PROSPECTS AND CHALLENGES FACING FRONTIER STOCK MARKETS IN THE WESTERN BALKANS: QUO VADIS?[1]

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Abstract

The aim of the research paper is to present empirical results on a tested framework of factors influencing selected frontier stock markets of the Western Balkan countries in their accession path to the European Union. These stock markets are juxtaposed with the frontier stock market of Bulgaria – a country full member of the EU in the course of 11 years now, thereby inferring important comparative conclusions. Based on the comparative analysis between the capital markets in Southern and Eastern Europe (including that of Bulgaria), the paper proposes tentative insights into the road ahead for future regional integration and financial development of the capital markets of the Western Balkans.

Keywords: frontier stock markets, emerging stock markets, financial integration, financial development

JEL Classification: G10, G23, G28

1. Introduction

Stock markets influence economic growth by promoting savings and improving the quality and quantity of investments. Emerging markets in particular need to boost economic growth by offering diverse financing opportunities to SMEs at lower financing costs. This decreases their dependence on bank financing and reduces their exposures to the risk of squeezed lending in constrained

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economic situations. Empirical studies linking the development of stock markets with economic growth reported positive correlation (Levine and Zervos, 1998), especially in emerging markets with positive effects on GDP per capita, reduced credit risks and increased level of legal protection (Durham, 2000).

The major function of stock markets is to serve as a mechanism to transform savings to finance the real sector (Baumol, 1965). Moreover, they can lead to increased efficiency of the financial system by encouraging competition in the financial sector, pushing down the cost of financing for companies, increasing transparency, reducing asymmetric information and establishing financial discipline in economic governance. This is especially becoming an ever-important issue in the current digital global economy environment and the ongoing discussions about the gains and losses from trade, financial and digital integration and disintegration processes (Peterson Institute for International Economics, 2019).

In theoretical terms, there are two basic traditional approaches to assess the development of capital markets: 1) institutional approach and 2) macroeconomic approach. The digitalization of the financial markets worldwide presently requires introduction of a third strand as well, namely 3) technological & digital approach (TD) (IMF, 2018). Future research directions may require establishment of a fourth strand of factors influencing stock market development in the light of the new inter-disciplinary approach (Batten, 2017; Burke et al., 2015) as 4) climatic changes and environmental disasters and their impacts on economic development in general (IMF, 2019).

2. Objectives, limitations, hypotheses and methodology of research

The objective of the research paper is to empirically test a framework of macroeconomic an institutional factor influencing financial development in frontier stock markets in the Western Balkans. It does not include analysis of microeconomic factors: supply side factors, based on the pecking order theory of capital structure; nor demand driven factors as risk-return preferences in respect of the funds invested, nor climatic or technological factors, which will be object of future research. The tested framework of institutional and macroeconomic variables includes data from World Bank Worldwide

Governance Indicators and World Development Indicators database for the period 2004 – 2017 as follows:

A) Institutional variables: political stability and absence of violence/terrorism; control of corruption; regulatory quality; voice and accountability; government effectiveness; rule of law.

B) Macroeconomic variables: FDI as % of GDP; domestic credit to private sector as % of GDP; real interest rate; GDP growth per capita; inflation (GDP deflator); gross domestic savings as % of GDP; gross fixed capital formation as % of GDP; trading volume as % of GDP; broad money as % of GDP.

The research rationale is to test a theoretical framework of institutional and macroeconomic variables and their impact on stock market development in selected frontier stock markets in the Western Balkans, namely Republic of North Macedonia, Serbia, and Montenegro – countries on their path to accession to the European Union, against stock market development of another frontier capital market, namely that of Bulgaria – a country which has been a full-fledged member of the European Union for 11 years till the present, and to draw some conclusions about the natural evolutionary path of development of frontier markets toward emerging markets upon the realization of certain conditions. The methodology of the research has been based on a modification of the Calderon-Rossel model (1991), El-Wassal (2005, 2013) and Garcia and Liu (1999) framework of variables. Specifically, the model of Calderon-Rossel and the modified model of Garcia and Liu studied emerging markets in countries of Latin America and Asia. These models have reached results that GDP growth, domestic investments and the development of the sector of financial intermediation are important factors in this process. Then, El-Wassal (2005) has researched the link between stock market development and economic growth, financial liberalization and foreign portfolio investments in approximately 40 emerging markets between 1980-2000 and found out that economic growth, policy measures for financial liberalization and increased volumes of foreign portfolio investments are major factors determining stock markets' development in emerging economies.

The empirical design includes application of an Engle-Granger or autoregressive regression (AR) model consistently for each of the analysed countries in the Western Balkans. Dependent variable in each case is market capitalization/GDP of the respective frontier market stock exchange. Initially an Augmented Dickey Fuller (ADF) is

applied to all tested variables included in the model to determine their stationarity.

The research paper has formulated two testable hypotheses as follows:

1) Although being a full-fledged member of the European Union eleven years till the present, the frontier capital market of Bulgaria has not been upgraded to status of emerging market (as per MSCI classification) due to persisting institutional environment weaknesses at the background of improving macroeconomic conditions.

2) The evolutionary path forward to the frontier stock markets of the selected Western Balkan countries requires significant changes in the institutional and macroeconomic setting. This could hardly be achieved in the course of a decade due to the wider costs of re-adjustments to current financial integration and disruption processes (Peterson Institute for International Economics, 2019).

3. Specifics of frontier stock markets

Within the present research design framework, the case in point is presenting and discussing some stylized facts about frontier stock markets from theoretical and practical point of view. The main specifics of these of stock markets in general, and for the analyzed Western Balkan countries in particular, can be summarized as follows:

Table 1

Frontier stock markets – Stylized facts

Stylized Fact	**Frontier Markets (FM)** Bulgaria, Republic of North Macedonia, Serbia, Bosnia and Herzegovina (MSCI, FTSE, S&P, Russell)
1) Definition used	Belonging to low to upper-middle income developing countries; not fulfilling the criteria of global bond and equity indices; having less developed capital markets; with structural weaknesses (illiquid, non-transparent and low regulation levels; high-transaction costs); higher idiosyncratic risks (i.e. political and currency risks) and higher volatility (IMF, 2014b)(MSCI, 2018)

Source: see cited academic sources within the table

Regarding the countries in the analysis, all of them belong to the group of upper-middle income states according to the World Bank (GNI per capita between USD 3,896 and USD 12,055). Among the

Western Balkans countries aspiring for EU membership the highest GNI p.c. has been realized by Montenegro (USD 7,350 by 2017), yet it is still 22 % of the EU average income (which for 2017 is USD 32,777 by World Bank data). In comparison, for Bulgaria, the GNI p.c. in 2008 when the country became member of the EU, stood at USD 6,100 and by 2017 it had slightly risen to USD 7,760 (or representing 24 % of EU GNI p.c.) (see: https://data.worldbank.org/region/european-union).

Table 2

Frontier stock markets – Stylized facts

Stylized Fact	**Frontier Markets (FM)** Bulgaria, Republic of North Macedonia, Serbia, Bosnia and Herzegovina (MSCI, FTSE, S&P, Russell)
2) Asset returns	Good diversification strategy due to low correlation with global market returns due to low levels of integration with global financial markets (Berger, Pukthuanthong & Yang, 2011; Oey, 2014; IMF, 2016). Annualized returns for all FM are 11% (Vanguard research, 2013) while according MSCI annualized returns since 2002 were 7,49%.

Source: see cited academic sources within the table

The MSCI Serbia index since 2008 has realized negative annualized return of -12,10%; for Bulgaria since 2005 it stood on negative ground at -9,46%; for Bosnia and Herzegovina since 2010 annualized returns were also negative -2,82% (MSCI Index, 2019).

Table 3

Frontier stock markets – Stylized facts

Stylized Fact	**Frontier Markets (FM)** Bulgaria, Republic of North Macedonia, Serbia, Bosnia and Herzegovina (MSCI, FTSE, S&P, Russell)
3) Attraction of private equity flows	Between 2000-2014 portfolio flows exceeded those to emerging markets by 1.4 % of GDP (IMF, 2016)

Source: see cited academic sources within the table

Regarding Serbia, the average portfolio investments for the period 2014 – 2018 were negative -1,1 % of GDP, while the FDI balance stood at 4,9 % of GDP (IMF, 2017). For Bulgaria during 2013-2018, average portfolio investments were on negative ground of -0,1% of GDP and annualized FDI amounted to 3,67 % of GDP (IMF, 2018).

In Republic of North Macedonia during 2012-2018, portfolio investments represented also negative, -1,7 % of GDP, while FDI registered annualized fall by 2,7 % of GDP due to high corruption levels, regulatory and institutional weaknesses (IMF, 2017). In Montenegro for the same period portfolio equity investments registered positive annualized average growth of 0.7 % of GDP, while annualized average FDI was 11,2 % of GDP.

Table 4

Frontier stock markets – Stylized fact

Stylized Fact	**Frontier Markets (FM)** Bulgaria, Republic of North Macedonia, Serbia, Bosnia and Herzegovina (MSCI, FTSE, S&P, Russell)
4) Financial integration	Before 2008 the correlation between FM bond index returns and global bond market returns is insignificant, while after 2008 it has become comparable to that of Emerging Markets (beta of approximatelly 1.7) (IMF, 2016). Between 2002-2013 average intercountry correlation among MSCI FM index stood at 0.36 (Rowader, 2015)

Source: see cited academic sources within the table

For the period 2004-2014 the correlation coefficient between the regional stock exchanges in the Western Balkans has been as follows (Stefanova, 2017):

1) moderately strong correlation existed between Serbia and Republic of North Macedonia 0,521; Republic of North Macedonia and Montenegro 0,514; Bulgaria and Republic of North Macedonia 0,425.

2) strong correlation existed between Montenegro and Serbia 0,937; Bulgaria and Serbia 0,993; Bulgaria and Montenegro 0,966.

Table 5

Frontier stock markets – Stylized facts

Stylized Fact	**Frontier Markets (FM)** Bulgaria, Republic of North Macedonia, Serbia, Bosnia and Herzegovina (MSCI, FTSE, S&P, Russell)
5) GDP growth rate	Over 2008-2013 median compound annual growth rate among FM economies was 3.2% while till 2017 it expanded at a median rate of 3.5 % (Rowader, 2015).

Source: see cited academic sources within the table

According to IMF reports (2017, 2018) for 2013-2018 annualized average GDP growth in Montenegro stood at 2,7 %; in Bulgaria it also was 2,7%; in Serbia it was 1,83 % and in Republic of North Macedonia GDP grew at 2,9 %, i.e. lower economic growth in all analysed countries than the median rate for FM economies.

Table 6

Frontier stock markets – Stylized facts

Stylized Fact	**Frontier Markets (FM)** Bulgaria, Republic of North Macedonia, Serbia, Bosnia and Herzegovina (MSCI, FTSE, S&P, Russell)
6) Stock market value	Stock market value is equivalent to a median value of 23.4 % of GDP (Rowader, 2015)

Source: see cited academic sources within the table

For the analysed period 2006-2017 the annualized average stock market capitalization in the countries from the Western Balkans was as follows: in Serbia 26,36 % of GDP; in Bulgaria 18,16 %; in Republic of North Macedonia 28,64% and in Montenegro 77,80 %.

Table 7

Frontier stock markets – Stylized facts

Stylized Fact	**Frontier Markets (FM)** Bulgaria, Republic of North Macedonia, Serbia, Bosnia and Herzegovina (MSCI, FTSE, S&P, Russell)
7) Volatility	Average annual volatility of FM 2003-2014 was 18.88 % (Rowader, 2015)

Source: see cited academic sources within the table

For the analysed countries in the report average annualized volatility of the stock market index on the respective stock exchange was as follows: 10 years' standard deviation of index return for Bulgaria 29,23 %; for Serbia 34,62 % and 5 years' standard deviation of the index return for Bosnia and Herzegovina was 15,09 %. The 10 years' average annual volatility of MSCI Frontier Markets index stood at 15,57 %, while MSCI Advanced Markets Index was 14,65%.

Table 8

Frontier stock markets – Stylized facts

Stylized Fact	Frontier Markets (FM) Bulgaria, Republic of North Macedonia, Serbia, Bosnia and Herzegovina (MSCI, FTSE, S&P, Russell)
8) Liquidity	Limited liquidity. Stock markets dominated by major institutional investors. Since 2000 turnover of FM was less than 20% and FM needed 10 trading days to liquidate 94 % of the portfolio (Vanguard Research, 2013).

Source: see cited academic sources within the table

Regarding the countries, included in MCSI Frontier Markets index, the turnover ratio (a proxy for liquidity) stood at: Serbia 0,42 % (2018); Bosnia and Herzegovina 0,00 %. The MSCI Frontier Markets index turnover ratio amounted to 11,80 % in 2018. Regarding Bulgaria for the period 2004 - 2017 annualized average turnover ratio was 18,7%, and in 2018 it climbed up remarkably to 35,15%. One of the reasons for the change could be explained with the introduction of the new EU regulatory regime for algorithmic and high-frequency trading which led to significant reductions of these practices on the Bulgarian stock exchange (Stefanova, 2018).

Table 9

Frontier stock markets – Stylized facts

Stylized Fact	Frontier Markets (FM) Bulgaria, Republic of North Macedonia, Serbia, Bosnia and Herzegovina (MSCI, FTSE, S&P, Russell)
9) Operational Complexity	Less automated settlement process; higher trading costs due to complex custodian relationships; ownership restrictions (IMF, 2014)

Source: see cited academic sources within the table

All the analysed stock exchanges in the Western Balkans have introduced electronic trading systems: Bulgarian capital market has been using the Frankfurt stock exchange trading system Xetra since 2008; the other stock markets are using also electronic trading systems: Serbia: BELEx Fix; Bosnia and Herzegovina stock market in Sarajevo uses SASE; Montenegro stock exchange uses BTS trading system. The analysed countries do not impose restrictions to foreign

trade and the relations are based on concluded double taxation treaties. The capital gains tax imposed is as follows: Serbia 15 %; Bosnia and Herzegovina 10 %; Republic of North Macedonia 10 %; Montenegro 9 %; Bulgaria 10 %.

Table 10

Frontier stock markets – Stylized facts

Stylized Fact	Frontier Markets (FM) Bulgaria, Republic of North Macedonia, Serbia, Bosnia and Herzegovina (MSCI, FTSE, S&P, Russell)
10) Fiscal stability	FM mean public debt as a % of GDP by 2014 stood at 48.2 % (IMF, 2014).

Source: see cited academic sources within the table

The annualized mean public debt during the period 2013 -2018 for the countries under analysis is: Montenegro 67% of GDP; Republic of North Macedonia 37,2 % of GDP; Serbia 79,9 % of GDP; Bulgaria 24 % of GDP.

Table 11

Frontier stock markets – Stylized facts

Stylized Fact	Frontier Markets (FM) Bulgaria, Republic of North Macedonia, Serbia, Bosnia and Herzegovina (MSCI, FTSE, S&P, Russell)
11) Political Environment	Lower rankings in terms of economic freedoms by Heritage Foundation (2018)

Source: see cited academic sources within the table

For 2018 Heritage Foundation has determined that in the group of mostly free countries from the research paper sample is only Republic of North Macedonia (33rd rank); while in the group of moderately free countries belonged Bulgaria (47th rank); Montenegro (68th rank); Serbia (80th rank) and Bosnia and Herzegovina (91st rank).

Table 12

Frontier stock markets – Stylized facts

Stylized Fact	Frontier Markets (FM) Bulgaria, Republic of North Macedonia, Serbia, Bosnia and Herzegovina (MSCI, FTSE, S&P, Russell)
12) Corruption	Lower rankings in terms of corruption control (Transparency International, 2018)

Source: see cited academic sources within the table

Transparency International has ranked the countries in the present analysis in 2017/2018 as follows: lowest perception of corruption has been registered for Montenegro (64th rank of 180 countries); followed by Bulgaria (71st rank); Serbia (77th rank); Bosnia and Herzegovina (91st rank) and highest perception for corruption in Republic of North Macedonia (107th rank).

4. Prospects and challenges for regional financial development in selected Western Balkan frontier stock markets

The financial development of the Western Balkans is part of the overall process of preparing the countries in the Western Balkans for accession to the EU. In this report, there are only three countries in the Western Balkans that are in an advanced stage of preparation for EU accession, namely Serbia, Montenegro and with some conditionality, Republic of North Macedonia. Regional adaptation of the capital markets in the Western Balkans is expected to be a slow and difficult process. Progress can be expected in harmonizing the laws of these countries in line with EU requirements but given the extreme underdevelopment of these countries' capital markets, market practices are expected to be well behind the legislative framework. Problematic factors to the capital markets in the Western Balkans remain the limited range of financial instruments, significant fluctuations in the prices of traded financial instruments, lack of built-in clearing and other infrastructures for introducing new financial instruments such as warrants, derivatives, etc. (see point 2 above).

EU policy towards the countries of the Western Balkans is aimed at deepening the cooperation and integration of the countries in the region as a condition for achieving full EU membership and a course towards their integration in the EU through a strategy for adjustment of their economies. Candidate countries should meet the

Copenhagen criteria (1993), which include institutional aspects (such as institutional stability, democracy and law enforcement, etc.) and economic aspects (such as a functioning market economy, ability to meet competitive pressure and adapt to market forces in the EU). In addition, the requirement for compliance with the Madrid criteria is included, such as the need to develop administrative and judicial capacity to implement the EU acquis Communautaire. A report by the European Commission on the promotion of EU enlargement (2018) outlined recommendations for reforming the rule of law, safeguarding the fundamental rights, fighting corruption and organized crime and improving the functioning of democratic institutions. For Montenegro and Serbia, the accession process is expected to be realized in perspective by 2025. In the current period, the intermediate objective of the preparatory process for Serbia is the challenge of normalizing relations with Kosovo, as regional cooperation and good neighbourly relations are an important part of the evaluation of the progress in preparation for EU membership of each of the analysed Western Balkan candidate countries.

The Regional Cooperation Council has an important role to play in promoting regional cooperation in the Western Balkans through the "Southeast Europe 2020 Strategy: Jobs and Prosperity in a European Perspective" adopted in 2013. It aims to achieve economic growth in SEE through 86 measures in 16 directions, respecting the principles of regional support for EU accession through shared implementation of regional and national commitments and political will to achieve ambitious goals such as increasing the average GDP of per capita to 44% of the EU average by 2020, increasing total intra-regional trade in SEE and reducing trade deficits to 12% of GDP by 2020. The current global realities of disruptions in trade, financial disintegration threats and rising risks from digitalization and cybersecurity may require serious re-definition of the established targets in Southeast Europe 2020 Strategy.

By 2017, in the analysed Western Balkan countries, stable macroeconomic indicators have been achieved by **Montenegro** (as GDP growth) due to investment projects undertaken in public infrastructure and active tourism. Montenegro would need time to meet the Maastricht criteria due to a significant government debt-to-GDP ratio of 78% and a budget deficit of 7% of GDP (IMF, 2018). Incoming FDIs have reached 11% of GDP and cover over 60% of the current account deficit. The IMF projections are for an expected fall in GDP

growth by 2019 due to worsened demographic trends and external risks such as strong dependence of the country on FDI and external financing.

As far as **Serbia** is concerned, economic growth in the country remains heavily dependent on such factors as public sector reform, a reduction in the share of the grey economy, elevating the efficiency of judicial and tax systems. The main engines of economic growth in Serbia remain net exports, recovery of industrial production and investment. Net incoming FDIs by 2017 stood at 6% of GDP and fully covered the current account deficit. An IMF report (2017) made recommendations for building sustainable institutions in Serbia as a step for further economic growth and EU accession.

In **Republic of North Macedonia**, the lowest GDP growth rate has been reported in recent years due to political instability and the need to undertake comprehensive structural reforms in the institutional environment, stimulation of employment and social inclusion, budget consolidation. Due to a significant drop in FDI levels reaching 2.6% of GDP by 2018, an increased external debt of 70% of GDP is reached in the course of the outflow of foreign investors due to rising political instability in the country and the increased perception of corruption levels.

According to the Corruption Perceptions Index of Transparency International, Montenegro ranks 64th, followed by Bulgaria (71st rank), Serbia (77th rank), Bosnia and Herzegovina (91st rank) and Republic of North Macedonia at 107th rank. Then the Global Competitiveness Index 2017-2018, which has not ranked Republic of North Macedonia, positions Montenegro at the 77th place out of 137 countries, followed immediately by Serbia (78th position) from the group of member states from the Western Balkans aspiring for EU accession. Bulgaria, as a full member of the EU for 11 years till the present, has reached 49th rank. For the Western Balkan countries, in general, problematic factors for increasing the competitiveness of their economies remain factors such as: 1) limited access to finance; 2) corruption; 3) ineffective government bureaucracy.

The results of the Global innovation index for 2018 showed that Montenegro is the leading innovative country among the EU aspiring Western Balkan countries (52nd position in 126 countries), followed by Serbia (55th position) and Albania (83rd position). By contrast, Bulgaria being a member of the EU ranks ahead at 37th due to constantly improving business environment for innovations.

A step in the regional financial integration of the frontier stock markets in the Western Balkans was setting up SEE Link as the regional technology platform for stock trading between the Bulgarian, Macedonian and the Croatian stock exchanges in 2014 with the financial support of the EBRD. The aim of the trading platform is to attract foreign investors from the regional capital markets, to improve the visibility of stock exchanges and increase their efficiency. By 2018, members of SEE Link trading platform are: Bosnia and Herzegovina, Croatia, Greece, Republic of North Macedonia, Serbia, Bulgaria and Slovenia.

Table 13

Market capitalization in selected Western Balkan countries (before and after SEE Link was created) in billion USD

Year	Republic of North Macedonia	Serbia	Bulgaria	Montenegro (not a member of SEE Link)
2006	2,04	10,8	8,9	1,9
2007	5,8	23,7	17,1	3,9
2008	2,3	12,6	7,3	1,9
2009	2,6	11,4	6,9	2,3
2010	2,5	1,5	6,3	2,3
2011	2,4	1,7	7,3	2,7
2012	2,3	7,5	5,8	2,9
2013	**2,1**	**7,9**	**5,9**	**2,8**
2014	1,8	2,8	5,6	2,9
2015	1,8	2,7	5,1	2,9
2016	2,2	2,1	5,7	2,9
2017	2,3	2,5	13,9	2,8

Source: the author, according to data from the stock exchanges of the respective countries and the Worldbank database

As seen from Table 13 above, since the creation of SEE Link in 2014, the stock exchanges of the SEE Link member states reported a slight increase in their market capitalization. There are still **problematic factors** behind the potential for successful regional financial development in the analysed countries of the Western

Balkans, besides the stylized facts about frontier stock markets, analysed in point 2 above, including:

1) a structural barrier to the potential for deep capital markets development remains the small size of the economies of these countries.

2) all analysed stock markets continue to be classified as "peripheral" or "frontier" because of their low level of economic development, a significant share of state ownership in the equity of publicly listed public companies, tax constraints, underdeveloped infrastructure for offering innovative financial products.

3) lack of initial public offerings, which indicates that companies in the region have no interest in the capital markets as an alternative way of financing, and dominance of banks as a major source of financing for SMEs.

4) the need for reforms of pension systems, which is expected to contribute to the development of capital markets in the Western Balkans in the future by removing existing restrictions on voluntary pension funds and insurance companies to invest in shares in public companies.

5) despite the implementation of corporate governance codes developed in close cooperation with international institutions, which is binding on companies listed on Western Balkan stock exchanges, many of these companies do not provide public information on the corporate social policy they follow and, in this respect, activities for maintaining relations with investors is at an early stage.

6) In the Western Balkan countries, the privatization process is not yet over, and this influences the volatility of their capital markets. Many companies in the real sector face bankruptcies, high indebtedness, limited access to finance, inefficient asset and equity management, and a low degree of flexibility of the capital structure of public companies. Moreover, in the course of the privatization, dominate the sales to strategic investors or employee-management privatizations, resulting in a high concentration of equity ownership.

7) last but not least, a significant challenge remains improving liquidity of the government securities market (especially the secondary one), activating the repo-market development and the more active use of money market instruments. Excluding Bulgaria (being under currency board regime), the repo markets are dominated by central bank interventions through interbank lending and repo transactions.

Among the important **enabling factors** for the future success of the regional financial development and technological integration of the Western Balkan stock exchanges are:

1) the potential for harmonization of trading rules and the general regulatory framework for capital markets in the current stage preparing aspiring Western Balkan countries for full EU membership.

2) a similar degree of stock market (under)development.

3) increasing the visibility of stock markets with further diversification of the financial products offered (especially with the potential for introduction of structured and derivative securities in the future in SEE Link) and access of SMEs to stock equity financing through future development of specialized segments at stock exchanges for securities trading of SMEs (as BEAM segment at the Bulgarian stock exchange).

4) all these stock exchanges have established cooperation agreements with other exchanges in the South-eastern Europe region, which is indicative of their aspirations to deepen regional cooperation.

5) a number of empirical studies (Stefanova, 2017; Stoykova and Paskaleva, 2018) have established strong correlations between stock exchanges in SEE (especially between the stock exchanges of Bulgaria, Serbia and Montenegro, where the correlation coefficients are above 0.9).

Last, but not least, the regional financial development in Western Balkan EU aspiring countries cannot be considered as happening in a vacuum, and may be confronted by **global risk factors,** arising from challenges as:

1) increasing vulnerabilities from trade protectionist measures which call into question the distribution of gains and losses from trade liberalization policies, especially in peripheral countries in the long run.

2) financial integration is facing disruptive threats world-wide arising from digitalization of financial services, cyber-security risks, deepening and persisting social inequalities etc. which require strengthened resilience in the mix of macroprudential policies and increased international cooperation efforts for setting harmonized rules providing equitable distribution of costs and benefits from financial integration, particularly for peripheral countries.

5. Discussion of results regarding framework of factors influencing frontier stock markets in the Western Balkans

5.1 Macroeconomic factors

Applying a model of multivariate regression analysis and Engle-Granger cointegration for the countries of the Western Balkans between 2006-2017 the following statistically significant **macroeconomic factors** influencing their stock markets (respectively - their market capitalization) have been identified:

Serbia

The applied Engle-Granger cointegration model for the period 2006-2017 did not establish existence of **statistically significant** macroeconomic factors on the market capitalization rate in Serbia (see Table 6A, in the Appendix). However, in a study (Stefanova, 2017, pp162-163) of Southern and Eastern Europe applicant countries, specifically for Serbia a multi-step regression model established the following:

1) gross savings as a % of GDP (+) (Sig., 000). This is consistent with an IMF study (2008) which found out that gross savings were positively correlated with market capitalization but were statistically insignificant in explaining the development of emerging stock markets due to the dominance of banking intermediation in the financial system.

2) FDI as% GDP (Sig.000) (+). A similar correlation between market capitalization and FDI/ GDP ratio has been established by the author in a study of capital markets in Romania and Croatia (Stefanova, 2017), while Furstenberg (1998) concluded that financial integration of a country could be promoted by enhancing competition and technology transfer, which is the result of foreign participation in a given market. Thus, according to Montiel (1994), countries characterized by a high degree of financial integration with the rest of the world, ceteris paribus, should attract average larger gross capital flows.

Montenegro

The applied autoregressive model (see Table 4 in Appendix) established the existence of the following **statistically significant** relationships between market capitalization rate and included factor macroeconomic variables:

1) real interest rate (p-value 0.0050) (+). Interest rates are an important economic variable directly related to economic growth and associated with the cost of capital. When real interest rates rise, this

leads to a reduction in investment in the economy and is one of the reasons for the decline in market capitalization (ie stock prices). For Lee (1997), the relationship between these two variables is not stable over time (i.e., it is non-linear), gradually changing from a significantly negative to a lack of dependence or even a positive (but insignificant) dependence.

2) domestic credit to nonfinancial institutions/ GDP (p-value 0.0085)(-). This is an evidence of the underdevelopment of the stock market and dominance of the banking sector in the financial intermediation.

3) gross domestic savings rate (p-value 0.0069)(-). Similar negative relationship was established by Garcia and Liu (1999) for Latin America supporting the fact that greater part of domestic savings is intermediated through the banking system.

4) value of trade/GDP (p-value 0.0084)(-). This is an evidence of concentrated ownership structure with low level of free float and dominance of institutional investors on the stock market following „buy-hold" strategies.

5) broad money/GDP (p-value 0.0045) (+). As a measure of the size of banking sector, this positive relationship supports other empirical studies (Boyd & Smith, 1996) that on emerging stock markets banks and the stock exchange are complementary sources of financing.

6) FDI/GDP (p-value 0.0231)(-). This negative relationship supports the evidence that during the analysed period significant part of capital in Montenegro was accumulated through FDI inflows and not through the intermediation of the stock exchange.

7) inflation rate (p-value 0.0239)(+). The positive relationship is indiciative of the stabilizing role of moderate inflation on boosting stock market activity and is in line with empirical results of Boyd and Smith (1996, 2001) about the non-linear relationship between inflation and financial development.

8) gross fixed capital formation (p-value 0.0110)(+). As the stock exchange with the highest annualized stock market capitalization in the analyzed period (see Table 6 above), the postitive relationship is indicative of increased role of the stock exchange in Montenegro in transformation of savings to investment projects.

The Republic of North Macedonia

The applied weighted least square model (see Table 2 in Appendix) on the macroeconomic factors influencing stock market

capitalization did not establish **statistically significant** relationships for the analysed period. However, another study (Stefanova, 2017) on the Macedonian stock market underlined the importance of real GDP growth per capita (p-value 0.006) (+). Demirguc-Kunt & Levine (1996a), Levine & Zervos (1998) also confirmed a positive two-way relationship between economic growth and long-term stock market development.

Bulgaria

Obvious from Table 7 in Appendix, the empirical results for Bulgaria are as follows:

1) the real interest rate (p-value 0.0546) (+). An increase in the real interest rate by 1 pp is associated with a rise of the market capitalization rate by 1.90271 p.p.

2) domestic credit to non-financial institutions/GDP (p-value 0.0105)(-) whereby increase by 1 pp was associated with decline in market capitalization by 2.77 pp.

These empirical results for the Bulgarian stock exchange confirm the underdevelopment of the capital market under the period 2006-2017 and the dominance of the banking sector (providing funding for investment mainly by the banking sector) as shown by 2) above.

5.2. Institutional factors

As a second step, an application of an autoregression model and/or Engle-Granger cointegration model to test the relationship between market capitalization and institutional variables on the stock exchanges in the Western Balkans between 2006-2017, identifies the following statistically significant relationships:

Serbia

The applied Engle-Granger cointegration model (Table 5 in Appendix) did not establish **statistically significant** relationships for Belgrade stock exchange, although the results are indicative of improved estimates for the rule of law, but worsened estimate for control over corruption

Republic of North Macedonia

For this stock market (see Table 1 in Appendix), **statistically significant** institutional variables for the period under review are:

1) the deteriorated estimate of corruption control (p-value 0.0118)(-), whereby decrease by 1 pp. has led to a decrease of the market capitalization by 212 pp.

2) the worsened government effectiveness score (p-value 0.0172)(-), whereby decrease by 1 pp. has led to a decrease of the market capitalization by 106 pp.

3) the deteriorated assessment of the rule of law (p-value 0.0318)(-), whereby decrease of 1 pp. is associated with a fall of the market capitalization by 168 pp.

4) improved estimate of voice and accountability (p-value 0.0091)(+) boosted market capitalization rate by 217 pp.

5) deteriorating estimate of political stability (p-value 0.0572)(-) was associated with fall in market capitalization rate of 16 pp.

Montenegro

The results for Montenegro (see Table 3 in Appendix) identified the following **statistically significant** dependencies between market capitalization and institutional variables:

1) improved rating for regulatory quality (p-value 0.0022)(+) led to an increase in market capitalization rate by 1,423 pp.

2) improved estimate of the indicator for government effectiveness (p-value 0.0053)(+) was associated with an increase of the market capitalization rate by 1,402 pp.

3) worsened estimate of rule of law (p-value 0.0076) (-) was associated with a drop in market capitalization rate of 1,819 pp.

Bulgaria

Last but not the least, the empirical results (see Tables 8 and 9 in Appendix) show the following **statistically significant** institutional factor associated with the stock market capitalization ratio:

1)improved estimate of voice and democratic accountability (p-value 0.0199)(+) is associated with an increase of the market capitalization of the stock exchange in Bulgaria by 149 pp.

2) improved estimate of political stability (p-value 0.0017)(+) was related with boost of market capitalization of 28.05 pp.

3) heightened control of corruption (p-value of 0.0469)(+) cointegrated with rising market capitalization by 21.92 pp.

4) worsened estimate of regulatory quality (p-value of 0.0075)(-) associated with fall in market capitalization by 19.65 pp.

The model applied is adequate (p-value 0.000060) and explained over 90 % of the changes in the market capitalization rate in Bulgaria with the variation of the independent institutional factors (see table 9 in Appendix). The empirical results for Bulgaria correspond to the findings made as follows: 1) in the ECB Convergence Report (2018) where it is specifically recommended for Bulgaria to achieve

steady convergence with maintenance of macroeconomic and fiscal stability, which requires stable institutions and a supportive business environment. 2) Furthermore, the European Commission Convergence Report for 2018 set out other important factors for the economic integration and convergence of Bulgaria, including stability of the institutional environment, and special attention to be paid to the current weaknesses: relatively low institutional quality, governance weaknesses and corruption.

Based on the above empirical results regarding the influence of various macroeconomic and institutional factors on the stock market development (i.e. the market capitalization rate) of the selected frontier stock markets from the Western Balkans (including that of Bulgaria - as a member country of the EU), the formulated testable hypotheses in point 2 above have been proved:

1) Despite macroeconomic stability in Bulgaria and improving GDP growth rate after 2013, the Bulgarian stock market has been deterred from effectively performing its function to promote direction of savings to the most profitable investments and offering diverse financing opportunities due to the fact that it continues to be bank dominated and is facing various institutional weaknesses relating to deteriorating regulatory quality and corruption (see point 4 empirical results for Bulgaria). Besides, following 11 years of full membership in EU there are significant structural weaknesses facing the Bulgarian economy. The low GNI per capita for Bulgaria for the entire period under analysis being about 24 % of EU average (see stylized fact 1) is a proof of the increased financial openness of the country, which in the aftermath of the global financial crisis in particular has contributed to outflow and repatriation of profits of foreign (and local) investors (see stylized fact 3 and 4 - negative portfolio flows and falling FDIs in Bulgaria), including that of domiciled multinational enterprises along the value chains from Bulgaria, under conditions of increasing volatility (see stylized fact 7, for Bulgaria); negative asset returns (see stylized fact 2, for Bulgaria); falling stock market value (see stylized fact 6, for Bulgaria); limited liquidity (see stylized fact 8).

2) The evolutionary path and upgrade from frontier to emerging stock market status for the Wester Balkan countries aspiring for EU membership in the future will require more than a decade of significant improvements in the institutional environment (see point 4 above - i.e. Low regulatory quality, high corruption levels; worsened government efficiency) and the challenge of sustaining the positive influence of

enabling macroeconomic conditions (i.e. positive impact of FDI/ GDP on stock market development in Serbia and of real GDP growth per capita in the Republic of North Macedonia). Obviously, the empirical results in the present paper support potential preparedness of Montenegro for upgrade to emerging market status in the foreseeable future due to improved institutional environment (see the empirical results for improved regulatory quality, democratic accountability and political stability), which has been conducive to maintenance of macroeconomic stability and economic growth, thereby boosting stock market development (highest levels of FDIs and portfolio flows; highest stock market value as % of GDP etc.).

6. Conclusions

Based on the empirical study of the frontier stock markets in Western Balkans, important conclusions can be drawn for the future financial development of Western Balkan aspiring countries' preparation for EU accession, taking into account the limitations of the study. Applying the concepts of financial development in peripheral countries within the context of the new institutional economy (North, 1990 Acemoglu & Johnson, 2005 etc.), EU membership aspiring countries and Bulgaria as a full-fledged EU member country have a priority to build a robust institutional framework that guarantees the rule of law, property rights protection and democratic accountability. This is a prerequisite for achieving economic stability and predictability of the business environment as well as for sustainable and socially inclusive economic growth needed for upgrading their stock markets from "frontier" to "emerging markets" status in the ever-increasing complexities and risks in the global economy.

The experience with Bulgaria and its membership for 11 years now in the EU with existing harmonized EU legal framework, but not adequately implemented in practice, and not strengthened enough regulatory institutional capacities is indicative of the insufficient adequacy of the ongoing financial integration endeavours of its capital market in the EU (that is, "in the middle of nowhere" – still being a market classified in the MSCI standalone market indexes category) in the context of the current challenges and the future to the global economy. This fact is borne out by the ongoing EU recommendations in the course of continuous monitoring of Bulgaria (2018) to improve

the judicial system, reducing corruption levels and guaranteeing the democratic environment.

In this sense, the way forward for the Western Balkans countries aspiring for EU membership in the future calls for comprehensive improvement and strengthening of institutional structures, opening of their economies through WTO membership and conclusion of free trade agreements with diversified trading partners with a view to their subsequent successful integration into global trade chains and boosting the competitiveness and innovation potential of their businesses. Overcoming ever-increasing macroeconomic, institutional, technological, climatic, etc. challenges, complexities, and risks facing the economies and stock markets of the Western Balkan countries requires an integrated approach for active co-operation and involvement of national, regional and international stakeholders (market and institutional ones) to successfully move from status of peripheral/frontier to emerging stock markets in the Western Balkans in the medium to long term.

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APPENDIX

Table 1A

Results from Cointegration Engle-Granger test on the relationship between institutional factors and market capitalization in Republic of North Macedonia

	coefficient	std. error	t-ratio	p-value	ADF test
const	70.9119	11.6978	6.062	0.0090 ***	
d_Macedonia_Political stability	−16.0702	5.3401	−3.009	0.0572*	p-value 0.02059
d_Macedonia_Control of corruption	−212.593	38.5925	−5.509	0.0118**	p-value 0.007642
d_Macedonia_Regulatory quality	−92.7460	58.5087	−1.585	0.2111	p-value 0.04814
d_Macedonia_Voice and accountability	217.463	35.9453	6.050	0.0091***	p-value 0.02308
d_Macedonia_Government effectiveness	−106.528	22.1976	−4.799	0.0172**	p-value 0.04749
d_Macedonia_Rule of law	−168.945	44.3594	−3.809	0.0318**	p-value 0.01405
time	−7.76476	1.43680	−5.404	0.0124**	

Mean dependent var. −0.660909	S.D. dependent var 23.20573
Sum squared resid. 116.0957	S.E. of regression 6.220818
R-squared 0.978441	Adjusted R-squared 0.928137
Log-likelihood −28.56918	Akaike criterion 73.13837
Schwarz criterion 76.32153	Hannan-Quinn 71.13183
rho −0.244714	Durbin-Watson 2.412253

Source: author's calculations

Table 2A

Results from Weighted Least Squares test on the relationship between macroeconomic factors and market capitalization in Republic of North Macedonia

WLS, using observations 2006-2017					
Dependent variable: d_Macedonia_MC					
Variable used as weight: Macedonia_MC					
	coefficient	std. error	t-ratio	p-value	ADF test
d_Macedonia_FDI	8.29854	2.29402	3.617	0.0686*	p-value 0.02266
d_Macedonia_Domestic_Credit/GDP	−6.60894	2.41832	−2.733	0.1119	P-value 0.01378
d_Macedonia_RIR	11.0199	6.49815	1.696	0.2320	p-value 0.001056
d_Macedonia_GDP growth	6.66124	1.84209	3.616	0.0687*	p-value 0.005921
d_Macedonia_Inflation rate	1.98737	6.11684	0.3249	0.7761	p-value 0.0002093
d_Macedonia_Gross_Savings/GDP	0.208819	2.45405	0.08509	0.9399	p-value 0.004843
d_Macedonia_Gross_Capital Formation/GDP	13.8725	3.88361	3.572	0.0702*	p-value 4.333e-06
d_Macedonia_Trade/GDP	−0.704408	0.430211	−1.637	0.2432	p-value 0.005437
d_Macedonia_Broad_Money/GDP	9.56882	2.67942	3.571	0.0702*	p-value 1.435e-07

Statistics based on the weighted data:			
Sum squared resid	3674.287	S.E. of regression	42.86191
Uncentered R-squared	0.985604	Centered R-squared	0.986577
F(9, 2)	15.21410	P-value(F)	0.043170
Log-likelihood	−47.57003	Akaike criterion	113.1401
Schwarz criterion	116.7211	Hannan-Quinn	110.8827
rho	0.339384	Durbin-Watson	2.318827
Statistics based on the original data:			
Mean dependent var	−0.660909	S.D. dependent var	23.20573
Sum squared resid	165.6856	S.E. of regression	9.101802

Source: author's calculations

Table 3A

Results from Autoregressive test on the relationship between institutional factors and market capitalization in Montenegro

Autoregressive Model Institutional Factors					
Cochrane-Orcutt, using observations 2006-2017					
Dependent variable: Montenegro_MC					
rho = -0.748847					
	coefficient	**std. error**	**t-ratio**	**p-value**	**ADF test**
d_Montenegro_Political_Stability	128.201	41.3163	3.103	0.0532*	p-value 9.183e-09
d_Montenegro_Control_Corruption	−121.144	44.4597	−2.725	0.0723*	p-value 4.741e-09
d_Montenegro_Reg_Quality	1423.16	144.058	9.879	0.0022***	p-value 0.002639
d_Montenegro_Voice_Accountability	−144.675	298.096	−0.4853	0.6607	p-value 0.02316
d_Montenegro_Gov_Effectiveness	1402.90	192.613	7.284	0.0053***	p-value 0.07818
d_Montenegro_Rule_Law	−1819.81	282.395	−6.444	0.0076***	p-value 0.07662
Statistics based on the rho-differenced data:					
Mean dependent var	82.78444		S.D. dependent var	7.730434	
Sum squared resid	1360.404		S.E. of regression	21.29479	
Uncentered R-squared	0.410297		Centered R-squared	-0.438264	
F(6, 3)	68.20638		P-value(F)	0.002692	
rho	0.175836		Durbin-Watson	1.643196	

Source: author's calculations

Table 4A

Results from Autoregressive test on the relationship between macroeconomic factors and market capitalization in Montenegro

Autoregressive Model Macroeconomic					
Prais-Winsten, using observations 2006-2017					
Dependent variable: d_Montenegro_MC					
rho = -0.971516					
	coefficient	**std. error**	**t-ratio**	**p-value**	**ADF test**
d_Montenegro_FDI/GDP	−1.14259	0.176579	−6.471	0.0231**	p-value 0.005132
d_Montenegro_Domestic_Credit/GDP	−4.62005	0.427960	−10.80	0.0085***	p-value 0.04083
d_Montenegro_RIR	7.77286	0.550317	14.12	0.0050***	p-value 0.03004
d_Montenegro_GDP growth	−0.448870	0.199815	−2.246	0.1537	p-value 0.02115
d_Montenegro_Inflation rate	3.73537	0.588020	6.352	0.0239**	p-value 0.004252
d_Montenegro_Gross domestic savings/GDP	−20.4102	1.70636	−11.96	0.0069***	p-value 2.104e-09
d_Montenegro_Gross domestic fixed capital formation/GDP	4.01852	0.425315	9.448	0.0110**	p-value 0.003879
d_Montenegro_Trade/GDP	−4.66327	0.428856	−10.87	0.0084***	p-value 0.01672
d_Montenegro_Broad_Money/GDP	2.87720	0.192889	14.92	0.0045***	p-value 0.0003991
Statistics based on the rho-differenced data:					
Mean dependent var	1.810000		S.D. dependent var	12.02071	
Sum squared resid	2.033435		S.E. of regression	1.008324	
Uncentered R-squared	0.998804		Centered R-squared	0.999263	
F(9, 2)	312.6043		P-value(F)	0.003193	
rho	−0.235054		Durbin-Watson	2.698498	

Source: author's calculations

Table 5A

Results from Co-integration Engle-Granger test on the relationship between institutional factors and market capitalization in Serbia

	coefficient	std. error	t-ratio	p-value	ADF test
const	−3.96613	4.99414	−0.7942	0.5104	
d_d_Serbia_Political stability	35.0901	58.8182	0.5966	0.6113	p-value 0.04342
d_d_Serbia_control of corruption	−388.296	92.6831	−4.189	0.0525*	p-value 0.00968
d_d_Serbia_Reg_Quality	−236.139	140.723	−1.678	0.2353	p-value 0.01369
d_d_Serbia_Voice and accountability	9.69607	49.4873	0.1959	0.8628	p-value 6.026e-05
d_d_Serbia_Gov_Effectiveness	114.748	72.1534	1.590	0.2527	p-value 0.007005
d_d_Serbia_Rule_of law	380.392	127.729	2.978	0.0967*	p-value 0.03726

Mean dependent var	−2.602222	S.D. dependent var	30.36600
Sum squared resid	343.0350	S.E. of regression	13.09647
R-squared	0.953498	Adjusted R-squared	0.813991
Log-likelihood	−29.15318	Akaike criterion	72.30637
Schwarz criterion	73.68694	Hannan-Quinn	69.32710
rho	0.088125	Durbin-Watson	2.731391

Source: author's calculations

Table 6A

Results from Co-integration Engle-Granger test on the relationship between macroeconomic factors and market capitalization in Serbia

	coefficient	std. error	t-ratio	p-value	ADF test
const	30.7587	15.2545	2.016	0.2931	
d_Serbia_FDI/GDP	−10.1993	6.84287	−1.491	0.3762	p-value 0.002805
d_Serbia_Domestic Credit/GDP	−11.1855	5.78668	−1.933	0.3039	p-value 0.00576
d_Serbia_RIR	−10.0509	4.05229	−2.480	0.2440	p-value 0.00239
d_Serbia_Inflation rate	−0.692476	5.59637	−0.1237	0.9216	p-value 0.003197
d_Serbia_GDP growth	21.9858	12.6037	1.744	0.3314	p-value 0.005972
d_Serbia_Gross domestic savings/GDP	−47.1891	19.5458	−2.414	0.2500	p-value 0.003789
d_Serbia_Gross fixed capital formation/GDP	−12.0146	9.55786	−1.257	0.4278	p-value 0.004128
d_Serbia_Trade/ GDP	−1.29214	1.68406	−0.7673	0.5834	p-value 0.00239
d_Serbia_Broad_Moneay/GDP	4.02287	5.20215	0.7733	0.5809	p-value 0.0005947

Mean dependent var	−3.326364	S.D. dependent var	16.68288
Sum squared resid	77.08813	S.E. of regression	8.779985
R-squared	0.972302	Adjusted R-squared	0.723022
Log-likelihood	−26.31712	Akaike criterion	72.63424
Schwarz criterion	76.61320	Hannan-Quinn	70.12607
rho	−0.238592	Durbin-Watson	2.378018

Source: author's calculations

Table 7A

Autoregressive Test (1st lagged order) on relationship of macroeconomic factors and market capitalization in Bulgaria

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	ADF test
const	−3.35501	2.01049	−1.6687	0.1938	
d_d_BG_FDI/GDP	−0.566335	0.532315	−1.0639	0.3654	p-value 0.009247
d_d_BG__Domestic__Credit/GDP	−2.77418	0.483171	−5.7416	0.0105**	p-value 0.008792
d_d_BG__Real__IR	1.90271	0.619902	3.0694	0.0546*	p-value 3.787e-05
d_d_BG__GDP__Growth	0.618107	0.578646	1.0682	0.3638	p-value 1.27e-05
d_d_BG__Inflation__GDP__Def	1.92374	0.735531	2.6154	0.0793*	p-value 3.619e-05
d_d_BG__GDSavings/GDP	2.52662	1.04069	2.4278	0.0935*	p-value 4.884e-05
d_d_BG__GFCF/GDP	−0.393706	1.13855	−0.3458	0.7523	p-value 0.002034
d_d_BG__Trade/GDP	0.294103	0.220353	1.3347	0.2742	p-value 0.0002402
d_d_BG__Broad__Money/GDP	1.39879	1.02259	1.3679	0.2648	p-value 7.561e-05

Mean dependent var	−0.227692	S.D. dependent var	17.63142
Sum squared resid	67.13296	S.E. of regression	4.730503
R-squared	0.982005	Adjusted R-squared	0.928021
F(9, 3)	26.27849	P-value(F)	0.010596
rho	0.360446	Durbin-Watson	1.956139

Source: author's calculations

Table 8A

Engle-Granger cointegration test on institutional variables and market capitalization in Bulgaria

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	ADF test
const	−0.0203305	3.47308	−0.005854	0.9955	
d_d_BG_Political Stability	−1.72380	22.8303	−0.07550	0.9417	p-value 0.0006526
d_d_BG__Control of Corruption	−1.15083	46.7868	−0.02460	0.9810 p	p-value 0.006687
d_d_BG__Regulatory Quality	−32.0102	45.5991	−0.7020	0.5026	p-value 0.008014
d_d_BG__Voice__Accountability	149.162	51.4645	2.898	0.0199**	p-value 5.49e-05
d_d_BG__Government Effectiveness	−8.29360	23.9767	−0.3459	−0.7383	p-value 0.0001524
d_d_BG__Rule__Law	7.00286	10.1659	0.6889	0.5104	p-value 7.684e-07

Mean dependent var	0.090000	S.D. dependent var	16.36385
Sum squared resid	1398.206	S.E. of regression	13.22028
R-squared	0.627031	Adjusted R-squared	0.347305
Log-likelihood	−55.29579	Akaike criterion	124.5916
Schwarz criterion	129.5479	Hannan-Quinn	124.5388
rho	−0.257618	Durbin-Watson	2.269098

Source: author's calculations

Table 9A

Heteroscedasticity correction test on institutional variables and market capitalization in Bulgaria

	Coefficient	*Std. Error*	*t-ratio*	*p-value*
const	1.42381	0.697144	2.0423	0.0804*
d_d_BG_Political_Stability_1	28.0564	5.68515	4.9350	0.0017***
d_d_BG__Control__Corruption_1	21.9204	9.10273	2.4081	0.0469**
d_d_BG__Regulatory__Quality_1	−19.6585	5.2941	−3.7133	0.0075***
d_d_BG__Voice__Accountabili_1	117.559	15.3295	−7.6688	0.0001***
d_d_BG__Government__Effecti_1	3.09286	6.22926	0.4965	0.6347
d_d_BG__Rule__Law_1	0.148718	1.14473	0.1299	0.9003

Sum squared resid	7.056942	S.E. of regression	1.004059
R-squared	0.969197	Adjusted R-squared	0.942795
F(6, 7)	36.70855	P-value(F)	0.000060
Log-likelihood	−15.06982	Akaike criterion	44.13964
Schwarz criterion	48.61304	Hannan-Quinn	43.72555
rho	−0.022299	Durbin-Watson	1.992683

Source: author's own calculations