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THE REAL AND THE FICTION IN THE ECONOMY OF WESTERN BALKANS: A RESEARCH METHODOLOGY

This study attempts to propose a Research Model for study linkages across Western Balkans' economies macroeconomic indicators and the stock market. Do they move independently of each other? Are there any asymmetries following shocks or not? And, finally, do financial crises have any effect on these linkages? The answers to these questions will clarify the distance between the real and the fiction, i.e., macroeconomic developments and stock market trends, in the sensitive area of the six Western Balkan countries: Albania, Bosnia-Herzegovina, North Macedonia, Montenegro, Serbia, and Kosovo. Deciphering stock market trends and linking them to the real economy would be a powerful tool of their economic maturity, in their process of EU accession.

Keywords: macroeconomic indices, stock market, Western Balkans, EU Accession.

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РЕАЛЬНЕ ТА ФІКЦІЯ В ЕКОНОМІЦІ ЗАХІДНИХ БАЛКАН: МЕТОДОЛОГІЯ ДОСЛІДЖЕННЯ

У цьому дослідженні запропоновано дослідницьку модель для дослідження зв'язків між макроекономічними показниками економіки Західних Балкан та фондовим ринком. Чи рухаються вони незалежно один від одного? Чи є якісь асиметрії після шоків чи ні? І, нарешті, чи впливають фінансові кризи на ці зв'язки? Відповіді на ці запитання прояснять відстань між реальністю та вигадкою, тобто макроекономічними розвитками та тенденціями фондового ринку, у чутливій зоні шести західнобалканських країн: Албанії, Боснії та Герцеговини, Північної Македонії, Чорногорії, Сербії та Косово. Розшифровка тенденцій фондового ринку та їх пов'язування з реальною економікою стане потужним інструментом їхньої економічної зрілості в процесі вступу до ЄС.

Ключові слова: макроекономічні показники, фондовий ринок, Західні Балкани, вступ до ЄС.

I. Introduction. From the Feira European Council in 2000 and the Thessaloniki European Council in 2003 to the Sofia European Council in May 2018, the European perspective of the six Western Balkan economies is more than obvious, as evidenced by the Stabilization and Association Process: six countries with a common future in the EU (Milenko & Wilson, 2021). Recently, political, and financial changes in the Western Balkans have slowed down the process, due to lessening interest among political elites for the area, development exhaustion in the EU and its Member States, serious economic impacts of recent financial crises as well as of covid-19 pandemic, (Jacimovic, Deichmann, and Tianping, 2022).

In this context, the investigation of the dynamics between the real economy and the stock market could prove to be a particularly useful tool for the development of the Process. Moreover, the conclusion of bilateral FTAs ("Stabilization and Association Agreements", SAAs) between the EU and Western Balkans (Albania-2009, North

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Macedonia-2004), Montenegro-2010), Serbia-2013, Bosnia and Herzegovina-2015, and Kosovo-2016) can prove to be effective tools for their economic and institutional evaluation. In this sense, deciphering stock market trends and linking them to the real economy can contribute to the evaluation of their economic maturity (Zheng, et al, 2022).

As is well known, macroeconomic performance indicators feed studies and forecasts in economic activity (OECD, 2011). On the other hand, fiction, i.e., stock market trends, and their environment can be interpreted differently, culminating now in the use of neural networks (Wu, et al, 2021) not always in connection with the real economy. From the time of empirical studies of Eugene Fama in the 1970s and 1980s (Malkiel and Fama, 1970, Fama and French, 1989) until the most recent in the 1990s (Chen, 1991, and Lee, 1992) led to the conclusion that the evolution of the real economy shapes the stock market trends. Recent research in the US, Japan, and European economies, on the other hand, has shown that the real economy and stock market trends are not linked, so interest rates and other macroeconomic variables do not affect the stock market (Chan et al., 1991, Lee, 1996, Chan et al., 1998, Flannery and Protopapadakis, 2002, Binswanger, 2004, Laopodis, 2011, 2016, Laopodis and Papastamou, 2019).

This study aims to present a research methodological model that could decipher the relationship between macroeconomic variables and stock market developments, in the sensitive area of the Western Balkans, thus further illuminating the complex problem of the information transmission mechanism (Claus & Grimes, 2019), and completing the evaluation of their economic performance, vital for the Stabilization and Association Process.

The questions asked in this study are:

1. Is there any correlation among macroeconomic variables in the economies of the Western Balkans and if so, to what extent? Or to put it another way, is there some sort of information dissemination (at the mean level) among these indices within the six Western Balkan economies? The question becomes even more important if one of the six countries proves to play the role of information leader for other countries' real economies.
2. Is there any correlation between the real economy in each of the six countries and developments in the stock market? Does the real economy follow stock market trends? Or does the stock market follow the real economy? The answer to this question offers another dimension to the problem of their economic and institutional maturity: are these economies ready to enter Europe or are they still living in a fictitious stock market world? Can the stock market play its real role, i.e., transfer financial information effectively? In other words, can interest rates be reliably stable? And in that sense, are stock market forecasts based on fundamentals possible?
3. What is the nature of the relationship between real and fiction economies in the Western Balkans over time? That is, it was more intense before the signing of the "Stabilization and Association Agreements" (SAAs)? Besides, it is known that the relations between these two worlds differ in difficult times.

The study presents the methodological design and empirical analysis models.

II. Short Literature Review. As mentioned, previous studies have reached a safe conclusion: the analysis of macroeconomic variables could be of great use in forecasting stock market trends (Keim and Stambaugh, 1986, Fama and French, 1989,

Fama, 1990, Balvers et al., 1990, Barro, 1990, Schwert, 1990, and Chen, 1991). The study of Errunza and Hogan (1998) was indicative: employing the VAR model concluded that the real economy could interpret stock market fluctuations in European countries over 35 years (1959–1993). That seems to have changed since the late 1990s. Studies by Campbell and Shiller (1988, 1991), Carlson and Sargent (1997), and Shiller (2000) attributed stock market fluctuations, not to real economy developments, but non-fundamental factors, such as excessive speculation and irrational exuberance. Worse still, as Lee's (1998) study showed: neither earnings, dividends, nor discount rates, and of course, production indices could explain stock market fluctuations. The studies of Chan et al. (1998), and Flannery and Protopapadakis (2002) came to the same pessimistic (for forecasting) conclusion: macro fundamentals cannot interpret equity returns. Then what was it that could explain them?

The study by Lee et al. (2003) is considered remarkable to investigate the relationship between output indices and stock returns for ten major Eastern and Southeastern Asian countries: despite recognizing correlation, this was ultimately not the rule for all countries. What was missing in some countries? The study by Tsagkanos and Siriopoulos (2015) to investigate the relationship between stock prices and production of Eurozone countries, utilizing the Seemingly Unrelated Regression (SUR) and threshold co-integration approaches resulted in the recognition of weak economic connection when applying the SUR methodology, but asymmetric, long-run relationship, when applying the threshold co-integration approach. The conclusion is obvious and equally uncertain: the nature of the correlation depends on the research methodology.

III. Data, Methodology, and Preliminary Results. Collecting statistics for the evaluation trends of the real economy as well as the stock market, is the first obstacle of research, since data collection in these countries is a problem, to maintain data consistency:

- indices of industrial production for total production index, energy, and crude petroleum for the six countries of Western Balkans: Albania, Bosnia-Herzegovina, North Macedonia, Montenegro, Serbia, and Kosovo for a period of five years (2016–2021) to cover the period from the signing of the "Stabilization and Association Agreements" (SAAs) between the EU and Western Balkans (Albania-2009, North Macedonia-2004, Montenegro-2010, Serbia-2013, Bosnia and Herzegovina-2015, and Kosovo-2016)

- stock market indices, and four interest rates: one short-term (3-m Treasury bill), and three long-term ones (the 5-year and 10-year Treasury note and bond, respectively, and a corporate BAA-rated bond) for each country for the same period.

The next phase of the study must be the construction of nominal, continuously compounded returns for the stock market index (SP) and industrial production index (IPG) using the formula below:

$$\begin{aligned} sp &= \log(SP_t/SP_{t-1}) * 100 \quad (1a) \\ ipg &= \log(IP_t/IP_{t-1}) * 100 \quad (1b) \end{aligned} \tag{1}$$

From the collected interest rates, we could derive two spreads namely, one term spread (10-yr T-bond minus the 3-m T-bill) and a credit spread (Corporate bond minus 5-year T-note). As shown in their study Jon Faust, Simon Gilchrist, Jonathan H. Wright, and Egon Zakrajsek, credit and term spreads have been found to predict well real economic activity (Faust, Gilchrist, Wright, and Zakrajsek, 2013)

The second stage, the methodology, could begin with the first question: can a country's economic performance be considered as an information leader for the economic performance of the other five countries? The method used could be the multivariate Granger causality regressions and tests, with the well-known assumption that, the changes of the elements of the real economy Granger-cause i's changes if j's coefficient(s) is (are) statistically significant - at the usual 5% level. (Granger, 1969, and Granger, 1980). Regressions are run for the economic indices of each of the six countries of the Western Balkans, with a rolling window of 12 months for up to twelve lags (k), including own lagged returns, for each i and j index combination (i, j = 9), as follows:

$$r_t^i = \beta_0^{ij} + \sum_{k=1}^{12} \beta_1^{ij} r_{t-k}^i + \sum_{k=1}^{12} \beta_2^{ij} r_{t-k}^j + e_t^{ij} \quad (2)$$

where the coefficients of interest are β_2^{ij} for the remaining indices. The 12-month rolling window should be just right to avoid noise and short-term leader-follower relationships.

The third phase would be the investigation of short-term or long-term, dynamic interactions among the selected countries' real economy indices for the entire period. We can first test the first hypothesis via a vector autoregressive (VAR) model:

$$r_t = A_0 + A_1 r_{t-1} + u_t \quad (3)$$

where r_t is a vector of the returns of the specific indices and A_1 is the matrix of coefficients describing the indices' lagged influences on each country's economy index. To investigate the effect (shock) of a country's economic index on the economic index of other countries, we would derive the variance decompositions and the impulse response functions of each country's economy index vis-a-vis all others and trace their responses to such shocks. It is reminded that the relationships examined are assumed to be linear since we concentrate on the mean levels of the series. Otherwise, that is, the series exhibit nonlinearities, it is obvious that is not our focus in this paper.

Also, the present study proposes to utilize only part of the many outputs produced by VAR models: impulse response functions and variance decompositions. Impulse responses present the impact of one standard deviations shock (innovation) of one variable on another variable's current and future values. When we are dealing with two variables, there is no problem in the computation of the standard impulse response functions (IRF) but when multiple series are simultaneously examined this approach breaks down. This is so because this approach is based on some prior (ad hoc) orthogonalization of shocks on a Cholesky decomposition of the innovation matrix. The latter essentially means that the results are sensitive to the ordering of the variables and implies problems in causalities among the variables. To get around the problem, we compute the generalized IRFs (GIRFs) based on Pesaran and Shin (1998) which are invariant (insensitive) to the ordering of the variables. Perhaps the greatest advantage of GIRFS is that they permit the interpretation of the initial response of each variable to shocks emanating from all the variables (in the system).

Finally, the variance decomposition tables would provide the added insight as to how much each variable contributes to the forecast variance decomposition of another variable plus its variation. In that way, we can assess the extent of contribution (influence) of all variables to each variable for a forecast horizon.

The fourth stage could be the formulation of:

- preliminary statistical results ("photographic" representation and not a capture of dynamic relationships, since these simple statistic measures) with each country economic indices, and their correlations for the entire period: do the countries' indices moved closer together or there are disconnections? Which country is experienced the greatest volatility? Do these indices present skewness and kurtosis? And if yes, that means that there are notable departures from normality with some sectors tending to have a higher probability of generating (large) negative returns than suggested by the normal distribution, based on their negative skewness. In addition, evidence of leptokurtosis (fat tails) would connote that there would be a lower probability of extreme outcomes compared to the normal distribution. Finally, another metric that solidifies these series' notable departures from normality is the Jarque-Bera statistic which is very high and statistically significant in most cases. Do they are moved positively with each other or there are exceptions? Do some correlations among the indices are stronger than others?

- main empirical results, showing dynamic linkages among each country's economic indices with each country's stock market and long-term bond yield, performing multivariate Granger causality regressions and tests. Another table would contain selected results from the Granger causality tests for the entire period in two panels:

Panel A would display the direction of causality among each country's production growth rates (showing if the production growth of one country influence others, or the economy of some countries appear to be more exogenous),

Panel B would show the causality dynamics among production growth, bond yields, and stock returns for each country.

Also, some tables and figures must be presented to exhibit:

- each of the six Western Balkan countries' industrial production growth rates generalized impulse response functions (GIRFs) for the entire period, to understand the impact of economic shocks between countries,

- variance decompositions of each country's industrial production and stock returns for selected periods and the full period, showing if economic indices, bond yields, and the stock market appear to move independently of each other or not,

- relationship between six countries' bond yields and stock markets for the entire period, to understand if each country's magnitudes appear to follow its path.

Conclusions. In this paper, we proposed a research methodology to investigate the dynamic linkages among the six countries of Western Balkans' economic indices, stock markets, and interest rates/yields for the 2015-2021 period, via Granger causality tests and VARs, for the full and several sub-periods. Can some of these countries play the role of economic leaders in the area?

1. Are there any impulse responses and variance decompositions from various VARs, indicating independent move of the real economic indices, bond yields, and the stock market in these six countries?

2. Are there signs of disconnection among important real and financial sectors in each of the countries examined? Do these countries have followed their paths and that no significant short-run (or even long-run) linkages of real production growth rates across countries exist or not?

Utilizing this methodology has two advantages: it feeds empirical research to capture the economic development in the sensitive, political, economic, and social

terms, area of Western Balkans, and contribute to the economic evaluation of the EU Stabilization and Association Process.

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