Does a country's sovereign credit rating drive capital inflows into emerging European markets? Evidence from Balkan region

 Seyed Alireza Athari

Department of Business Administration, Faculty of Economics and Administrative Sciences, Cyprus International University, Northern Cyprus, Turkey.
Email: ali_athari@yahoo.com

ABSTRACT

This study investigates the impact of sovereign credit ratings on capital inflows and their composition for emerging European economies in the Balkan region. This study sheds light on this nexus by selecting Bulgaria, Croatia, Greece, Romania, and Slovenia between 2006-2018 using panel data analysis. The estimation results underscore that a sovereign credit rating is a significant driver of capital inflows, and a decline in sovereign credit risk leads to increased foreign direct investment and portfolio inflows. Furthermore, the estimation results demonstrate the importance of the country's specific pull factors and reveal that a country characterized by a larger market size, better institutional quality, a stable macroeconomic environment, and a more developed financial market could attract more capital inflows. Moreover, the results highlight that global risk and liquidity push factors have a significant effect on driving cross-border capital inflows into the Balkan economies. The findings suggest that policymakers should reduce sovereign credit risks and increase the country's absorptive capacity and competitiveness in order to attract more capital inflows to the investigated Balkan countries.

Contribution/Originality: This study specifically contributes by examining the impact of sovereign credit ratings on capital inflows and their compositions, namely foreign direct investment and portfolio inflows, for emerging European economies in the Balkan region.

1. INTRODUCTION

Recent years have seen a shift in capital flows to emerging economies, particularly after the 2008-2009 recession, while advanced economies have experienced declines in total gross capital flows (Broner, Didier, Erce, & Schmukler, 2013). A wide variety of factors, including risk, asset classes, and other domestic and global factors, can cause cross-border capital flows, as demonstrated by James, McLoughlin, and Rankin (2014). Identifying the factors that influence the movement of capital flows is crucial from a policymaking perspective so that policies can take advantage of capital inflows and prevent sudden capital outflows. Research has shown that capital flows are essential to economic growth and productivity (Alfaro, Kalemli-Ozcan, & Volosovych, 2008; Durham, 2004; Kose & Prasad, 2012). Furthermore, capital flows enhance risk sharing, facilitate technological transfer, develop financial markets, and lower capital costs (Kose, Prasad, & Terrones, 2007; Obstfeld, 2012; Osei, Morrissey, & Lensink, 2002). Despite their benefits, capital flows have been associated with a rise in real exchange rates, heightened

exposure to financial crises and boom-and-bust cycles, a current account deficit, and sharp reversals of capital inflows (Kose & Prasad, 2012; Lartey, 2008).

Prior works revealed that environments that are considered to have a high level of competitiveness or absorptive capacity through country-specific pull factors such as macroeconomic policies, institutional quality, financial markets, and trade openness can better mitigate the risks of rapid capital outflows, facilitate absorption of international capital, and ultimately exploit the potential advantages of capital inflows for enhancing economic activities. Álvarez (2015) for example, found that in environments with high institutional quality, investors are more likely to reduce capital outflows during financial instability, thus offsetting the negative effects of reduced capital inflows. Soto (2003) found that advanced economies with better institutional quality benefit more from capital inflows than emerging economies. Slesman, Baharumshah, and Wohar (2015) found that capital flows significantly impact economic activities only in environments with a high level of institutional quality. Athari and Adaoglu (2019) showed that private and public institutional quality positively impacts capital inflows. Also, Choong, Baharumshah, Yusop, and Habibullah (2010) found that environments with more developed financial markets could benefit more from capital flows. However, there is evidence, that the benefits of capital flows may be muted or small in environments with low competitiveness or absorption capacity.

Given the importance of capital flows, several scholars have examined their determinants for the last three decades to enhance their volume and utilize their possible advantages for boosting economic outputs and productivity. In an influential study, Fernandez-Arias (1996) found that cross-capital movements are impacted by both the pull (country-specific) and push (global) factors. For the pull factors, several studies underscored that institutional quality (Araujo, David, Van Hombeeck, & Papageorgiou, 2017; Athari & Adaoglu, 2019) trade openness (Binici, Hutchison, & Schindler, 2010; Byrne & Fiess, 2016) financial market development (Choong et al., 2010; Kurul, 2017) and macroeconomic environment (Alfaro et al., 2008; Athari & Adaoglu, 2019) are significant determinants of capital flows. On the other hand, for the push factors, Kim (2000) showed that a reduction in the global interest rate could drive great amounts of capital inflows. Other studies also revealed that global liquidity (Kalemli-Ozcan, Papaioannou, & Perri, 2010) international investors' risk appetite (González-Hermosillo, 2008), global risk, and non-oil commodity prices (Ahmed & Zlate, 2014; Athari, Shaeri, Kirikkaleli, Ertugrul, & Ozun, 2020) are considered other push factors driving capital flows. Several studies, Chuhan, Claessens, and Mamingi (1998) and Reinhart and Reinhart, (2008) confirmed that both pull and push elements impact capital inflows to emerging environments.

While the above-mentioned studies highlighted the significant role of country-specific pull factors in driving capital flows, a strand of the literature showed that the sovereign default risk also matters in the movement of capital flows (Reinhart & Rogoff, 2004). Sovereign credit risks influence global investors, prompting them to rebalance their portfolios upon credit rating announcements. Furthermore, downgrading a country's credit rating increases its sovereign bond yield, resulting in the global reweighting of debt portfolios and cross-border capital flows (Longstaff, Pan, Pedersen, & Singleton, 2011). In an empirical study, Kim and Wu (2008) found that sovereign credit ratings (hereafter, SCRs) significantly affect capital flows. Kim and Wu (2011) also revealed that SCRs positively impact cross-border banking flows of G7 countries to 55 emerging economies. The results of a study by Cai, Gan, and Kim (2018) documented that SCRs affect foreign direct investment (hereafter, FDI) flows. Kellard, Kontonikas, Lamla, Maiani, and Wood (2022) revealed that sovereign credit risk has an adverse effect on FDI flows, and a rise in credit risk leads to lower FDI inflows. Recently, De, Mohapatra, and Ratha (2020) showed that SCRs have a significant positive effect on net capital inflows for 26 emerging and frontier economies.

How do SCRs affect cross-capital movements in emerging European countries, particularly in the Balkans? While the effects of pull and push factors have been deeply analyzed, few studies have attempted to explore how capital inflows are affected by SCRs extensively in these emerging economies. During the 1990s, emerging Balkan countries opened up their markets, relaxed macroeconomic and financial regulations, and adopted new policies. By

taking such actions, domestic financial markets became more accessible to foreign investors, and the Balkan economies have been growing at an average rate of 5.51% since the end of 2008. However, the subprime mortgage crisis (2008-2009) adversely affected the Balkan countries, resulting in a rise in sovereign debt levels, a decrease in sovereign credit ratings, and a decline in foreign investment. Considering these characteristics, we conduct this study on the Balkan countries to provide a comprehensive picture.

As reviewed, there is a significant gap in the literature to probe the sovereign credit rating and capital flows in the Balkan region. Thus, the present work fills this gap and contributes by including of novel panel data, including the SCRs, to empirically examine how the sovereign credit risk impacts capital inflows in the Balkan region. To achieve this purpose, the sovereign credit rating scores are calculated based on the three credit rating agencies, including Standard & Poor's (S&P), Fitch Ratings, and Moody's. Additionally, we provide an empirical framework to shed light on this by selecting the emerging European Balkan economies, namely Bulgaria, Croatia, Greece, Romania, and Slovenia, between 2006-2018. Likewise, this study has another contribution by testing the impact of sovereign credit ratings on the capital inflows' compositions, namely FDI and portfolio inflows, to precisely determine this relationship. This is perhaps the first study to investigate this relationship in the Balkan countries, and its findings open up a whole new debate in finance.

Overall, the estimation results show that a sovereign credit rating is a significant driver of capital inflows, and a decrease in sovereign credit risk leads to increased FDI and portfolio inflows. Besides, the estimation results confirm the prior works and highlight the importance of the pull and push factors in inflowing capital into the Balkan region.

The article is organized as follows: Section 2 describes the data and methodology. Section 3 shows the estimation results, followed by a robustness check. Section 4 concludes the article.

2. DATA AND METHODOLOGY

2.1. Data Description

The study focuses on emerging Europeans in the Balkan region, particularly Bulgaria, Croatia, Greece, Romania, and Slovenia, during the 2006-2018 period. This study selects the final sample size and study period based on the matching of data and availability from various sources, including the credit rating agencies (e.g., S&P, Fitch Ratings, Moody's), the World Bank, and the International Monetary Fund (IMF). Likewise, following the prior works (e.g., Athari and Adaoglu (2019)) the data for the country-specific pull factors, including market size, institutional quality, macroeconomic environment, and financial market development, were obtained from World Economic Forum (WEF). Besides, we collected the data for the push factors, including the global risk from Chicago Board Options Exchange (CBOE), the non-oil commodity price index from IMF and global liquidity from World Development Indicators (WDI). Table 1 shows the descriptions of the variables.

Table 1. Variable's descriptions.

Variables	Definitions	Sources
Dependent variable: Capital inflows		
Direct investment	Total foreign direct investment (US$).	International monetary fund (IMF)
Portfolio flows	Total foreign portfolio investment, equity, and investment fund shares (US$).	
Independent pull variables:		
Sovereign credit ratings	It uses three major credit ratings by S&P, Moody's, and fitch ratings.	The author's calculation is based on S&P, fitch ratings, and Moody's
Institutional quality	WEF institutional quality pillar and the score calculated by WEF are based on public institutional quality and private institutional quality sub-pillars.	World economic forum

Variables	Definitions	Sources
Macroeconomic environment	WEF macroeconomic environment pillar	(WEF)
Financial market development	WEF financial market development pillar	
Market size	WEF market size pillar	
Independent push variables:		
Global risk	VIX index	Chicago board options exchange
Non-oil commodity price	Non-oil commodity price index	International monetary fund (IMF)
Global liquidity	The weighted average of broad money growth of G7 countries.	World development indicators (WDI)

Note: Table 1 shows the variable's description, definitions, and sources.

Table 2 specifically shows the SCRs based on S&P, Fitch Ratings, and Moody's. Following the previous studies (e.g., (Athari, Kondoz, & Kirikkaleli, 2021; Cantor & Packer, 1996; Christopher, Kim, & Wu, 2012)), we converted the alphabetical rating grade into numerical linear scores between 0 to 20. A higher sovereign credit rating score indicates a country has lower sovereign credit risk, and vice versa.

Table 2. Sovereign credit ratings and their scores.

Credit rating range	S&P and fitch ratings	Moody's	Linear scale score
Prime	AAA, AA+	Aaa, Aa1	20, 19
High	AA, AA-	Aa2, Aa3	18/ 17
Upper − medium	A+, A, A-	A1, A2, A3	16, 15, 14
Lower − medium	BBB+, BBB, BBB-	Baa1, Baa2, Baa3	13, 12, 11
Non − investment	BB+, BB, BB-	Ba1, Ba2, Ba3	10, 9, 8
Highly speculative	B+, B, B-	B1, B2, B3	7, 6, 5
Substantial credit risk	CCC+, CCC, CCC-	Caa1, Caa2, Caa3	4, 3, 2
Selective default	CC, SD / RD (Default)	Ca, C	1, 0

Note: Table 2 shows the sovereign credit ratings based on S&P, fitch ratings, and Moody's.

Figure 1 displays the SCRs, FDI, and portfolio inflows for the entire investigated countries between 2006-2018. As presented in Figure 1, there is a positive movement between SCRs and disaggregated capital inflows, implying that SCRs play a significant role in attracting capital inflows in the Balkan economies.
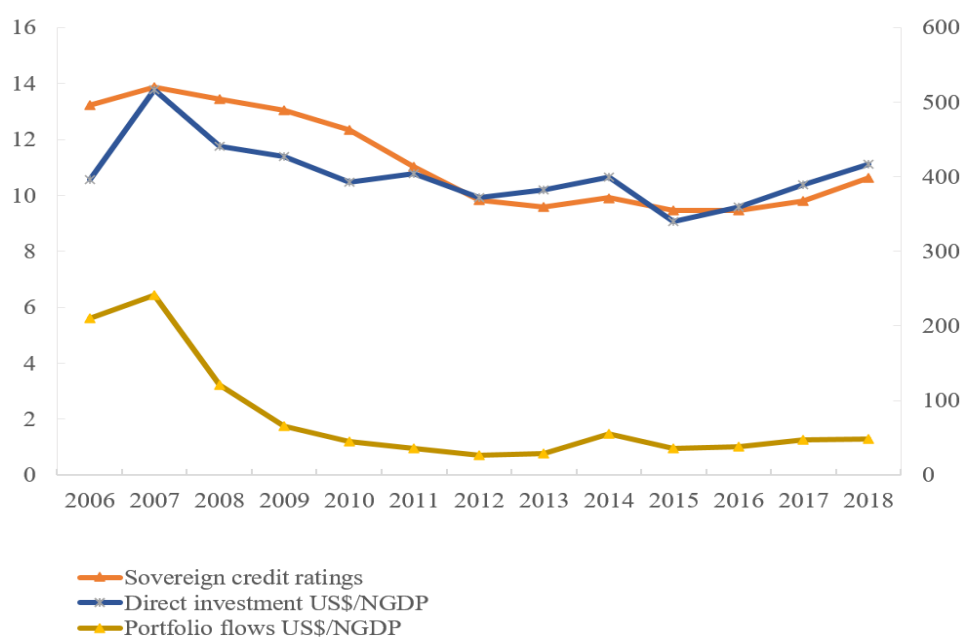

Figure 1. Time series plot of sovereign credit ratings, foreign direct investment, and portfolio flows.

177

Besides, Table 3 displays the Pearson correlation matrix and Variance Inflation Factors (VIF) for the entire set of chosen countries. The correlation matrix and the VIF did not indicate any severe multicollinearity between the variables.

Table 3. Pearson correlation matrix.

Variables	SCRs	MS	IQ	ME	FMD	GR	NCP	GL	VIF
Sovereign credit ratings (SCRs)	1.00								1.11
Market size (MS)	-0.25*	1.00							1.12
Institutional quality (IQ)	0.18*	-0.26**	1.00						1.16
Macroeconomic environment (ME)	0.32*	-0.34*	0.07	1.00					1.15
Financial market development (FMD)	0.23*	-0.03	0.09	0.32*	1.00				1.07
Global risk (GR)	0.15**	-0.01	0.11	0.04	0.33*	1.00			1.14
Non-oil commodity price (NCP)	-0.11	-0.05	-0.18*	-0.11	-0.15**	0.13	1.00		1.06
Global liquidity (GL)	0.11	0.08	0.05	0.16**	-0.17*	0.11	-0.28*	1.00	1.22

Note: Table 3 shows the Pearson correlation matrix and variance inflation factor (VIF) between the variables. * and **are statistically significant at 1% and 5%.

2.2. Models and Methodology

The precise following applied form is used to examine the factors of capital inflows.

$$Capital\ Inflows = f(Pull\ factors, Push\ factors)$$

Equation 1 shows the expanded aforementioned practical form. We use Equation 1 to test the effect of SCRs on capital inflows by controlling the country-specific pull and push variables. Remarkably, the time dummy is included in the estimation model but, for parsimony, the coefficients do not present it.

$$Capital\ Inflows_{it} = \alpha_0 + \alpha_1 Sovereign\ Credit\ Ratings_{it} + \alpha_2 \sum Pull\ control\ factors_{it} +$$
$$\alpha_3 \sum Push\ control\ factors_t + \varepsilon_{it}(1)$$

Where $_{it}$ stands country and time, correspondingly. ε_{it} is an independent error term. Capital inflows are measured by FDI and portfolio flows. Sovereign credit ratings$_{it}$ is computed based on the S&P, Moody's, and Fitch Ratings; $\sum Pull\ control\ factors_{it}$ includes market size, institutional quality, macroeconomic environment, and financial market development; $\sum Push\ control\ factors_t$ includes global risk, non-oil commodity price, and global liquidity.

To avoid outliers, we initially winsorized factors. Further, this work follows the studies by Baltagi (2005) and Hsiao (2014) which apply panel data approaches. Likewise, following the prior works (e.g., (Athari et al., 2020)) which avoided including the lagged capital inflows in their estimation models, we estimate Equation 1 by using the fixed effects static panel data method (Baltagi, Jung, & Song, 2010; Newey & West, 1986). Remarkably, the dynamic panel data is not applicable in this work, given that the estimation model does not suffer from endogeneity problems, and the condition (i> t) for using dynamic panels violates. Moreover, we employ the Panel-Corrected Standard Errors (PCSE) approach in the robustness check sub-section.

3. UNIVARIATE AND MULTIVARIATE ANALYSIS

3.1. Univariate Results

Table 4 reveals the descriptive summary of variables. The mean (median) of SCRs for the examined countries is 11.19 (11.15), indicating that Table 2 places the sovereign credit risk of the selected countries in the lower-medium range. Besides, Table 4 shows that among the country-specific pull factors, the macroeconomic environment factor

has the highest score with a mean (median) of 4.70 (4.84). Furthermore, Panel (B) shows that Slovenia with a mean of 15.44, and Greece with a mean of 7.97 have the highest and lowest SCR scores, respectively. It also highlights that Romania, with a mean of 4.43, has the highest market size score, while Slovenia, with a mean of 4.16, has the highest institutional quality score. Moreover, Panel (B) shows Bulgaria has the highest scores, with a mean of 5.26 and 4.06 for the macroeconomic environment and financial market development, respectively.

Table 4. Descriptive summary (2006-2018).

Panel (A): All investigated countries (N=5)					
Variables	**Mean**	**Median**	**St.dev**	**Minimum**	**Maximum**
Foreign direct investment/Nominal gross domestic product (NGDP)	401.16	392.11	190.48	125.37	764.61
Portfolio flows/NGDP	69.56	12.58	156.19	1.79	907.94
Sovereign credit ratings	11.19	11.15	3.62	1.81	18.11
Market size	3.97	3.90	0.42	3.28	4.62
Institutional quality	3.69	3.62	0.34	3.05	4.47
Macroeconomic environment	4.70	4.84	0.73	2.42	5.70
Financial market development	3.82	3.96	0.52	2.50	4.68
Global risk	19.42	17.54	6.57	11.09	32.70
Non-oil commodity price	113.05	107.81	16.50	87.03	147.05
Global liquidity	3.89	2.70	2.85	0.66	10.44
Panel (B): Average pull factors for each country					
Pull factors	**Bulgaria**	**Croatia**	**Greece**	**Romania**	**Slovenia**
Sovereign credit ratings	11.47	10.30	7.97	10.80	15.44
Market size	3.89	3.64	4.38	4.43	3.50
Institutional quality	3.32	3.63	3.79	3.54	4.16
Macroeconomic environment	5.26	4.71	3.53	4.90	5.10
Financial market development	4.06	3.91	3.41	4.01	3.71

Note: Table 4 shows the descriptive summary of variables.

3.2. Multivariate Results

3.2.1. Pre-Estimation Tests

This study conducts several pre-estimation tests. First, we perform the cross-sectional dependence test by Pesaran (2021) and the results (-0.616, Pr = 0.759) confirm the null hypothesis of no cross-sectional dependence. Second, we probe the stationarity of the factors using approaches suggested by Levin, Lin, and Chu (2002) and Im, Pesaran, and Shin (2003). Table 5 shows the panel unit root results, revealing that the variables are stationary at I(1) for both options.

Table 5. Unit root test results.

Variables	**Panel (A): Levin et al. (2002)**		**Panel (B): Im et al. (2003)**	
	With trend	**With cross-sectional dependence**	**With trend**	**With cross-sectional dependence**
Direct investment	-10.783*	-11.322*	-2.224**	-13.513*
Portfolio flows	-9.231*	-14.235*	-5.745*	-11.242*
Sovereign credit ratings	-11.375*	-9.751*	-10.366*	-8.557*
Market size	-6.427*	-8.667*	-13.832*	-12.614*
Institutional quality	-8.883*	-5.786*	-16.431*	-9.452*
Macro environment	-10.544*	-14.333*	-9.237*	-1.673***
Financial market development	-7.295*	-15.644*	-6.758*	-13.518*
Global risk	-14.136*	-7.528*	-8.575*	-14.673*
Non-oil commodity price	-15.621*	-8.751*	-7.453*	-12.334*
Global liquidity	-11.374*	-6.836*	-2.226**	-7.154*

Note: Table 5 shows the panel unit root test results using Levin–Lin–Chu (LLC) and Im–Pesaran–Shin (IPS) unit root test (H0: Panels contain unit roots). The symbols *, **, and *** denote statistical significance at the 1%, 5%, and 10% levels, correspondingly.

Third, we check the direction of causality between the variables using Granger causality test to avoid endogeneity problems. As shown in Table 6, Granger causality from the set of explanatory factors (sovereign credit ratings, market size, institutional quality, macro environment, financial market development, global risk, non-oil commodity price, global liquidity) to FDI and portfolio flows for the panel of countries is statistically significant. This implies that the historical data from the observed explanatory factors can provide future insights into capital inflows for the selected Balkan countries.

Table 6. Granger causality test.

Null hypothesis			F-statistics	[Prob. value]	Granger causality
Sovereign credit ratings	→	FDI/ PF	3.454*/ 4.348*	[0.000]/ [0.001]	Yes
Market size	→	FDI/ PF	5.326*/ 2.235**	[0.001] / [0.023]	Yes
Institutional quality	→	FDI/ PF	4.245*/ 6.471*	[0.002] / [0.000]	Yes
Macro environment	→	FDI/ PF	2.341**/ 7.639**	[0.026] / [0.001]	Yes
Financial market development	→	FDI/ PF	7.176*/ 5.233*	[0.001] / [0.000]	Yes
Global risk	→	FDI/ PF	5.435*/ 2.326**	[0.000] / [0.036]	Yes
Non-oil commodity price	→	FDI/ PF	6.678*/ 8.722*	[0.003] / [0.000]	Yes
Global liquidity	→	FDI/ PF	8.727*/ 7.464*	[0.000] / [0.001]	Yes

Note: Foreign direct investment (FDI) and portfolio flows (PF) stand as foreign direct investment and portfolio flows, respectively. * and ** denote 1% and 5% statistical significance levels, correspondingly.

3.2.2. Results and Discussion

Table 7 displays Equation 1's estimation results. The empirical results reveal that the coefficients of SCRs are significant and positive, implying that a higher country's credit rating drives capital inflows, particularly FDI and portfolio inflows. This finding is consistent with the prior works (e.g., (Cai et al., 2018; De et al., 2020; Kim & Wu, 2008)), implying that a country's sovereign credit rating matter in attracting capital inflows and a rise in sovereign risk has a deterrent effect on capital inflows. As Longstaff et al. (2011) argued, global investors, reweight their debt and equity portfolios based on countries' sovereign credit risks, which ultimately drive changes in cross-border capital flows.

Besides, the results in Table 7 show that pull factors have a vital role in driving capital inflows and that an environment with a higher level of competitiveness is more probable to attract capital from investors, (Athari et al., 2020). Specifically, the results provide significant evidence and highlight that the market size (e.g., (Binici et al., 2010; Byrne & Fiess, 2016)), institutional quality (e.g.,(Araujo et al., 2017; Athari & Adaoglu, 2019)), and macroeconomic environment (e.g.,(Alfaro et al., 2008; Athari & Adaoglu, 2019)) positively impact capital inflows and their components. According to Table 7, these are significant country-specific pull factors, and a sample country with a larger market size, better institutional quality, and a more stable macroeconomic environment is likely to receive FDI and portfolio inflows. The study by Athari and Adaoglu (2019) stressed the role of institutional quality in driving capital inflows and showed that corporate ethics and accountability are the significant components of institutional quality. Studies have also shown that a country, by increasing institutional quality through reducing corruption (Wei, 2000) implementing rule of law (Albuquerque, 2003) and reducing political risk (Asiedu, 2006) could attract FDI inflows.

Furthermore, the results suggest that global risk and liquidity are significant push factors, supporting the previous studies (e.g., (Ahmed & Zlate, 2014; Kalemli-Ozcan et al., 2010; Kurul, 2017)). Unlike the positive effect of global liquidity, the results support the previous works (Athari et al., 2020; De et al., 2020) and reveal that global risk has a mixed effect depending on the types of capital inflows. When global risk rises, for example, FDI inflows increase among investors, while portfolio inflows react positively. The positive effect of global risk on FDI might be explained since investors exposed to rising global risk prefer to invest in environments with the least exposure to global risk. This is because an increase in global risk diminishes investors' inclination to invest in debt and equity

markets, leading them to shift their focus to other asset classes, thereby reducing capital inflows. Likewise, the positive effect of global liquidity on capital inflows could be justified since a rise in global liquidity makes it easier to obtain capital, which ultimately drives greater amounts of capital inflows. Overall, the results indicate that the sovereign credit ratings, country-specific pull factors, and also the global push factors significantly impact capital inflows into the Balkan countries.

Table 7. The effect of sovereign credit ratings on capital inflows and their compositions using the fixed effects approach.

Independent variables	Dependent variables		
	Foreign direct investment	Portfolio flows	Capital inflows
Pull factors			
Sovereign credit ratings	0.693* (3.10)	0.536* (4.60)	0.445* (4.26)
Market size	0.724** (2.12)	0.657 (1.39)	0.332** (2.15)
Institutional quality	0.753* (3.88)	0.841** (2.03)	0.766* (5.22)
Macroeconomic environment	0.874*** (1.71)	0.471** (2.08)	0.343 (1.56)
Financial market development	0.051 (0.84)	0.082* (3.44)	0.063*** (1.67)
Push factors			
Global risk	0.469*** (1.69)	–0.312** (-2.19)	–0.254* (-4.57)
Non-oil commodity price	0.542 (1.20)	0.337 (0.48)	0.314 (1.36)
Global liquidity	0.282* (3.30)	0.376*** (1.72)	0.426** (2.12)
Time dummy	Yes	Yes	Yes
F-statistic	85.51*	81.12*	78.76*
Adj. R²	0.46	0.41	0.44

Note: This table shows the impact of sovereign credit ratings on capital inflows and their compositions namely foreign direct investment and portfolio flows using the fixed effects method between 2006-2018. The descriptions of variables present in Table 1. *, **, and *** denote 1%, 5%, and 10% statistical significance levels, correspondingly.

3.2.3. Robustness Check

This study estimates Equation 1 by using the new alternatives of the "Trade (% GDP)", "World Governance Indicators", "International Country Risk Guide (ICRG) Economic risk index", "Stock market turnover ratio", "Global economic policy uncertainty", and "International bank credit" for measuring market size, institutional quality, macroeconomic environment, financial market development, global risk, and global liquidity, respectively. To do so, the data was collected from World Bank, PRS Group, policy uncertainty website, and Bank for International Settlements (BIS). Also, the present study employs the Panel-Corrected Standard Errors (PCSE) approach to estimate Equation 1. Table 8 shows the robustness test results. Similar to those shown in Table 7, the results reveal that the coefficients of sovereign credit risk are positive and significant; improving the credit rating scores driving capital inflows. Likewise, the results confirm the significant effect of pull factors, including market size and institutional quality, and also push factors, including global risk and liquidity, on disaggregated capital inflows. The results also support prior studies (e.g., Kurul (2017)) showing that financial market development is a significant pull factor for driving FDI and that a country with developed financial markets could attract greater FDI inflows. Choong et al. (2010) also indicated that environments with developed financial markets are more likely to benefit from capital flows for enhancing economic activities.

Table 8. Robustness test.

Independent variables	Dependent variables		
	Foreign direct investment	Portfolio flows	Capital inflows
Pull factors			
Sovereign credit ratings	0.575*** (1.85)	0.629*** (1.91)	0.521* (3.78)
Market size	0.181*** (1.69)	0.263** (2.14)	0.446 (1.45)
Institutional quality	0.236** (2.02)	0.121* (2.89)	0.335*** (1.73)
Macroeconomic environment	0.415 (0.44)	0.356 (0.42)	0.436** (2.08)
Financial market development	0.037* (4.06)	0.023** (2.11)	0.052** (2.11)
Push factors			
Global risk	0.235* (4.77)	-0.462*** (-1.79)	-0.338** (-2.14)
Non-oil commodity price	0.575 (1.08)	0.241 (0.31)	0.243 (0.87)
Global liquidity	0.227*** (1.69)	0.322** (2.07)	0.365*** (1.69)
Time dummy	YES	YES	YES
F-statistic	84.27*	81.41*	83.55*
Adj. R^2	42.45	44.46	0.39

Note: This Table shows the robustness results using panel-corrected standard errors (PCSE) between 2006-2018 Market size is trade (% GDP); Institutional quality is world governance indicators (WGI); macroeconomic environment is ICRG economic risk index; Financial market development is stock market turnover ratio; Global risk is global economic policy uncertainty; Global liquidity is the international bank credit. The descriptions of variables present in Table 1. *, **, and *** denote 1%, 5%, and 10% statistical significance levels, correspondingly.

4. CONCLUSION

This study empirically examines the impact of countries' SCRs on capital inflows and their composition in the Balkan region. This study fills the gap and sheds light on this relationship by selecting emerging European economies in the Balkan region, including Bulgaria, Croatia, Greece, Romania, and Slovenia, during the 2006-2018 period. The results reveal that the coefficients of SCRs are positive and significant, implying that a rise in sovereign credit rating drives capital inflows, in particular FDI and portfolio inflows. In other words, a rise in sovereign credit risks has a deterrent effect and discourages investors from inflowing their capital into the Balkan countries. Further, the results confirm the previous works and reveal that the traditional pull and push factors play a significant role in cross-border capital inflows into the examined countries. Specifically, the estimated coefficients of pull factors indicate that a country characterized by larger market size, better institutional quality, a stable macroeconomic environment, and a more developed financial market could attract more capital inflows. Also, the results reveal that the global risk and liquidity push factors have a significant effect on driving cross-border capital to the Balkan countries.

The results are robust and have important policy implications. The results suggest that policymakers, by lowering sovereign credit risks through various approaches such as asset risk management, lengthening government debt maturities, and implementing sound banking regulations, could attract more capital inflows, particularly FDI and portfolio inflows, to the investigated Balkan countries to boost economic growth and productivity. Besides, the results suggest that policymakers should be more focused on the rising country's absorptive capacity and competitiveness ranking by considering the country-specific pull factors including market size, institutional quality, macroeconomic environment, and financial market development to attract more capital inflows. Determining and improving the potential pull factors helps exploit the potential benefits of capital inflows toward increasing productivity and also helps mitigate the risks of sudden capital outflows.

For further study, it would be noteworthy to include the effect of economic policy uncertainty and geopolitical risk on the capital inflows of the Balkan economies and other emerging economies. Moreover, it would be useful to examine this nexus by grouping economies based on income level and stages of economic development.

REFERENCES

Ahmed, S., & Zlate, A. (2014). Capital flows to emerging market economies: A brave new world? *Journal of International Money and Finance, 48*, 221-248. https://doi.org/10.2139/ssrn.2412153

Albuquerque, R. (2003). The composition of international capital flows: Risk sharing through foreign direct investment. *Journal of International Economics, 61*(2), 353-383. https://doi.org/10.2139/ssrn.206071

Alfaro, L., Kalemli-Ozcan, S., & Volosovych, V. (2008). Why doesn't capital flow from rich to poor countries? An empirical investigation. *The Review of Economics and Statistics, 90*(2), 347-368. https://doi.org/10.3386/w11901

Álvarez, I. A. (2015). Institutional drivers of capital flows. Working Papers (No. 1531), Bank of Spain.

Araujo, J. D., David, A. C., Van Hombeeck, C., & Papageorgiou, C. (2017). Joining the club? Procyclicality of private capital inflows in lower income developing economies. *Journal of International Money and Finance, 70*, 157-182. https://doi.org/10.1016/j.jimonfin.2016.08.006

Asiedu, E. (2006). Foreign direct investment in Africa: The role of natural resources, market size, government policy, institutions and political instability. *World Economy, 29*(1), 63-77. https://doi.org/10.2139/ssrn.717361

Athari, S. A., & Adaoglu, C. (2019). Nexus between institutional quality and capital inflows at different stages of economic development. *International Review of Finance, 19*(2), 435-445. https://doi.org/10.1111/irfi.12169

Athari, S. A., Kondoz, M., & Kirikkaleli, D. (2021). Dependency between sovereign credit ratings and economic risk: Insight from Balkan countries. *Journal of Economics and Business, 116*, 105984. https://doi.org/10.1016/j.jeconbus.2021.105984

Athari, S. A., Shaeri, K., Kirikkaleli, D., Ertugrul, H. M., & Ozun, A. (2020). Global competitiveness and capital flows: Does stage of economic development and risk rating matter? *Asia-Pacific Journal of Accounting & Economics, 27*(4), 426-450. https://doi.org/10.1080/16081625.2018.1481754

Baltagi, B. H. (2005). *Econometric analysis of panel data* (3rd ed.). West Sussex: JohnWiley & Sons.

Baltagi, B. H., Jung, B. C., & Song, S. H. (2010). Testing for heteroskedasticity and serial correlation in a random effects panel data model. *Journal of Econometrics, 154*(2), 122-124. https://doi.org/10.2139/ssrn.1808187

Binici, M., Hutchison, M., & Schindler, M. (2010). Controlling capital? Legal restrictions and the asset composition of international financial flows. *Journal of International Money and Finance, 29*(4), 666-684. https://doi.org/10.2139/ssrn.1486526

Broner, F., Didier, T., Erce, A., & Schmukler, S. L. (2013). Gross capital flows: Dynamics and crises. *Journal of Monetary Economics, 60*(1), 113-133. https://doi.org/10.1596/1813-9450-5768

Byrne, J. P., & Fiess, N. (2016). International capital flows to emerging markets: National and global determinants. *Journal of International Money and Finance, 61*, 82-100. https://doi.org/10.1016/j.jimonfin.2015.11.005

Cai, P., Gan, Q., & Kim, S.-J. (2018). Do sovereign credit ratings matter for foreign direct investments? *Journal of International Financial Markets, Institutions and Money, 55*, 50-64. https://doi.org/10.2139/ssrn.2997573

Cantor, R., & Packer, F. (1996). Determinants and impact of sovereign credit ratings. *Economic Policy Review, 2*(2), 1-18. https://doi.org/10.2139/ssrn.1028774

Choong, C.-K., Baharumshah, A. Z., Yusop, Z., & Habibullah, M. S. (2010). Private capital flows, stock market and economic growth in developed and developing countries: A comparative analysis. *Japan and the World Economy, 22*(2), 107-117. https://doi.org/10.1016/j.japwor.2009.07.001

Christopher, R., Kim, S.-J., & Wu, E. (2012). Do sovereign credit ratings influence regional stock and bond market interdependencies in emerging countries? *Journal of International Financial Markets, Institutions and Money, 22*(4), 1070-1089. https://doi.org/10.1142/9789813223585_0015

Chuhan, P., Claessens, S., & Mamingi, N. (1998). Equity and bond flows to Latin America and Asia: The role of global and country factors. *Journal of Development Economics, 55*(2), 439-463. https://doi.org/10.1016/s0304-3878(98)00044-3

De, S., Mohapatra, S., & Ratha, D. (2020). Sovereign credit ratings, relative risk ratings and private capital flows: Evidence from emerging and frontier markets. *Studies in Economics and Finance, 38*, 873-898. https://doi.org/10.1108/sef-10-2020-0437

Durham, J. B. (2004). Absorptive capacity and the effects of foreign direct investment and equity foreign portfolio investment on economic growth. *European Economic Review, 48*(2), 285-306. https://doi.org/10.1016/s0014-2921(02)00264-7

Fernandez-Arias, E. (1996). The new wave of private capital inflows: Push or pull? *Journal of Development Economics, 48*(2), 389-418. https://doi.org/10.1016/0304-3878(95)00041-0

González-Hermosillo, B. (2008). Investors risk appetite and global financial market conditions. Working Paper No. (WP/08/85), International Monetary Fund.

Hsiao, C. (2014). *Analysis of panel data.* Cambridge: Cambridge University Press.

Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of Econometrics, 115*(1), 53-74. https://doi.org/10.2139/ssrn.4338245

James, E., McLoughlin, K., & Rankin, E. (2014). Cross-border capital flows since the global financial crisis. *Reserve Bank of Australia Bulletin*, 65-72. https://doi.org/10.2139/ssrn.1791529

Kalemli-Ozcan, S., Papaioannou, E., & Perri, F. (2010). *This time is different: Financial integration and the 2007 crisis.* Paper presented at the Joint Conference of the European Central Bank and the Journal of International Economics.

Kellard, N. M., Kontonikas, A., Lamla, M. J., Maiani, S., & Wood, G. (2022). Risk, financial stability and FDI. *Journal of International Money and Finance, 120*, 102232. https://doi.org/10.1016/j.jimonfin.2020.102232

Kim, S.-J., & Wu, E. (2008). Sovereign credit ratings, capital flows and financial sector development in emerging markets. *Emerging Markets Review, 9*(1), 17-39. https://doi.org/10.1016/j.ememar.2007.06.001

Kim, S. J., & Wu, E. (2011). International bank flows to emerging markets: Influence of sovereign credit ratings and their regional spillover effects. *Journal of Financial Research, 34*(2), 331-364.

Kim, Y. (2000). Causes of capital flows in developing countries. *Journal of International Money and Finance, 19*(2), 235-253.

Kose, M. A., & Prasad, E. (2012). Capital accounts: Liberalize or not? *Finance & Development*, 19-36.

Kose, M. A., Prasad, E., & Terrones, M. (2007). How does financial globalization affect risk sharing? Patterns and channels. Working Paper No. (WP/07/238), International Monetary Fund.

Kurul, Z. (2017). Nonlinear relationship between institutional factors and FDI flows: Dynamic panel threshold analysis. *International Review of Economics & Finance, 48*, 148-160. https://doi.org/10.1016/j.iref.2016.12.002

Lartey, E. K. (2008). Capital inflows, Dutch Disease effects, and monetary policy in a small open economy. *Review of International Economics, 16*(5), 971-989. https://doi.org/10.1111/j.1467-9396.2008.00762.x

Levin, A., Lin, C.-F., & Chu, C.-S. J. (2002). Unit root tests in panel data: Asymptotic and finite-sample properties. *Journal of Econometrics, 108*(1), 1-24. https://doi.org/10.1016/s0304-4076(01)00098-7

Longstaff, F. A., Pan, J., Pedersen, L. H., & Singleton, K. J. (2011). How sovereign is sovereign credit risk? *American Economic Journal: Macroeconomics, 3*(2), 75-103. https://doi.org/10.3386/w13658

Newey, W. K., & West, K. D. (1986). A simple, positive semi-definite, heteroskedasticity and autocorrelationconsistent covariance matrix. *Econometrica, 55*, 703–708. https://doi.org/10.3386/t0055

Obstfeld, M. (2012). Financial flows, financial crises, and global imbalances. *Journal of International Money and Finance, 31*(3), 469-480.

Osei, R., Morrissey, O., & Lensink, R. (2002). The volatility of capital inflows: measures and trends for developing countries (No. 02/20). CREDIT Research Paper.

Pesaran, M. H. (2021). General diagnostic tests for cross-sectional dependence in panels. *Empirical Economics, 60*(1), 13-50. https://doi.org/10.1007/s00181-020-01875-7

Reinhart, C. M., & Reinhart, V. R. (2008). Capital flow bonanzas: an encompassing view of the past and present, Working Paper No. (w14321). National Bureau of Economic Research, Cambridge, MA.

Reinhart, C. M., & Rogoff, K. S. (2004). Serial default and the "paradox" of rich-to-poor capital flows. *American Economic Review, 94*(2), 53-58. https://doi.org/10.3386/w10296

Slesman, L., Baharumshah, A. Z., & Wohar, M. E. (2015). Capital inflows and economic growth: Does the role of institutions matter? *International Journal of Finance & Economics, 20*(3), 253-275. https://doi.org/10.1002/ijfe.1514

Soto, M. (2003). Taxing capital flows: An empirical comparative analysis. *Journal of Development Economics, 72*(1), 203-221. https://doi.org/10.1016/s0304-3878(03)00074-9

Wei, S.-J. (2000). How taxing is corruption on international investors? *Review of Economics and Statistics, 82*(1), 1-11. https://doi.org/10.3386/w6030