI, Akcay (2001) does not find a significant relationship, and Egger and Winner (2003, 2005) demonstrate evidence in support of the hypothesis that corruption may act as an incentive for FDI. The intuition behind this result is that corruption can help multinationals circumvent regulatory and administrative restrictions, since in low-income countries these are oftentimes used to allow government officials to share in the profits from foreign investment.



Source: World Investment Report

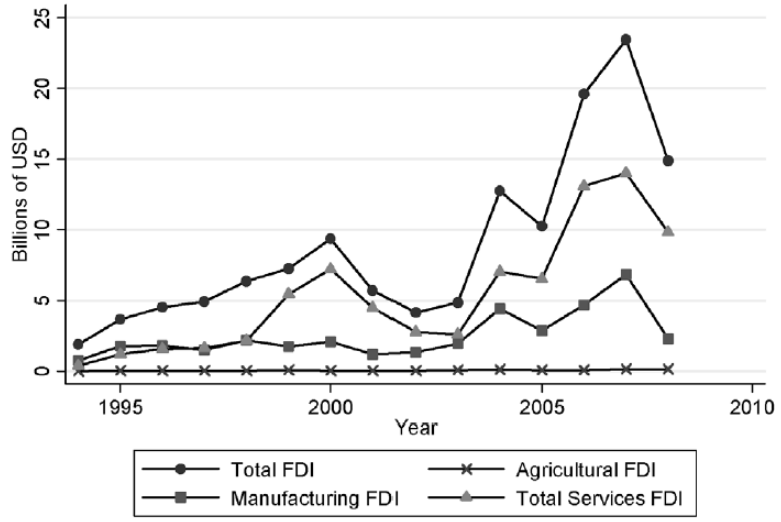
Figure 3: FDI Inflows to Eastern to Central Asia

The debate on the impact of corruption continues to this day. In a recent study, Javorcik and Wei(2009) use firm-level data and focuses on emerging market economies and find that for the set of countries examined, corruption not only reduces inward FDI, butalso shifts the ownership structure toward joint ventures. The existence of corruption, the authors argue, makes a local subsidiary necessary to cut through the bureaucratic labyrinth.

Finally, a group of relatively new studies investigate the role of investment climate in attracting FDI to developing countries. Using firm-level data across seventy-seven developing countries, Kinda (2010) finds that constraints related to the investment climate, such as physical infrastructure problems, financing constraints, and institutional problems, hamper FDI. The results also highlight that foreign firms are more constrained in their activity by physical infrastructure hurdles and the lack of skilled workers than are firms supplying the domestic market. Rutkowski (2006) provides a firm-level study that concludes with some evidence that FDI reduced foreign subsidiaries' financial constraints without increasing the constraints suffered by domestic enterprises. These results are supported by Sekkat and Veganzones-Varoudakis (2007), who assess the effects of openness and investment climate on FDI. The authors demonstrate that infrastructure availability and sound economic and political conditions increase the attractiveness of developing countries to foreign investors and that these results are especially strong in Africa, the Middle East, and South Asia. Galego et al. (2004) examined the probability of FDI diversion from the EU periphery to Central and Eastern European countries, and also touched on the sectoral characteristic of the impact, finding that the impact of these factors is higher on FDI in the manufacturing sector than on total FDI. The interest in sector-level analysis of FDI has been recent. This study were able to locate only two journal articles that discuss the determinants of FDI in the sector of services (Golub 2009; Kolstad and Villanger 2008) and no articles that focus on inter sector comparisons.

Golub (2009) attempts to systematically analyze the policies toward service FDI, focusing on the pattern of restrictions in the service sector. Based on indices of barriers to foreign ownership and operational restrictions on foreign firms, the study finds that the most heavily restricted industries are those that are highly sensitive to national security or national sovereignty considerations: telecommunications, transportation, finance, and electricity. It also illustrates that the most open countries with respect to FDI in services tend to be in Eastern and Western Europe and Latin America, whereas East Asia, the Middle East, and South Asia tend to have greater restrictions. The second study, Kolstad and Villanger (2008), also examines the host country determinants of FDI in services, but without making cross-sectoral comparisons. With the help of a fifty-seven-

country sample, the authors demonstrate that institutional quality and democracy are more important for attracting FDI in services than are investment risk and political stability. In addition, democracy is found to be more important in developing than in developed countries, with a threshold level below which a country is unable to attract FDI. Moreover, consistent with the nontradability of services hypothesis, the study also finds that services FDI is seeking a market and unaffected by trade openness. Another study (Walkenhorst 2004) assesses the factors that influence the distribution of FDI across industries and countries of investor origin.

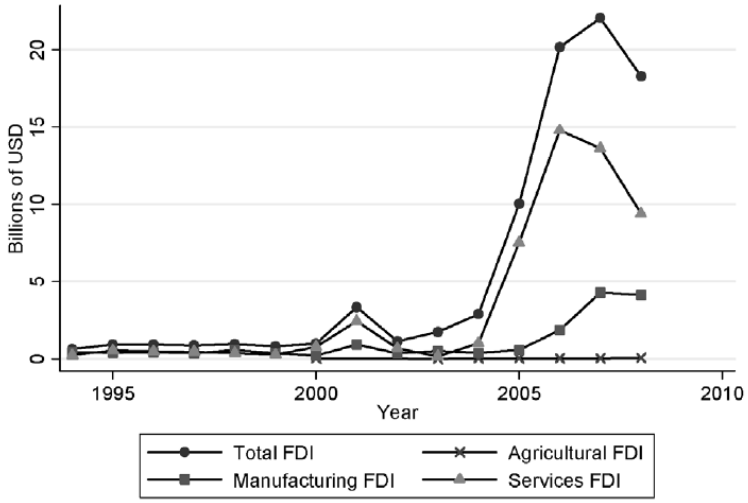


Source: UNCTAD, World Investment Report, 2011

Figure 4: FDI Inflows to Poland

Selected Stylized Fact:

A prominent characteristic of sectoral FDI in the EECA region in the examined period is the surge of services FDI. This rise of the share of services FDI in total FDI flows is still an on-going worldwide phenomenon that has well-documented implications for economic growth (Doytch and Uctum 2011). In the last five years of the period studied, services FDI to the EECA increased tenfold, from $18 million to $180 million. The main industries in the services sector are wholesale and retail trade, including hotels and restaurants; transportation; and government, financial, professional, and personal services such as education, health care, and real estate services.



Source: UNCTAD, World Investment Report, 2011

Figure 5: FDI Inflows to Turkey

The recent surge in services FDI is due to a large extent to financial FDI, but is not limited to it (Figure 2). At the same time, the increase in manufacturing FDI is more moderate: for the five years of the period studied, manufacturing FDI increased only from $16 million to $85 million, while Primary as well as agricultural FDI remained practically unchanged (Figure 2). Figures 3 to 8 represent the cases of several selected countries: Croatia, Czech Republic, Estonia, Poland, and Turkey, The rise of services FDI is clearly

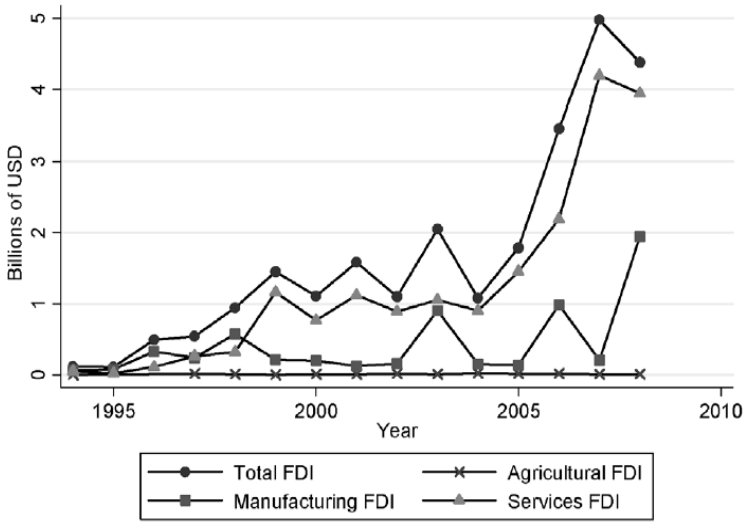
visible on all five graphs. In most of these countries, this rise is supplemented by an increase in manufacturing FDI, while agricultural FDI is typically unchanged

Conceptual Framework, Data and Empirical Methodology:

We base our conceptual model on an augmented gravity equation for FDI, following the general equilibrium model developed by Anderson and van Wincoop (2003) and Helpman et al. (2008), as summarized by Waglé (2011):

$$FDI = \frac{Y_i Y_j}{Y}\left[\frac{\tau_{ij}}{\Pi_i P_j}\right]^{1-\sigma} V_{ij}$$

Where i is an index for the home country and j is an index for the host country; Y indicates income; Π_i is outward, multilateral resistance; P_j represents barriers to inward FDI; V_{ij} captures the fraction of the firms that are able to undertake FDI; τ_{ij} represents transaction costs; and σ is a constant for the elasticity of demand .[3]



Source: UNCTAD, World Investment Report, 2011

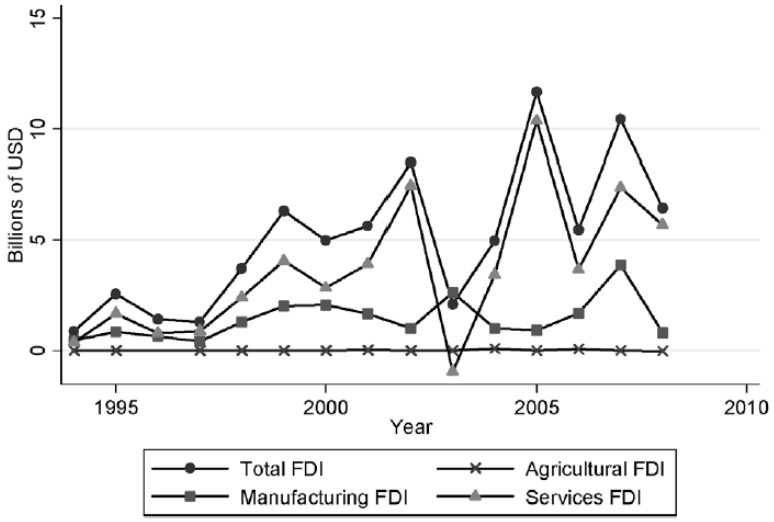
Figure 6: FDI Inflows to Croatia

Conceptual Framework:

The aggregate location of FDI across the world depends on the decisions of millions of multinational enterprises, influenced by both host-country and home-country factors. At the firm level, the question of FDI activity, and particularly what motivates a firm to choose to invest in a production affiliate rather than exporting, is answered with firm specific intangible assets, such as technologies or managerial skills, for example.[4] At the national level, inward FDI is determined by a set of exogenous macroeconomic factors and policies.

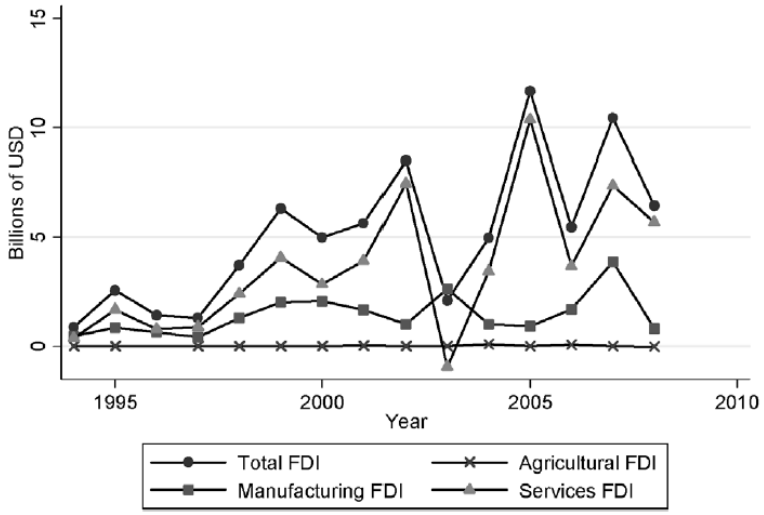
Following a methodology by Blonigen (2005) and Waglé (2011), this study utilizes a model deduced from a general equilibrium framework to analyze external factors affecting FDI activity. The factors analyzed by this framework are: market size, market growth potential, exchange rates, taxes, political stability, clustering of foreign firms, trade protectionism/openness, trade volumes, and institutions

- **Market Size:** The hypothesis is that MNEs target countries with large domestic markets and higher market growth potential; [5]
- **Exchange Rates:** FDI is expected to be attracted by weaker real exchange rates; [6]
- **Taxes:** The impact of taxes on FDI has been a point of interest for both international economics and public economics. They both hypothesize that higher taxes discourage inward FDI and encourage outward FDI.[7] multiple studies have tested for the magnitude of this effect.[8]
- **Institutions and Political Stability:** Countries with better institutions and more stable political environments attract more FDI.[9]
- **Agglomeration:** The presence of other foreign firms is expected to motivate FDI.[10]
- **Trade Volume / Trade Openness:** There is still a debate in the literature as to whether FDI replaces or complements trade. Buckley and Casson (1981) lay out a model comparing FDI and trade, with the only difference between the two being captured by a relatively higher fixed cost in the case of FDI. The firm-level argument, based on transaction cost economics and mentioned above, is that FDI is to be treated as a substitute for trade. The empirical evidence, however, has not definitively supported this view (Lipsey and Weiss 1981, 1984; Singh and Jun 1995).
- **Trade Openness:** The hypothesis is that trade protectionism stimulates "tariff jumping FDI."[11]



Source: UNCTAD, World Investment Report, 2011

Figure 7: FDI Inflows to Estonia



Source: UNCTAD, World Investment Report, 2011

Figure 8: FDI Inflows to Czech Republic

Data and Empirical Methodology:

The empirical model of this Study attempts to analyze is :

$$\text{Log}\left(FDI_{it}^{j}\right) = \beta_0 + \beta_1 \log\left(FDI_{it-1}^{j}\right) + \beta_2\, y_{it}^{j} + \beta_3\, Growthy_{it}^{j} + \beta_4\, School_{it} + \beta_5\, Inst_{it} + \beta_6\, Res_{it} + RER_{it} + \mu_i + \eta_t + \varepsilon_{it},$$

$$\mu_i \sim \text{i. i. d. } (0,\sigma_{\mu_i}),\ \varepsilon_{it} \sim \text{i. i. d. } (0,\sigma_{\varepsilon}),\ \text{E}[\ \mu_i\ \varepsilon_{it}\ ] = 0.$$

FDI_{it}^{j} is defined as the natural logarithm of respective sector FDI inflows computed as a ratio of GDP. All *FDI* series are net inflows, account for the purchases and sales of domestic assets by foreigners in the corresponding year, and are in current U.S. dollars. The data were compiled from the Organization for Economic Cooperation and Development Web site (all OECD countries), the UNCTAD, Statistics of FDI in ASEAN, and national government institutions and investment agencies' Web sites. The primary sources for data on FDI by industry are most often specialized government investment boards and agencies, and sometimes general statistical agencies or ministries. *j* is an index for total, agricultural, manufacturing, and services FDI.[12]

y_{it}^{j} is real GDP per capita. It is compiled from World Development Indicators (WDI) and included in the model as a proxy for market size.

$Growthy_{it}^{j}$, the growth rate of real GDP per capita, is also collected from WDI and is included in the model as a proxy for market growth potential.

$School_{it}$ is the *gross secondary school enrollment ratio*, which is defined as the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. The schooling variable is compiled from the United Nations Educational, Scientific, and Cultural Organization (UNESCO) and World Development Indicators. The "schooling" variable is used in this study as a proxy for

human capital endowment. It brings novelty to the model. The expected sign of the effect of human capital on attracting FDI is uncertain. On the one hand, we would expect high-quality human capital to act as a stimulus for FDI, but on the other hand, if the hypothesis for low-wage-seeking FDI is true, it should act as a deterrent to FDI. It should also be expected that FDI inflows to different sectors would be affected differently by the human capital endowment. So far, the question of human capital's impact on FDI has not been studied well. There are some studies that focus on the effect of wages on inward FDI instead. For example, Onaran and Stockhammer (2008) describe evidence in support of FDI being attracted by low wages.

$Inst_{it}$ is the key explanatory variable. This study focuses on the impact of the country's investment profile and democratic accountability, both compiled from the ICRG. The aim of ICRG is to assess the state of the institutions of the countries covered on a comparable basis. The working definition of democracy that ICRG uses includes, for example, the following features: a government/ executive that has not served more than two successive terms; free and fair elections for the legislature and executive, as determined by constitution or statute; active presence of more than one political party and a viable opposition; evidence of checks and balances among the three branches of government (executive, legislative, and judicial); evidence of an independent judiciary; and evidence of the protection of personal liberties through constitutional or other legal guarantees (PRS Group 2012). The measure of democratic accountability thus reflects how responsive a government is to its people: the less responsive it is, the more likely it is that the government will fall—peacefully in a democratic society, but possibly violently in a nondemocratic one (PRS Group 2012**)**. The investment profile is a measure of the government's attitude toward inward investment, as determined by the ICRG's assessment of four subcomponents: the risk to operations (scored from 0 [very high risk] to 4 [very low risk]); taxation (scored from 0 to 3, corresponding to very high, high, medium, and low risk); repatriation (scored from 0 to 3); and labor costs (scored from 0 to 2, corresponding to high, medium, and low) (PRS Group 2012).

Res_{it} is the natural resources rents share of GDP, including rents generated by coal, forest, mineral, natural gas, and oil resources.13 Accounting for natural resource endowments as determinants of FDI is another innovation brought to the model. Except for the study by Asiedu and Lien (2010), which looks at whether democracy affects FDI differently depending on whether a country is endowed with natural resources or not, the authors are not aware of other studies accounting for the impact of natural resource endowments. We hypothesize that the natural resources factor has potentially different implications for FDI inflows to agriculture, manufacturing, and services, and believe that estimating their impact on total FDI inflows it is also of interest.

RER_{it}, the real effective exchange rate, is defined as the nominal effective exchange rate (a measure of the value of a currency against a weighted average of several foreign currencies) divided by a price deflator or index of costs.

The variables μ_i and η_t are, respectively, a country-specific and a time-specific effect represented by year dummies. The country-specific effect that is most commonly used is a fixed (within-group) effect because a random effect assumes an independent distribution of the explanatory variables from the individual effects, an assumption that is violated between $FDI^{j}_{i,t-1}$ and μ_i, the time-specific effect is a row vector of fifteen year-dummy variables for the period 1994–2018. The twenty-one countries included in the study are Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Montenegro, Poland, Romania, Russia, Slovakia, and Turkey.[14]

The method for this study is the dynamic Blundell–Bond "system" GMM estimator. It argues that the trivial static estimators, such as pooled ordinary least squares (OLS) and fixed effects are not appropriate for this study. Pooled OLS fail to account for the time-series dimension of data, the unobserved country-specific (fixed) effects that cause an omitted variable bias, and potential endogeneity problems. Fixed-effects estimators control for the unobserved country-specific time-invariant effects in the data. However, they correct for the possible correlation between these effects and some of the independent variables by conditioning them out through taking deviations from time averaged sample means. Such a procedure strips the dependent variable of its long-run variation and does not allow for capturing the dynamic characteristics of the data. Fixed effects estimators do not solve the potential problem of the endogeneity of the key explanatory variables either.

The Blundell–Bond system GMM uses lagged level observations as instruments for differenced variables and lagged differenced observations as instruments for level variables, thereby constructing a matrix of "internal" instruments. It has one set of instruments to deal with the endogeneity of regressors and another set to deal with the correlation between lagged dependent variables and the induced moving average error term. A necessary condition for the system GMM is that the error term must not be serially correlated, and especially not second-order serially correlated, otherwise the standard errors of the instrument estimates grow without bound. For this reason, Arellano and Bond (1991) developed a second-order autocorrelation test on which we base our analysis.[15]

The system GMM estimator requires one more thing: even if the unobserved country specific effect is correlated with the regressors' levels, it must not be correlated to their differences. This requirement also means

that the deviations of the initial values of the independent variables from their long-run values are not systematically related to the country-specific effects.[16]

Empirical Results:

The results summaries are presented in Tables 1 and 2. Table 1 presents the results of the four regressions run with *investment profile* as the key explanatory variable. The four regressions have, respectively, total FDI, agricultural FDI, manufacturing FDI, and services FDI as dependent variables. The results of these four models are illustrated along the four table columns, titled, respectively, "Total FDI," "Agriculture FDI," "Manufacturing FDI," and "Services FDI." The table rows list the regression coefficients of the explanatory variables, whose effects we study. Table 2 is organized in the same way, except that here the key explanatory variable is *democratic accountability*.[17]

In summary, focusing first on the two key explanatory variables of interest, *investment profile* and *democratic accountability*, we find stronger evidence in support of the importance of the latter variable. Democratic accountability tends to act as a stimulus for inward FDI in both the agricultural and manufacturing sectors. It appears to significantly influence of total inward FDI as well. In comparison, the investment profile has a positive influence on agricultural FDI only. Overall, the lesson from both tables is that in Eastern Europe and Central Asia, inward agricultural FDI is sensitive to the quality of institutions.

The significance of institutional quality, however, is not the only interesting result of this study. The coefficients of several variables that are hypothesized to have a positive impact on FDI have surprising signs. Real per capita GDP, which we use a proxy for market size, is found to have a negative impact on FDI in the region of interest (Tables 1 and 2, row 2), or at best no significant effect (Tables 1 and 2, row 2). The negative effect is best demonstrated within the agriculture industry (Tables 1 and 2, row 2, column 2). In other words, it is not the countries with large GDP per capita that attract more foreign direct investment. In the case of the agricultural industry, it is the other way around: the underdeveloped countries from the region attract more FDI.

The proxy variable for market growth potential also produces surprising results. If we approximate the market growth potential with the growth rate of GDP, the results of this study suggest that the only industry in which the growth of GDP matters for inward FDI is the agriculture industry (Tables 1 and 2, row 3, column 2). The estimate regression coefficients for GDP growth are also rather large: 7.577 and 10.524 (Tables 1 and 2, respectively). They suggest that any 1 percent increase in the growth rate can potentially increase agricultural FDI's share in output by as much up as 10 percent.

It is interesting to analyze the performance of the human capital variable, *secondary school enrollment ratio*, since, as mentioned above; its impact on FDI has not been documented very well. As expected, the quality of human capital is more important in determining services FDI than in determining manufacturing or agricultural FDI (Tables 1 and 2, row 5, column 4). This impact can be seen at the overall FDI level as well (Tables 1 and 2, row 5, column 1). Although not significant, the human capital variable has a positive sign in the manufacturing regressions (Tables 1 and 2, row 5, column 3), and notably, a negative sign in the agriculture FDI regressions (Tables 1 and 2, row 5, column 2). The negative sign reminds us of the argument that certain kinds of FDI are much more motivated by low wages (payable to low-quality human capital) than by a high overall level of schooling (UNCTAD 2004). From our results, it appears that agricultural FDI in Eastern Europe and Central Asia is the kind that seeks low wages and that services FDI is attracted by highly skilled local workers.

Table 1: Summary of regression coefficients for models run with *investment profile*

		Agriculture	**Manufacture**	**Services**
Log of FDI as a Share of GDP	**Total FDI/GDP**	**FDI/GDP**	**FDI/GDP**	**FDI/GDP**
Log of lagged	0.485***	0.573***	0.464***	0.695***
FDI/GDP	(5.86)	(4.61)	(3.90)	(6.57)
Real GDP per capita	–0.00009***	–0.0001***	–0.00002	–0.00002
	(–3.32)	(–2.86)	(–0.42)	(–1.25)
Real GDP growth rate	–1.094	7.577**	–0.315	–2.318
	(–0.61)	(2.58)	(–0.18)	(–1.59)
Investment profile	0.072	0.258***	0.012	0.049
	(1.57)	(2.61)	(0.22)	(0.92)
Gross secondary	1.702**	–4.029	1.962	1.309**
School enrollment	(2.41)	(–1.53)	(1.49)	(2.05)
Natural resources	–0.052	–0.068	0.193	–0.496
Rents share of GDP	(–0.08)	(–0.05)	(0.44)	(–0.86)
Real exchange rate	0.427	–0.844	0.487	2.389*
	(0.33)	(–0.57)	(0.27)	(1.70)
Number of Observations	255	97	156	149
Number of countries	21	18	18	18

AR (2)	0.538	0.126	0.980	0.403

Notes:

The first entry in each cell is the estimate of the respective explanatory variable coefficient on the FDI share of GDP. Figures in parentheses are t-statistics. The coefficients and the t-statistics are robust to heteroskedasticity and obtained from a one-step Blundell–Bond system GMM with instruments constructed for the lagged level of FDI, GDP per capita, and the respective institutional variable. ***, **, and * significance levels at less than 1 percent, 5 percent, and equal to or less than 10 percent, respectively.

Table 2: Summary of regression coefficients for models run with Democratic Accountability

Log of FDI as a Share of GDP	**Total FDI/GDP**	**Agriculture FDI/GDP**	**Manufacture FDI/GDP**	**Services FDI/GDP**
Log of lagged FDI/GDP	0.464*** (6.06)	0.687*** (5.90)	0.528*** (5.69)	0.638*** (5.58)
Real GDP per capita	–0.00007*** (–2.59)	–0.0001*** (–2.94)	–0.00006 (–1.02)	–0.00002 (–0.67)
Real GDP growth rate	–0.537 (–0.28)	10.524*** (3.01)	–1.398 (–0.64)	–1.983 (–1.35)
Democratic Accountability	0.117* (1.81)	0.718*** (3.32)	0.214** (1.94)	0.011 (0.09)
Gross secondary School enrollment	1.894** (2.44)	–2.957 (–1.54)	1.223 (1.43)	2.089*** (2.91)
Natural resources Rents share of GDP	0.568 (0.73)	5.653** (2.17)	1.361** (2.18)	–0.648 (–0.69)
Real exchange rates	0.397 (0.30)	–2.303 (–1.13)	1.431 (0.72)	2.468 (1.57)
Number of Observations	255	97	156	149
Number of countries	21	18	18	18
AR (2)	0.581	0.098	0.834	0.412

Notes:

The first entry in each cell is the estimate of the respective explanatory variable coefficient on the FDI share of GDP. Figures in parentheses are t-statistics. The coefficients and the t-statistics are robust to heteroskedasticity and obtained from a one-step Blundell–Bond system GMM with instruments constructed for the lagged level of FDI, GDP per capita, and the respective institutional variable. ***, **, and * significance levels at less than 1 percent, 5 percent, and equal to or less than10 percent, respectively

Another novelty introduced into the model is to control for the natural resource endowments of the domestic economy, measured by their rents relative to GDP. This Study hypothesized that natural resources should perhaps be a more important factor for agricultural and maybe manufacturing FDI, and less important for the determination of services FDI inflows. The two sets of models, with controls for investment profile and democratic accountability, respectively, differ in the evidence they produce. When this Study control for the investment profile of the domestic economy, natural resource endowments seem to be irrelevant for attracting FDI (Table 1, row 6). If this Study control for democratic accountability (Table 2, row 6), we get a different picture: as expected, natural resource endowments matter for motivating agricultural and manufacturing FDI, and do not appear to be a stimulus for services FDI (Table 2, row 6, columns 2, 3, and 4). Although this result is not surprising, it claims it is a contribution to the empirical literature on FDI, since it has not been well documented yet. The impact of the *real exchange rate* is not well illustrated by this study.

In summary, consistent with the literature on FDI determinants, this study finds that both the democratic accountability and the investment profile of the economies of the Eastern European and Central Asia (EECA) region act as incentives for inward FDI to these countries. However, the impact of institutional quality, as measured by these two factors, tends to be of differing magnitudes and significance for different sectoral FDI inflows. Whereas there is strong evidence from both sets of models (with investment profile and democratic accountability) that agricultural FDI is heavily influenced by the state of institutions, the evidence on behalf of manufacturing FDI comes only from the second model. When the state of democracy is controlled for, the results show that the location decisions of both agricultural and manufacturing FDI are impacted by the quality of institutions. This effect is reflected at the total inward FDI level as well. In this respect, services FDI to the EECA region is different: it is unaffected by the quality of institutions. This result needs to be better understood and further researched.

Conclusion:

This study focuses on the institutional determinants of inward FDI to the countries of Eastern Europe and Central Asia. The contribution of the study to the literature on FDI determinants is that it examines these

institutional effects by sectors, as effects on agricultural, manufacturing, and services FDI. The study employs an empirical model, built of a comprehensive conceptual and theoretical framework. We extend the framework by including two less-studied and less-understood determinants: domestic human capital and domestic natural resource endowments. This Study get a rich and interesting set of results. It demonstrate that when controlling for the quality of human capital, institutional quality matters more for attracting agricultural and manufacturing FDI to the EECA region than for attracting services FDI. A country's investment profile and state of democracy affect sectoral FDI in different ways: the investment profile has a significant positive effect on agricultural FDI, whereas the state of democratic accountability positively affects the inward FDI in both the agricultural and manufacturing sectors. Similarly, this Study find that being endowed with natural resources stimulates agricultural and manufacturing FDI, but not services FDI. These results are not completely intuitive. It may seem logical to expect that institutional environments play a bigger role in determination of FDI activities in the services sector rather than in primary and secondary sectors (Xu and Shenkar 2002). However, this assumption would be leaving two factors out. First, the industry of agriculture is heavily regulated and there is typically no good way to capture these regulatory environments with a comparative, cross-country dummy. Thus, investment climate, captured by *investment profile* partially reflects the regulatory environment in agriculture. Second, our expectation that the institutional environment should play a significant role in the determination of services FDI may also be erroneous. We find that in the region examined by this study, human capital—which may be indirectly related to institutions—rather than the quality of host-country institutions, is the significant determinant of services FDI. This finding supports the hypothesis that in the tertiary sector, FDI is motivated by educated, rather than cheap, labor. This is not the case with manufacturing or primary sector industries, where the evidence points to FDI being motivated by cheap labor.

The above results are new to the literature since FDI to the EECA region has not been documented at the sectoral level. More research is needed in the area of sectoral FDI determinants to highlight whether these findings hold for other regions and other institutional determinants.

Notes:

- Exceptions include a few relatively new studies by Golub (2009) and Kolstad and Villanger (2008), which are reviewed in the next section.
- There are many instances of discrimination against foreign investment in services, such as public utilities (electricity distribution, telecommunications), transportation (air and maritime transportation), financial services, and sometimes construction and wholesale/retail trade that do not exist in other sectors. For examples, see Golub (2009).
- For a complete derivation of the model, see appendix A in Waglé (2011).
- According to the transaction cost theory of Williamson (1981), when it is difficult to appropriate the rents from firm-specific intangible assets through a contract with an external party, it may be optimal for the firm to internalize the market transaction, establishing its own production affiliate. The opposite situation is also possible: an acquisition may seek access to another firm's specific intangible assets (Blonigen 1997; Kogut and Chang 1991). Dunning (1993) outlines the following motives for FDI: access to resources, access to markets, efficiency gains, and acquisition of strategic assets.
- Bevan and Estrin (2000) and Resmini (2000) approximate the size of the market by GDP and by population, respectively, and present evidence in support of the hypothesis that larger domestic markets attract more FDI.
- Evidence in support of this argument can be found in Blonigen (1997) and Froot and Stein (1991). There is also literature on the effects of short-term movements in exchange rates, mostly testing American FDI determinations and finding similar results (Grubert and Mutti 1991; Klein and Rosengren 1994; Kogut and Chang 1996; Swenson (1994).
- There is an early argument by Hartman (1984, 1985) that is contrary to this hypothesis and states that certain types of FDI may be insensitive to taxes.
- A review of this literature can be found in De Mooij and Ederveen (2003)
- There are some regional studies examining the effect of political stability on inward FDI. For example, Mutinelli and Piscitello (1997) illustrate a positive effect of political stability on inward FDI in Central and Eastern Europe, and Shiells (2003) finds similar results for CIS (Commonwealth of Independent States) countries. Demekas et al. (2007) also argue that a predictable policy environment, which promotes macroeconomic stability, ensures the rule of law and enforcement of contracts, minimizes distortions, supports competitiveness, and encourages private sector development can be expected to stimulate inward FDI.
- See Barrell and Pain (1999) for the Western European context. Campos and Kinoshita (2003) provide evidence in support of this argument.
- The empirical evidence in support of this argument has been mixed (Blonigen 1997; Grubert and Mutti 1991; Kogut and Chang 1996).

- Manufacturing industries are those listed in to the International Standard Industrial Classification's (ISIC) revision 3, divisions 15–37. Services correspond to ISIC divisions 50–99. Services include value added in the following activities: wholesale and retail trade (including hotels and restaurants), transportation, and government, financial, professional, and personal services such as education, health care, and real estate. Also included are imputed bank service charges, import duties, and any statistical discrepancies noted by national compilers, as well as discrepancies arising from rescaling.
- Estimates are based on sources and methods described in World Bank 2011.
- The reason for not including corporate tax rates or any tax rates at all is that long time-series on tax rates are not available for the countries of the region examined.
- By construction, the differenced error term is first-order serially correlated even if the original error term is not.
- A potential problem of overidentification could arise with system GMM if there are too many instruments. Unfortunately, there is no right answer as to how many is "too many" (Roodman 2006; Rudd 2000). A rule recommended by Roodman is that instruments should not outnumber individuals (or countries). In this study, we experimented with both instrumental matrices with a maximum number and a minimum number of lags. The results were largely consistent. The results we present are based on the minimum optimum lags—an approach we selected to preserve the degrees of freedom.
- In addition, we conduct a sensitivity analysis of the regressions, following the methodology of Levine and Renelt (1992). These results are available from the authors upon request.

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