DE GRUYTER OPEN

Scientific Annals of Economics and Business
63 (3), 2016, 311-320
DOI: 10.1515/saeb-2016-0124

FOREIGN DIRECT INVESTMENT FLOWS AND IMF LENDING PROGRAMS. NEW EMPIRICAL EVIDENCE FROM CESEE COUNTRIES

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Abstract

The aim of the paper it to assess the "catalytic effect" of IMF lending programs on foreign direct investment (FDI) flows to Central, Eastern and South-Eastern European (CESEE) countries during and after the latest global financial crisis. This paper provides new empirical evidence on this catalytic effect while controlling for banking stability. Our results show that IMF lending programs had a negative catalytic effect on FDI flows to emerging economies from CESEE over the period 1999-2013. Other key determinants of FDI flows to these countries are inflation, current account balance, level of education, and infrastructure.

Keywords: IMF, catalytic effect, FDI flows, financial crisis, Central, Eastern and South-Eastern Europe

JEL classification: F33, F34, G01

1. INTRODUCTION

Foreign direct investment flows played an important role in the economic development of the CESEE countries and also in the catching-up process with the Western European ones. The extant literature provides numerous evidences on the role and effects of FDI on CESEE economies. FDIs have been considered a stable source of capital given the low level of national savings and also a way to transfer technology and know-how to companies from the transition economies. Foreign capital can spur innovation, contribute to job creation, as well as support the economic growth. International Monetary Fund in its report on the transition of CESEE countries to market economy found that FDI played "a key role in developing new sectors that could reabsorb the dismissed employees from the declining sectors" (IMF, 2014, pp. 27-28). Other studies found some negative effects of FDI in emerging economies. For example, Bogumil showed that in the Baltic countries, Romania, Bulgaria, and Slovenia the "build-up of sizeable capital inflows into the non-tradable sector fueled unsustainable consumption and (construction) investment booms" (Bogumil, 2014, p. 2).

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As already explained in the financial literature, numerous and various factors affect the level of FDI flows. Economic growth, current account balance, inflation, public and private debt, competitiveness of the economy, human capital and physical infrastructure are often cited as FDI determinants. Several studies have found that the existence of a lending program with the IMF may influence positively or negatively the level of FDI flows (so called "catalytic effect").

The role of International Monetary Fund has been reconsidered in the light of the latest global financial crisis and also as a consequence of the reform of the Fund's lending framework. The IMF was once again considered the foremost international provider of short-term liquidity. Several developed and middle-income countries from the European Union (Cyprus, Greece, Hungary, Ireland, Latvia, and Portugal) concluded loan arrangements with the IMF to cope with the effects of global financial crisis. The effects of new IMF lending programs and actions have been again under question. In the last years numerous papers have analyzed the effects of IMF lending programs on the financial crisis, social spending, private capital flows, and economic growth.

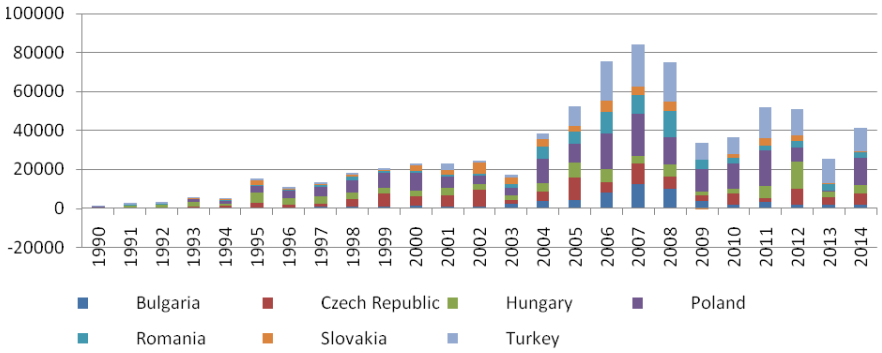
Our paper contributes to the existing literature by providing new evidence on the effects of IMF lending programs on foreign direct investment flows to CESEE countries, while controlling for systemic banking crisis. CEESE represents an interesting region for research as many of its countries signed new arrangements with IMF in order to cope with the negative effects of the latest global financial crisis. Our sample comprises countries with different evolutions of FDI flows and macroeconomic variables and thus we can highlight better the effects of IMF programs. Furthermore, we extend the existing knowledge by including in the analysis the pre-crisis period, two important crises and also the post crisis period.

The remainder of this paper is structured as follows. Section 2 provides an overview of FDI inflows to CESEE countries after the 1999s. Section 3 reviews some of the key literature on the effects of IMF lending programs on the private capital flows. In section 4, an explanation of data and the methodology employed in our paper is provided. We further present and discuss the key results of the study in Section 5. Section 6 concludes the paper and highlights some limits of the research.

2. PATTERNS OF FDI INFLOWS TO CESEE COUNTRIES AFTER THE 1990S

The patterns of FDI inflows to CESEE countries after the 1990s should be analyzed in relation to the global financial crisis started in September 2008. Figure 1 presents the evolution of FDI in selected countries from CESEE over the period 1990-2014. During the pre-crisis period, CESEE countries have been attractive location for foreign direct investments driven by the large privatization process (in some countries), macroeconomic reforms, prospects of EU accession, and lower labour cost per hour compared with Western European countries. Castejón and Wörz (2007) highlighted that this region was more successful in attracting in FDI flows than other emerging market economies. However, the distribution of FDI is highly unequal among countries over time. In the first decade after the Berlin wall fall, Hungary, Poland, Czech Republic, and Slovakia attracted the bulk of FDI inflows in the region. After the turn of the century, the level of FDI inflows increased also in Bulgaria and Romania, which became the largest recipients of FDI inflows in South-East Europe with an accumulated FDI stock of $64.7 billion (Romania) and $44 billion (Bulgaria) at the end of 2008. Starting 2003, the Russian Federation benefitted of the largest FDI inflows in the region, their value increasing from $7.95 billion in 2003 to $74.78 billion in 2008.

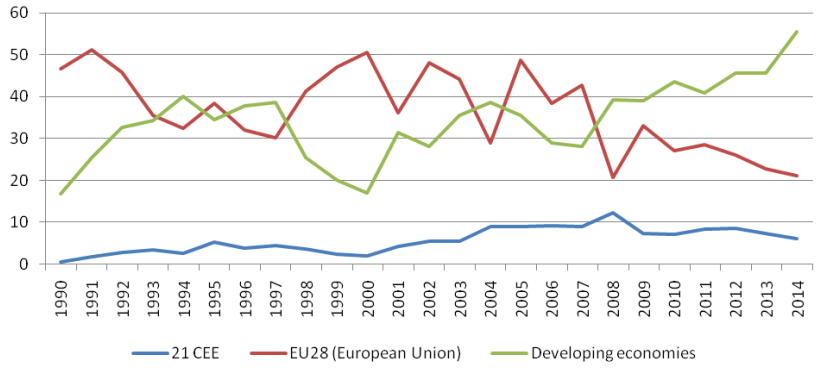
As shown in Figure no. 1, the latest global financial crisis had a significant negative impact on the FDI flows to this region over the period 2009-2014, even if at global level the FDI recovered, reaching new record heights in 2011. Several countries from the region – Bulgaria, Hungary, Latvia, Poland, Russian Federation, and Turkey – experienced a rebound in FDI flows in 2011, but this proved to be temporary in the context of the intensification of the euro area sovereign debt crisis.



Source: United Nations Conference on Trade and Development (2016)

Figure no. 1 – Foreign direct investments in selected countries from Central and Eastern Europe, 1990 – 2014 ($ million)

We also analyzed the FDI flows at global level in order to understand the changes in FDI inflows and outflows in the light of global financial crisis. We have found important changes in structure and patterns of global investment flows in the last twenty five years. Figure no. 2 depicts the share of inward FDI flows for our sample of 21 CESEE countries, for the EU members and for developing countries (according to the UNCTAD definition) in the global inflows.



Source: our representation based on data provided by United Nations Conference on Trade and Development (2016)

Figure no. 2 – CESEE, EU28 and developing economies share of global inflows

The share of FDI flows to CESEE countries in the global inflows has increased steadily over the period between 1990 and 2008. In 1990, the twenty one countries from our sample

were counting for less then 1% of total global inflows. In less than two decades, these countries become an important destination for FDI, reaching 12.25% of total global inflows in 2008. The global financial crisis reverted this favorable trend for CESEE countries, even if at global level the FDI inflows started to increase again and reached new record heights in 2011. Also, it is noticeable that the share of FDI flows to developing economies in the global inflows has increased during the financial crisis, from 28.23% in 2007 to 55.47% in 2014. Figure no. 2 shows the structural changes taking place in the FDI flows at the global level in the last two decades. While in 1991 the EU28 countries accounted for 51% of global inflows, twenty three years later their share is only 20.91%. Most of the countries from our sample, member of the EU, are affected by this irreversible change in the FDI inflows at global level.

3. LITERATURE REVIEW ON THE CATALYTIC EFFECT

Several papers provide theoretical arguments in favour of catalytic effect of IMF lending programs –Bird and Rowlands (1997), Bordo *et al*. (2004), Morris and Shin (2006), Corsetti *et al*. (2003) or Zwart (2007). In theory, the IMF lending programs may catalyze private investment by (1) signaling to financial markets that the government is committed to undertake economic and financial reforms; (2) providing liquidities that stimulate private investors to roll over their debt (Corsetti *et al.*, 2003); (3) providing an informational role for markets affected by asymmetric information (Marchesi and Thomas, 1999). Cottarelli and Giannini (2002), and Bird and Rowlands (2001) reviewed extensively the factors affecting the catalysis effect of IMF lending programs.

Several studies endeavour to measure IMF programmes' effect on FDI flows. These prior studies employ diverse methodological approaches leading to mixed and inconclusive findings on the catalytic effect of IMF lending programs. Several papers have found that this effect is significant and positive in countries with weak economic fundamentals (Mody and Saravia, 2006; Díaz-Cassou *et al.*, 2006; van der Veer and de Jong, 2010; Bauer *et al.*, 2012; van der Veer and de Jong, 2013). Using a dataset covering 142 countries from 1976 to 2006, Bauer *et al.* (2012) showed that IMF lending programs have positive effects on FDI inflows in democratic countries and weak negative effects in autocratic countries. van der Veer and de Jong (2013) found that IMF lending program catalyses private capital to non-defaulting countries.

Other studies (Jensen, 2004; Edwards, 2006; Bird and Rowlands, 2007) reported statistically significant negative effect of these programs on FDI inflows. Using a sample of 68 countries between 1970 and 1998, Jensen (2004) found that IMF lending lead to lower levels of FDI. According to this study, states under Fund programs attract 25% less FDI inflows than countries not under IMF agreements. Edwards (2006) highlighted that IMF programs are associated with significant outflows of portfolio investment. The author emphasized that the source of the capital flight is the IMF program ("the medicine"), not the economic environment ("the disease"). Bird and Rowlands (2007) found significant and negative catalytic effects for medium- and highly-indebted countries and a positive, but not statistically significant effect on countries with low levels of debt. Erce and Riera-Crichton (2015) found that IMF lending does not catalyze foreign capital, but it affects the behavior of resident investors.

4. DATA AND METHODOLOGY

Our analysis uses annual data for twenty one Central and Eastern European countries[1] for the period 1999-2013. We collect manually data about IMF lending programs from the

institution's official website. We retrieve most of the country-level data from World Bank (World Development Indicators, Global Financial Development Database) and International Monetary Fund (World Economic Outlook Database). Laeven and Valencia (2013) provided data on the presence of systematic banking crisis.

To examine the link between FDI flows and IMF lending programs, we estimated the following model:

$$FDI\ flows_{i,t} = \alpha\ IMF\ programs_{i,t} + \beta\ Control\ Variables_{i,t-1} + \varepsilon i,t \quad (1)$$

where $FDI\ flows_{i,t}$ is the measure of FDI flows; $IMF\ programs_{i,t}$ is a dummy variable used as proxy for the existence of an IMF lending program; $Control\ Variables_{i,\ t-1}$ is a vector of controls $\varepsilon_{i,t}$ is an error term; $i = 1, \ldots, N$ represents the country; and $t = 1, \ldots, T$ represents time. Finally, α is the coefficient of interest to us, which measures the effect of IMF programs on FDI flows.

Following the existing literature, our main dependent variable is FDI flows as percent of GDP. We use the World Bank's definition of FDI as "the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor" (World Bank, 2015).

Table no. 1 provides an overview of independent variables employed in the models. The presence of IMF loan arrangements is measured by a dummy variable equal to one if country *i* has signed at least one IMF lending arrangement in year *t*. Also, the dummy variable will take value 1 in the following two years. We use a three-year window to account for possible medium-term effect of IMF programs on FDI flows, mainly due to the time required to implement some of the reforms agreed with the Fund (Papi *et al.*, 2015). I focused my data collection efforts on the most used Funds' lending facilities: the Stand-by Arrangement (SBA), the Extended Fund Facility (EFF), the Extended Credit Facility, the Precautionary and Liquidity Line, and the Flexible Credit Line.

Table no. 1 – Variable definition and sources

Variable (Abbreviation)	Definition (according to data provider)	Source
FDI flows as percent of GDP (FDI_F_GDP) (%)	It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. Measured in % of GDP.	World Development Indicators, World Bank
IMF programs (IMF_P1)	Dummy variable set equal to 1 if a country is under an IMF program in that year or it was in the last two years. Zero otherwise	International Monetary Fund
Banking crisis dummy (BCD)	Dummy variable for the presence of systematic banking crisis (1=banking crisis, 0=none)	Global Financial Development Report 2015 /2016, World Bank, following Laeven and Valencia (2013) 2012: Author's calculations
Bank Z-score (BANKZ) (%)	It captures the probability of default of a country's commercial banking system. It is estimated as (ROA+(equity/assets))/ sd(ROA); sd(ROA) is the standard deviation of ROA. ROA, equity, and assets are country-level aggregate figures	Global Financial Development Report 2015 /2016, World Bank
Bank nonperforming loans to total gross loans (%)	Ratio of defaulting loans (payments of interest and principal past due by 90 days or	Global Financial Development Report 2015 /2016, World

Variable (Abbreviation)	Definition (according to data provider)	Source
(NPL)	more) to total gross loans (total value of loan portfolio)	Bank
Inflation (INFLATION) (%)	As measured by annual percent change in consumer prices.	World Development Indicators, World Bank
Current account balance (% of GDP) (CAB_GDP)	Current account balance measured as percent of GDP	World Economic Outlook Database, October 2015, IMF
Export of goods/services (% of GDP) (EX_GDP)	The value of all goods and other market services provided to the rest of the world (% of GDP)	World Development Indicators, World Bank
GDP per capita growth (annual %) (GDP_CAP_GR)	Annual percentage growth rate of GDP per capita based on constant local currency	World Development Indicators, World Bank
GDP growth (annual %) (GDPG)	Annual percentage growth rate of GDP at market prices based on constant local currency	World Development Indicators, World Bank
Education (EDU) (%)	Total enrollment in tertiary education (ISCED 5 to 8), regardless of age, expressed as a percentage of the total population of the five-year age group following on from secondary school leaving.	World Development Indicators, World Bank
Infrastructure (INFR) (%)	Internet users (per 100 people)	World Development Indicators, World Bank

All the countries from the sample confronted with problems in the banking systems after the onset of global financial crisis. In order to control for bank stability, we employed three alternatives variables:

(1) a dummy variable for the presence of a systematic banking crisis (1=banking crisis, 0=none). Following the methodology proposed by Laeven and Valencia (2013) we define a banking crisis episode as systemic when in a given year two conditions are met: (1) significant signs of financial distress in the banking system (as indicated by significant bank runs, losses in the banking system, and/or bank liquidations); (2) major banking policy intervention measures in response to significant losses in the banking system;

(2) the bank Z-score which measures the probability of default of a country's commercial banking system;

(3) the bank nonperforming loans to total gross loans (%).

Finally, the model controls for the effect that a set of standard macroeconomic variables, all one-year lagged, can have on the FDI flows. Namely, we control for current account balance, inflation, GDP per capita growth, and GDP growth. GDP growth is a proxy for the future size of a host-country market. Higher growth can also mean higher returns, which attract FDI to a host country.

Aside from these more conventional measures, we include export to GDP ratio as a proxy for international openness of a country and the level of education and the existing infrastructure as key determinants of FDI inflows. Telecommunications represents a key component of the basic physical infrastructure needed to conduct business. As proxy for infrastructure we use the number of Internet users per 100 people. The availability and the cost of internet connection are very important for FDI, as MNCs use them extensively in coordinating their activities across countries. The level of education exerts a positive

influence in the level of FDI flows. As proxy for the level of education we use total enrollment in tertiary education.

5. EMPIRICAL RESULTS

Table no. 2 shows descriptive statistics for the full unbalanced panel dataset with 21 countries and 265 observations[2]. In our sample, the FDI flows displays a wide variation across emerging countries over time (-1.34% to 36.88%). Montenegro has the highest average FDI flows as percentage of GDP, followed by Bulgaria, Estonia, Slovakia, Moldova, and Albania.

Table no. 2 – Summary statistics

Variable	Mean	Maximum	Minimum	Std. Dev.	Observations
FDI_F_GDP	5.18	36.88	-1.34	4.66	265
IMF_P1	0.43	1.00	0.00	0.50	265
BCD	0.11	1.00	0.00	0.31	265
BANKZ	14.20	62.91	-3.71	10.64	265
NPL	8.71	52.60	0.20	7.99	265
INFLATION	8.79	168.62	-1.28	14.92	265
CAB_GDP	-5.53	18.04	-49.76	7.41	265
EX_GDP	46.85	91.80	9.85	16.94	265
GDP_CAP_GR	4.12	13.27	-16.59	4.72	265
GDPG	3.93	12.23	-17.95	4.54	265
INFR	31.72	78.39	0.08	22.37	265
EDU	52.87	91.45	13.09	18.18	265

Source: Research results

First, we will test for correlation across explanatory variables. We will exclude one of those variables proved to be (highly) correlated from the empirical analysis in order to avoid possible multicollinearity problems in the regressions. Table no. 3 presents the correlation matrix for our variables. According to these results, a strong correlation between GDP per capita growth and GDP growth was found. As a consequence, we will use only one variable (GDP growth) in our models. As expected, a strong negative correlation between the current account balance and FDI flows has been found.

Table no. 3 – Correlation matrix

Variables	FDI_F_GDP	IMF_P1	BCD	BANKZ	NPL	INFLATION	CAB_GDP	EX_GDP	GDP_CAP_GR	GDPG	INFR	EDU
FDI_F_GDP	1											
IMF_P1	-0.04	1										
BCD	-0.02	0.02	1									
BANKZ	0.03	-0.05	-0.06	1								
NPL	-0.10	0.21	0.18	0.06	1							
INFLATION	-0.12	0.05	0.02	-0.13	0.11	1						
CAB_GDP	-0.59	0.03	0.17	0.01	0.19	0.14	1					
EX_GDP	-0.01	-0.19	0.02	0.02	0.00	0.06	0.02	1				
GDP_CAP_GR	0.11	-0.01	-0.33	-0.09	-0.31	0.01	-0.18	0.01	1			
GDPG	0.10	-0.01	-0.31	-0.03	-0.31	0.01	-0.19	-0.04	0.97	1		
INFR	0.01	-0.40	0.10	0.04	-0.22	-0.29	-0.07	0.38	-0.25	-0.26	1	
EDU	-0.17	-0.41	0.15	-0.29	-0.25	-0.03	0.19	0.47	-0.03	-0.09	0.54	1

Source: Research results

We conducted several tests in order to check the appropriateness of a pooled OLS regression. The existence of fixed effects has been test by the F test, while random effects have been examined by the Lagrange multiplier (LM) test. The results of these two tests suggest that the pooled OLS regression is favored. Table no. 4 presents the results of the multiple OLS regressions. The first model (column two) uses the presence of a systematic banking crisis dummy as proxy for banking stability. The second model (column three) includes bank nonperforming loans to total gross loans, while the third model (column four) uses the Bank Z-score as proxy for banking stability.

Table no. 4 – Impact of IMF lending programs on FDI flows

Variables **(1)**	**Model 1** **(2)**	**Model 2** **(3)**	**Model 3** **(4)**
C	5.812047 (1.049002)	5.746461 (1.192824)	6.579762 (1.231294)
IMF_P1	-1.129559** (0.536946)	-1.079020** (0.543959)	-1.135197** (0.548574)
BCD (-1)	2.093183*** (0.806620)	-	-
NPL (-1)	-	0.020257 (0.034313)	-
BANKZ (-1)	-	-	-0.021668 (0.024301)
INFLATION (-1)	-0.0211862** (0.010757)	-0.035627** (0.016998)	-0.022209** (0.010879)
CAB_GDP (-1)	-0.340464*** (0.033857)	-0.332876*** (0.034629)	-0.328441*** (0.034421)
EX_GDP(-1)	0.021437 (0.015967)	0.017523 (0.016518)	0.021730 (0.016344)
GDPG (-1)	0.055317 (0.057180)	0.034092 (0.060070)	0.015476 (0.055668)
EDU (-1)	-0.047224*** (0.017475)	-0.037804** (0.017992)	-0.048815** (0.019355)
INFR (-1)	-0.026709* (0.014392)	-0.026861* (0.015068)	-0.024846* (0.014786)
R-squared	0.672976	0.658852	0.658586
Adjusted R-squared	0.653533	0.638816	0.638697
Total panel (unbalanced) observations	267	267	267

*Standard error in parentheses | *** p<0.01, ** p<0.05, * p<0.1*
Source: Research results

Considering data from 21 emerging economies from CESEE between 1999 and 2013, we found that the Fund provide a negative catalytic effect for foreign direct investment. In all three models, the variable IMF programs (IMF_P1) is statistically significant and negative. Our results show that the existence of an IMF lending program in a particular country gives a strong negative signal to private investors. Even if the government agree with IMF to undertake several reforms, private investors proved to be reluctant to invest in the CESEE countries.

Empirical evidences suggest that two macroeconomic variables – inflation and current account balance – have a significant negatively effect on the level of foreign direct investment. The effects of bank stability on the FDI flows are mixed and inconclusive. The first model

showed that a systematic banking crisis has a positive effect on the level of FDI flows. The results obtained for the second and third model are not statistically significant. Contrary to our expectation, the level of education and infrastructure has negative effects on FDI inflows. None of our other explanatory variables is statistically significant. We have tested the normality assumption on error terms and the results showed that the errors are normally distributed.

Understanding what factors attract FDI flows to emerging countries represents a key topic nowadays. Our findings confirm some of the previous studies (Jensen, 2004; Edwards, 2006; Bird and Rowlands, 2007) and provide new insights on the effects of IMF arrangements on FDI flows during the latest global financial crisis. Our results are useful for IMF program development and also for the CESEE countries when they adopt policies to attract foreign direct investments or undertake economic reforms, as IMF arrangements do not serve anymore as a seal of approval to international markets.

6. CONCLUSIONS AND FURTHER RESEARCH

FDI inflows to CESEE countries have increased significantly until the onset of the latest global financial crisis. Starting 2009, it is noticeable a rapid contraction in FDI to these countries, even if at global level the FDI flows started to recover reaching new records in 2011. In this volatile environment, many countries faced numerous vulnerabilities and have to sign new agreements with IMF in order to restore macroeconomic and financial stability and to cover high financing needs.

The effects of IMF lending on various macroeconomic variables have been extensively studied in the financial literature. To date there is no clear consensus on the catalytic effect of IMF lending programs. The aim of the paper is to study the effects of IMF programs on FDI flows to CESEE countries in the light of financial crisis while controlling for banking stability.

Our models suggest that IMF lending programs are associated with significant outflows of private capital from CESEE countries over the period 1999-2013. The results are broadly in line with those obtained by Jensen (2004), Edwards (2006), and Bird and Rowlands (2007) by studying different groups of (developing) countries. We also found that inflation and current account balance have a statistically significant and negative effect on the FDI flows.

Our results have major policy implications. Government authorities and decision makers should understand all the effects of IMF programs on macroeconomic variables, including FDI flows and to include in monetary and fiscal policies measures aimed to control for the negative effects. These negative catalytic effects should be taken into consideration by government authorities in negotiating with IMF the conditions of lending programs.

One important limit of our paper relies in the endogeneity issues. We consider that our analysis our research could be extended by employing various statistical methods, in addition to basic multiple OLS regression, namely two-step treatment effects, Heckman selection correction, propensity-score matching, and fixed effects transformations.

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Notes

[1] Albania, Belarus, Bulgaria, Bosnia and Herzegovina, Croatia, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Macedonia, Moldova, Montenegro, Poland, Romania, Russian Federation, Serbia, Slovak Republic, Slovenia, Turkey, and Ukraine.

[2] Due to the fact that our panel is unbalanced, the number of observations per time period varies due to missing observations.