SJPS Slovak Journal of Political Sciences
Scientific article
sjps.fsvucm.sk I ISSN 1335-9096 (online)
2022 The Faculty of Social Sciences
University of Ss. Cyril and Methodius, Trnava.
DOI: https://doi.org/10.34135/sjps.240204

DEBT TRAP AND CHINA'S ECONOMIC FOOTPRINT IN THE WESTERN BALKANS

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Abstract
This paper investigates whether the Chinese economic footprint, proxied by bilateral trade and foreign direct investment (FDI), is associated with the gradual emergence of a debt trap in Western Balkans countries during the period from 2011 to 2022. By employing the dynamic panel data estimation, the research reveals that increasing Sino-Western Balkans trade and FDI intensity seems to contribute to rising debt levels in the Western Balkans. Despite the benefits of trade and investment agreements with China for infrastructure development in these countries, they also seem to heighten financial dependence, potentially jeopardizing the region's economic stability through unconditional low-interest loans. Given the Western Balkan countries' candidate status for EU membership, understanding of such Chinese involvement and its implications is crucial for their progress toward further integration.

Keywords: *China, Western Balkans, Initiative 14+1, Debt trap, Trade openness, Foreign direct investment, Public debt*

INTRODUCTION

China, as the world's leading export country, launched in 2013 its ambitious plan, the Belt and Road Initiative (BRI), which aimed to reduce transportation barriers and promote its regional economic cooperation by creating international economic corridors from Asia through Africa to the Middle East with a final destination, Europe (Tang et al., 2023; Wen et al., 2019). The effort for an economic presence in Europe has been further supported by additional cooperation with the Central and Eastern European (CEE) countries in the form of the 14+1 Initiative[4].

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[2] A number of changes have taken place since the inception of this initiative. Originally, the

The activities within the 14+1 Initiative, including infrastructure improvements and the promotion of trade and FDI, were primarily intended to give Beijing access to Western European markets (European Parliament, 2022). The Balkan Silk Road, i.e., the transport and logistics corridor in the Western Balkans region—comprising Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia—played a crucial role in this matter. China has been drawn to these countries mostly due to their strategic position but also because of their catch-up potential, affordable acquisition prices, and labour costs (Bastian, 2017; Boruta, 2021).

Simultaneously, the Western Balkans countries experienced benefits from this cooperation. Given their lack of well-developed infrastructure and heavy reliance on external investments and trade, it was the opportunity to receive financial assistance from China to meet their capital needs for road and highway construction (Ivanić, Savović, 2020). In this regard, the existing empirical evidence points to the fact that Chinese investment has driven infrastructure innovation in the Western Balkans on an unprecedented scale (Bastian, 2017; Vulović, 2023; Zweers et al., 2020).

Nevertheless, the majority of these investments have so far been financed through low-interest loans (Zweers et al., 2020). This led not only to the greater dependency of the Western Balkans countries on China, but also to the possibility of creating a debt trap, i.e., a situation when the borrowing country becomes caught in an escalating cycle of debt, making it difficult to escape. Debt trap may be especially challenging given that these countries are aspiring European Union (EU) candidate countries, and addressing public debt sustainability is crucial for their economic stability and future prospects within further European integration (Dvorský, 2022).

Given that, this article aims to explore whether China's trade- and FDI-related activities are associated with the gradual emergence of a debt trap in Western Balkans countries. Additionally, it discusses China's strategic influence in the region concerning the potential integration of these countries into the EU. In line with this, our research question is defined as follows: *How does China's economic presence relate to the debt levels of Western Balkans countries?* Furthermore, we discuss the potential positive or negative implications of China's economic influence in this region, considering not only fiscal policies but also their future engagement with the EU.

16+1 Initiative was established in 2012, covering China's cooperation with 16 CEE countries. Greece joined in 2019, creating the 17+1 format. However, in 2022, Estonia, Latvia, and Lithuania withdrew, resulting in the current 14+1 Initiative.

To address this research question, we analyse the connection between China's trade and FDI linkages with public debt in a sample of 33 European countries, with an emphasis on the Western Balkans, using panel models from 2011 to 2022. This methodology allows for an in-depth examination of China's economic effect in this region, as well as the public debt dynamics within the specified regional context and timeframe.

While geo-political discussions exist regarding this potential negative effect on the Western Balkans region, no quantitative analyses have been conducted with such specific research question for this region to our knowledge. Existing research focuses on other economic indicators, such as GDP while examining the potential benefits of BRI membership (see, e.g., Ashraf, Luo, Anser, 2021). However, it lacks an in-depth quantitative analysis of China's effect on BRI countries' debt sustainability—a critical aspect central to our study. It should also be noted that the Western Balkans countries have not been the main subject of interest of the existing empirical research regarding the BRI implications. Our research focuses on China's economic footprint via trade and FDI intensity in the Western Balkans countries. Unlike Popović, Erić (2018), who also study the Western Balkans, we specifically investigate China's effect on these countries' public debt, considering the potential debt trap. Our contribution lies in narrowing our scope to provide a detailed perspective, using our own proxy variables to enhance understanding of these dynamics within the regional context.

The remainder of this paper is structured as follows: In the first section, we provide a literature review related to the BRI Initiative, with the emphasis placed on the Western Balkans countries. The second section focuses on methodology, describing the model specification, data used for this analysis, and potential limitations of our approach. In the third section, we present our main findings and provide a related discussion on this topic. Finally, we discuss the potential implications of China's effect on the Western Balkans countries in the conclusions.

1 LITERATURE REVIEW

The Western Balkans countries have long faced several economic challenges. These include high unemployment rates, reliance on tourism without sufficient transport infrastructure, and a low level of national savings that necessitates supplementation through FDI, among others (see, e.g., Popović, Erić, 2018; Selimi, Sadiku, Sadiku, 2017; Ziberi, Alili, 2021).

Existing empirical studies validate this assertion and demonstrate that FDI plays a pivotal role in driving growth within this region. For instance, Ziberi and Alili (2021) focus on the drivers of economic growth in the Western Balkans (including Albania, Bosnia and Herzegovina, Montenegro, Kosovo, North Macedonia, and Serbia), and confirm that FDI contributes to the region's economic growth, as do remittances and population growth. The study also emphasizes the limited control over corruption and its detrimental effect on long-term economic growth, disturbing areas such as taxes, investments, and public expenditures.

As for FDI, the EU has been the dominant economic partner for this region. Popović and Erić (2018) show that the EU investment is in a positive relationship with the GDP per capita of the Western Balkans countries. Hence, the authors recommend implementing reforms to attract FDI and stabilize public debt.

However, more recently, a shift in the economic and political orientation of several Western Balkans countries towards China has been observed as a result of the BRI and 14+1 Initiative, which promised investments and stronger trade linkages (see, e.g., Bastian, 2017; Hurley, Morris, Portelance, 2018; Tang et al., 2023). In this regard, some studies highlight the positive effects of BRI. Here we can refer to, for instance Ashraf, Luo, Anser (2021) who find that the BRI initiative has contributed to increased GDP in countries associated with the BRI. Additionally, energy consumption, trade openness, and institutional quality also play crucial roles in supporting economic growth. To simultaneously promote economic development and reduce environmental pollution, the authors recommend enhancing institutional efficiency in these BRI-associated countries.

Moreover, the economic openness and institutions within one BRI country seem to positively affect neighbouring countries and contribute to economic development as well. Based on these findings, Ashraf, Luo, Khan (2022) suggest that the policymakers in BRI countries should focus on long-term macroeconomic policies to enhance the legal framework, establish the rule of law, and create an efficient judicial system. These changes aim to improve competitiveness and economic openness.

Given that the BRI seeks to encourage Chinese investment, it is pertinent to mention that the positive effect of Chinese FDI on the growth of developing countries has been confirmed by, for instance, Fu, Buckley, Fu (2020). The authors also provide a comparison between Chinese outward FDI with US outward FDI. Their results suggest that while Chinese FDI appears to boost employment and productivity growth more intensively than US FDI,

particularly in resource-rich low-income countries, US FDI demonstrates significant effects in generating new jobs mainly in middle-income countries.

On the other hand, the Chinese presence in the Western Balkans primarily relies on loans, rather than non-refundable financial assistance which can bring several negative effects of this Sino-Western Balkans cooperation (see, e.g., Brinza et al., 2024; Gafuri, 2020; Hurley, Morris, Portelance, 2018). If that is the case, why do the governments of Western Balkans countries favour this type of financing?

As Conley et al. (2020) state, the orientation of the Western Balkans toward Chinese loans often comes from the opaque conditions of these non-competitive contracts. While the EU funding provided by the European Investment Bank (EIB) is contingent upon certain conditions, such as financial and environmental sustainability, transparency in public procurement, and compliance with terms of employment, the loans provided by Chinese banks, including the Export-Import (EXIM) Bank of China and China Development Bank (CDB), do not adhere to standard disclosure requirements. The Chinese lack of transparency promotes bad governance structures and intensifies corruption, underscoring why Western investment initially remained absent in this region (Conley et al., 2020).

In this respect, Soyaltin-Colella (2023) points to the increasing corruption in Serbia and Montenegro. Although these countries show greater state capacity compared to other Western Balkans countries, the author explains that the emergence of the corruption problem arises mainly due to the non-advancing process of EU integration and Chinese unconditional low-interest loans that are heavily accepted by the governments of these countries. The no-strings-attached loans and non-transparent government-to-government agreements are then transformed into opportunities for Balkan stabilocrats and their networks, ultimately contributing to increased corruption.

At the same time, evidence has demonstrated that a significant level of corruption impedes growth in Western Balkans countries (Shahini, Muço, 2022). For this reason, improving good governance and curbing corruption can enhance the efficiency of reallocating public expenditures.

Shahini and Muço (2022) claim that over time, better governance can contribute to decreasing the indebtedness of the Western Balkans countries, but so far, indebtedness remains a concerning aspect of Chinese lending activities in the Western Balkans (Bastian, 2017; Brinza et al., 2024; Hurley, Morris, Portelance, 2018).[5] It follows from the fact that the combination of

[5] It is worth mentioning that another negative effect of Sino-Western Balkans cooperation includes a surge in Chinese imports unaccompanied by corresponding export growth from

low return on investment and substantial loan amounts makes it challenging for Western Balkans countries to repay Chinese loans. Some authors have labelled this situation as an example of Chinese debt-trap diplomacy, wherein small economies become dependent on China when they are unable to repay their loans (see, e.g., Doehler, 2019; European Parliament, 2022; Gafuri, 2020; South Asia Monitor, 2020).

The debt implications of China's presence in the region may be even worse due to the economic crisis caused by the COVID-19 pandemic; these countries are already asking for debt forgiveness as they cannot repay it (Gafuri, 2020). Debt sustainability concerns among Western Balkans countries have primarily been expressed in Montenegro, Bosnia and Herzegovina, and Albania. Additionally, Serbia has been identified as a risk due to its substantial share of Chinese capital since the inception of the BRI (Conley et al., 2020).

According to Sandhu (2021), Montenegro stands out as a nation facing serious risks due to predatory loans from Beijing, and its lending program is considered one of the most alarming in Europe. [6] The country's public debt-to-GDP ratio has reached a staggering 83%, while the primary driver of this debt is the ambitious Bar–Boljare Highway project. This highway aims to connect the port of Bar in Montenegro with other Eastern European countries (Bar–Boljare), whilst the first phase of the Bar–Boljare Highway project has been estimated to cost approximately $1 billion (Jaćimović, Deichmann, Tianping, 2023).

Moreover, the Montenegrin government is expected to owe approximately 85% of the investment to the EXIM Bank of China. Recent official reports indicate that the estimated cost has now risen to $1.1 billion, which represents more than 25% of Montenegro's GDP. The International Monetary Fund (IMF) has expressed concern about the unfavourable repayment conditions associated with the first phase of construction. To prevent an economic crisis, the IMF recommends subsidizing the loans provided for the second and third phases of the project (Sandhu, 2021; Jaćimović, Deichmann, Tianping, 2023).

Beyond debt issues in major recipients of Chinese funding (primarily Serbia, Bosnia and Herzegovina, and Montenegro), this cooperation also amplifies China's political influence (Brinza et al., 2024) as part of its soft

the Western Balkans, which leads to an expanding bilateral trade deficit (for more, see, e.g., Bastian, 2017; Boruta, 2021).

[4] Predatory loans are financial credits offered under unfair conditions designed to harm the borrower. They involve aggressive sales tactics, unclear terms, and high fees or interest rates, often leading to a cycle of debt. The goal may be profit or gaining control over the borrower or their assets (Agarwal et al., 2014).

power strategy. While this article primarily focuses on the hard power strategy, which relies on coercive methods such as economic pressure, military actions, and political coercion, it is important to note that China's approach in the Western Balkans also involves soft power elements, such as fostering positive relationships (Nye, 1990; 2008), building trust through cultural centers, facilitating university exchanges, and creating Confucius Institutes (European Parliament, 2022).

Previous studies confirm that the presence of Confucius Institutes has a positive effect on Chinese cross-border mergers and acquisitions (M&A), while the benefits seem to be larger in BRI countries compared to the non-BRI countries (see, e.g., Wang et al., 2021). Additionally, Confucius Classroom programs, which not only facilitate language learning but also enable travel to China, positively affect Chinese M&A, although their effect is somewhat weaker compared to Confucius Institutes.

Chinese political impact is particularly pronounced in Serbia, which, thanks to the tight political liaisons of President Aleksandar Vučić, can be identified as the centre of Chinese activities in the Western Balkans (Conley et al., 2020). These are then reflected in the growing debt; Serbia borrowed €195 million from the EXIM Bank of China for the Pupin bridge and €1.08 billion for two sections of the Belgrade–Budapest railway. In addition, it borrowed €538 million for the construction of the Kostolac B3 coal-fired power plant. In a similar way, we can also mention North Macedonia which borrowed €714 million from the EXIM Bank of China for the construction of two highways: Miladinovtsi–Štip and Kičevo–Ohrid. This represents approximately 14% of the current level of government debt for 2020, which reaches €5.2 billion (see, e.g., Zweers et al., 2020).

While there is a plethora of policy commentaries and discussions regarding the harmful effects of the BRI membership on the indebtedness of participating countries (see, e.g., Brinza et al., 2024; European Parliament, 2022; Gafuri, 2020), the empirical literature lacks quantitative studies on this matter. In this regard, we can only refer to Sun et al. (2022), who, using a propensity score matching (PSM)-difference in difference (DID) approach, find that the BRI contributes to increasing overall external indebtedness (both short-term and long-term) in selected, mostly Asian BRI-participating countries. Therefore, our paper intends to fill the research gap by examining the indebtedness concerning the BRI in Western Balkans countries, contributing to the empirical literature focused on the region. In the following section, we explain our estimation strategy.

2 DATA AND METHODOLOGY

To answer our research question, we conduct the analysis for a total of 33 European countries, with an emphasis on five Western Balkans countries, namely, Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia, during the period 2011-2022.[7] Kosovo, although part of the Western Balkans, is not included in this research because China has not officially recognized its sovereignty.

The model is estimated for 33 European countries to ensure a sufficient number of observations. By incorporating an interaction term between a dummy variable representing Western Balkans countries and Chinese presence, proxied by bilateral trade and FDI linkages, the study specifically focuses on assessing the China's economic footprint in the indebtedness of these countries. This approach allows us to maintain the primary scope of the paper, which is to evaluate the effect of Chinese economic activities on the debt levels in the Western Balkans. For this purpose, we use bilateral trade data (including both exports and imports) sourced from the World Integrated Trade Solution (WITS) database, and bilateral FDI stocks (both inward and outward) obtained from the United Nations Conference on Trade and Development (UNCTAD). Additionally, data on public debt are retrieved from the International Monetary Fund (IMF) database. All sets of data are expressed as a share of GDP.

The research focuses on China's hard power. It examines economic activities, such as trade and FDI relations between China and the Western Balkans countries, which lead to growing financial dependence of these nations on Chinese loans and potentially to the emergence of a debt trap. These loans serve as a coercive tool of hard power, as they create financial pressure and influence political decision-making in the region. The analysis of China's hard power is essential, as its economic tools can significantly impact their sovereignty, macroeconomic stability, and EU integration processes.

To explore the relationship between Chinese trade and FDI activity in this region and public debt, we provide results based on the dynamic panel data econometric analysis using the following model specification:

[7] The analysis includes five Western Balkans countries, alongside EU countries and the United Kingdom.

$$PD_{it} = \beta_0 + \beta_1 PD_{it-1} + \beta_2 ChEF_{it} + \beta_3 Balkan_{it} +$$

$$\beta_4 ChEF_{it}\ X\ Balkan_{it} + \sum_{c=1}^{c} \delta_c\, CV_{cit} +$$

$$\gamma_2 Period_{2015-18} + \gamma_3 Period_{2019-22} + \mu_i + \varepsilon_{it}$$

where PD_{it} represents public debt for the *i*-th country in the period *t*, $ChEF_{it}$ stands for the economic footprint of China for the *i*-th country in the period *t* (considering two proxies: bilateral trade (TO_{it}) and FDI intensities (FDI_{it})), and $Balkan_{it}$ is a dummy variable denoting Western Balkans countries. The variable takes the value of 1 if the observation is from one of the studied Western Balkans (Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, or Serbia), and 0 otherwise. The effect of the Chinese economic footprint in these countries is captured through the interaction term $ChEF_{it}\ X\ Balkan_{it}$.

We follow the existing literature on public debt suggesting its persistent behaviour through time (see, e.g., Shah et al., 2024). For this reason, we also include the lagged dependent variable (PD_{it-1}) on the right side of the equation.

In addition to our main variables of interest, we include control variables in the model, following the studies by Agiropoulos, Galanos and Poufinas (2021), Del Monte and Pennacchio (2020), Filip (2019), and Gargouri, Keantini (2016), to reduce the risk of omitted variables bias. The correlation matrix of explanatory variables is provided in the Appendix (see Table A1).

The selected determinants of public debt are military expenditure ($Milit_{it}$) and the share of non-performing bank loans in total gross loans (Bnl_{it}). In a broader model specification, we supplement these with additional important public debt drivers: inflation index, average consumer prices ($Infl_{it}$), index of control of corruption ($Corrupt_{it}$), real GDP growth ($GDPg_{it}$), and primary fiscal balance, as a share of GDP ($FiscBal_{it}$).

Given that military expenditures are often financed through debt we anticipate a positive effect on public debt as confirmed by Gargouri and Keantini (2016). Furthermore, the allocation of resources towards military development may hinder economic growth if the government prioritizes this sector over others. A high share of non-performing bank loans threatens the stability of the banking sector and can also hamper economic growth (Agiropoulos, Galanos, and Poufinas, 2021). This situation often necessitates government intervention, leading to increased budget deficits and public debt.

In line with the findings of Aizenman and Marion (2009), we expect that inflation reduces the real value of public debt. A similar effect is anticipated in the case of real GDP growth, as evidence suggests that economic growth is crucial for reducing public debt (see, e.g., Filip, 2019). Additionally, a primary fiscal balance surplus is key for debt sustainability and can be used to reduce public debt (Escolano, 2010). Conversely, a higher level of corruption may indicate inefficient allocation of government expenditure and an unfavourable business environment, which can hinder government revenues and economic growth, potentially resulting in higher levels of public debt (Del Monte and Pennacchio, 2020). If possible, the variables enter the model in logarithmic form to reduce variability.[8]

Finally, μ_i denotes individual effects, $Period_{2015-18}$ and $Period_{2019-22}$ capture 4-year period-specific effects, which help reduce the number of instruments that would otherwise be high if year-specific effects were used, and ε_{it} represents the error term. The descriptive statistics are available in Table 1 below, which highlight the differing trends of the main variables under study, as well as the control variables, when considering the full sample and separately the Western Balkan countries.

Table 1: *Descriptive statistics*

Full sample:	**N**	**Min**	**Mean**	**StDev**	**Max**
PD	396	6.1370	67.7872	36.3932	213.1520
TO	396	0.8034	3.9095	2.2479	15.5982
FDI	396	-0.1615	1.5655	4.3655	34.8637
Milit	396	0.2187	1.3791	0.5546	4.0242
Bnl	375	0.1456	7.6728	8.0433	47.7478
Infl	396	92.4320	116.6043	38.9851	355.5380
Corrupt	396	3.4425	6.5450	1.7396	9.8053
GDPg	396	-15.3070	2.3040	3.7985	24.6160
FiscBal	396	-12.0130	-1.0512	2.7305	4.8160
Western Balkans:					
PD	60	27.7280	55.4979	16.0133	107.3480
TO	60	1.8608	4.5178	1.3642	9.6737

[8] We do not include the unit root testing as we are dealing with short panels. In this regard, Baltagi (2008) points out that with a small time dimension (*T*) in panel data, panel unit root tests often lack sufficient diagnostic precision and may lead to incorrect conclusions about non-stationarity in the entire panel, even if it contains a significant proportion of stationary series.

FDI	60	-0.0420	0.3624	0.4687	1.4123
Milit	60	0.6791	1.3901	0.4427	2.7113
Bnl	60	2.7900	10.9393	5.9494	22.2439
Infl	60	92.8920	161.4058	78.6235	355.5380
Corrupt	60	3.4425	4.2701	0.4154	4.9705
GDPg	60	-15.3070	2.4296	3.6868	13.0430
FiscBal	60	-8.1830	-1.4804	2.5604	3.9160

Source: Own calculations based on data from World Integrated Trade Solution, UNCTAD, International Monetary Fund, and the World Bank.

As the lagged dependent variable at the right side of the equation (Eq. 1) is correlated with unobserved individual panel effects, this can lead to inconsistency in standard estimates. Therefore, we estimate the model using a *dynamic* system-GMM estimator developed by Blundell and Bond (1998), which addresses this issue. Here, lagged levels of the variables are used as instruments in the regression on differenced data, and lagged differenced values are used as instruments in the regression on original data.

Despite the robustness of our methodology, there are several limitations to consider. The analysis is constrained by the availability of data, which may affect the accuracy of our findings and limit the number of regressors we can include, impacting the comprehensiveness of our model. It is also important to note that our analysis does not establish true causal relationships, but rather identifies associations between Chines economic presence in the Western Balkans countries and their level of public debt. However, to comprehensively capture multiple dimensions of China's influence in the region, we use two proxies for Chinese economic presence: bilateral trade and FDI linkages. This approach, despite its limitations, allows us to provide a more nuanced understanding of the effect of Chinese activities on the indebtedness of Western Balkans countries. By employing these proxies, we aim to offer a detailed analysis that can inform future research and policy decisions, thereby contributing to a more comprehensive understanding of China's role in the region.

3 RESULTS

The 14+1 Initiative aimed to intensify international trade and investment between Central and Eastern Europe and China since its establishment in 2012. Therefore, in the first place, we can evaluate its success based on the

volume of Sino-Western Balkans trade and investment linkages. We then focus on analysing the relationship between trade intensity and levels of public debt in the Western Balkans.

3.1 Sino-Western Balkans cooperation through the lenses of trade, FDI, and public debt

In Figures 1 and 2, we illustrate the imports and exports of goods and services (G&S) as a share of GDP between Western Balkan countries and China during the period from 2007 to 2022. As we can see, the Sino-Western Balkans trade intensity has changed since the introduction of the 14+1 and BRI initiatives.[9] Overall, we can observe an increasing trend in time (see Figure 1 and Figure 2).

Figure 1: *Western Balkans imports from China in the period 2007-2022*

Source: Own elaboration based on data from World Integrated Trade Solution (2023), and the World Bank (2023).

Additionally, country-specific evidence reveals some differences. While Chinese imports gradually increased in Albania, we observed significant variation in Montenegro during the observed period. Notably, there was a year-on-year increase in Chinese imports from 2014 to 2015. This surge coincided with the signing of an agreement for the construction of the Bar-

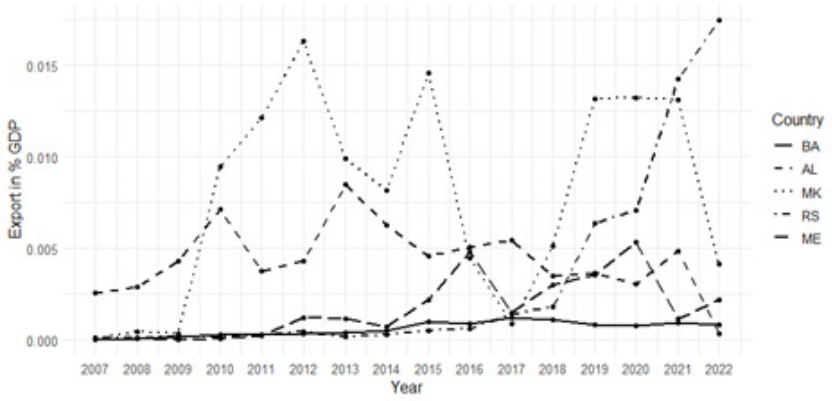
[9] Trade data (both imports and exports) and FDI data (both inward and outward) have been available since 2007. However, public debt data is only available from 2011 onwards. We include all available observations in our figures; however, it must be noted that the model is estimated for the period from 2011 to 2022.

Boljare highway section, which was carried out by a Chinese construction company.

In North Macedonia, Chinese imports have seen a slight increase, with broadcasting equipment representing the largest share of imported goods and services, as reported by OEC (2023). The major share of Chinese imports to Bosnia and Herzegovina can be attributed to steam turbines needed for China's biggest project in this Western Balkans country—the establishment of the seventh block of the Tuzla thermal power plant, as mentioned by Ivanić, Savović (2020).

During the last two years of the observed period, Serbia notably increased its imports of goods and services from China compared to other Western Balkans countries. This trend suggests a strengthening of trade relations between Serbia and China.

Figure 2: *Western Balkans exports to China in the period 2007–2022*



Source: Own elaboration based on data from World Integrated Trade Solution (2023), and the World Bank (2023).

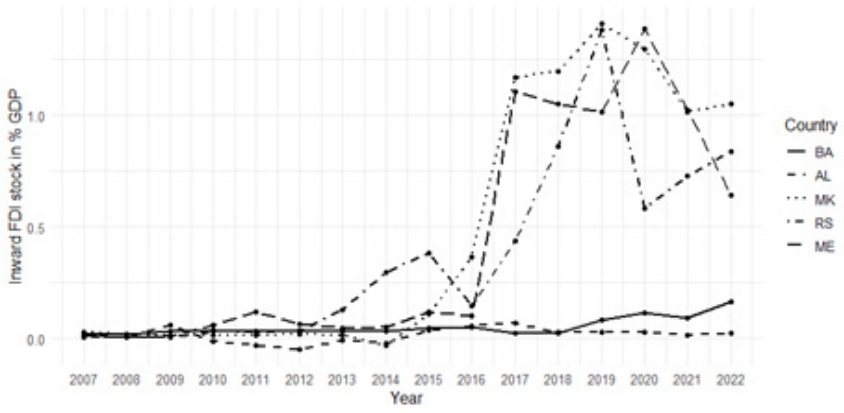
Figure 2 illustrates the Western Balkans exports of G&S to China. Compared to Chinese imports, exports from the Western Balkans are considerably lower, and for some Western Balkan countries, they are nearly zero. Bosnia and Herzegovina is currently the smallest exporter of goods and services to China among the countries under review, and its low level of exports remains relatively stable. Similarly, Montenegro also contributes minimally by their exports to China.

Until 2016, Serbian exports to China remained nearly consistent year-on-year. However, starting from that year, a more pronounced surge in exports to China became evident. By 2019, the country achieved an export level of $329.17 million, with copper ranking as the most exported item during that period.

North Macedonia stands out as the biggest exporter from the Western Balkans to China. Its export trajectory has undergone significant changes over time, with the most substantial growth occurring between 2018 and 2019—a remarkable increase of $100.78 million year-on-year. Similarly, Albanian exports to China have shown an unstable trajectory over time, with significant fluctuations during the observed period, now being the second biggest exporter to China in the Western Balkans.

In Figures 3 and 4, we present the inward and outward FDI stock between Western Balkan countries and China in the period 2007–2022. As shown in Figure 3, inward FDI stock has generally increased over time, particularly for Serbia and North Macedonia, indicating China's growing investment presence in the region.

Figure 3: *Inward FDI stock from China in the Western Balkans during the period 2007–2022*



Source: Own elaboration based on data from UNCTAD (2023), the World Bank (2023).

Figure 3 illustrates the inward FDI stock from China in the Western Balkans between 2007 and 2022, expressed as a percentage of GDP.

Prior to the launch of the 17+1 initiative and the Belt and Road Initiative, the level of inward foreign direct investment from China to the Western

Balkan countries remained relatively low and nearly uniform across the region. A significant shift occurred in the years following the introduction of these initiatives, as cooperation between China and the countries of Central and Eastern Europe deepened considerably.

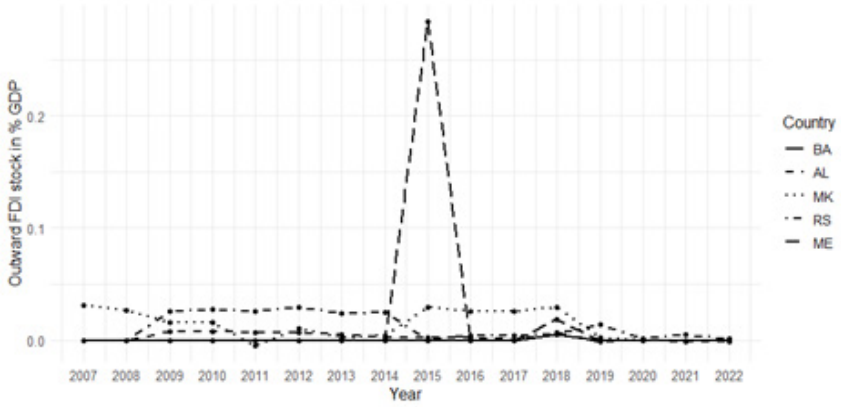
Serbia stands out with a sharp and continuous increase from 2016 to 2019, peaking in 2019, followed by a temporary decline and renewed growth in 2021 and 2022. This reflects China's intensified investment presence in Serbia, likely linked to large infrastructure and industrial projects. In 2019, Chinese capital was directed toward the construction of a tire manufacturing plant in the city of Zrenjanin. The project was valued at USD 900 million and is expected to employ around 1 500 people, with plans to further increase the number of jobs. This investment also included road infrastructure development towards the west to enable faster delivery of tires to Western customers (Ladevac, 2020).

Foreign direct investment in North Macedonia are somewhat lower; however, the graph clearly shows that their levels remained stable until 2015. A more pronounced increase can be observed in recent years, which may be linked to the rising total costs of the Kičevo–Ohrid motorway construction project, as also noted by Vangeli (2022).

In countries such as Albania and Bosnia and Herzegovina, China directs the lowest the level of FDI compared to the rest of the Western Balkans. One possible explanation is that Bosnia and Herzegovina is not located directly along the main route of the Belt and Road Initiative.

China has significantly directed its foreign direct investment towards Montenegro, although a notable increase is only observable from 2016 onwards. The peak of Chinese FDI in the country was recorded in 2020, reaching a value of USD 153.08 million.

Figure 4: *Outward FDI stock from Western Balkans in China during the period 2007–2022*



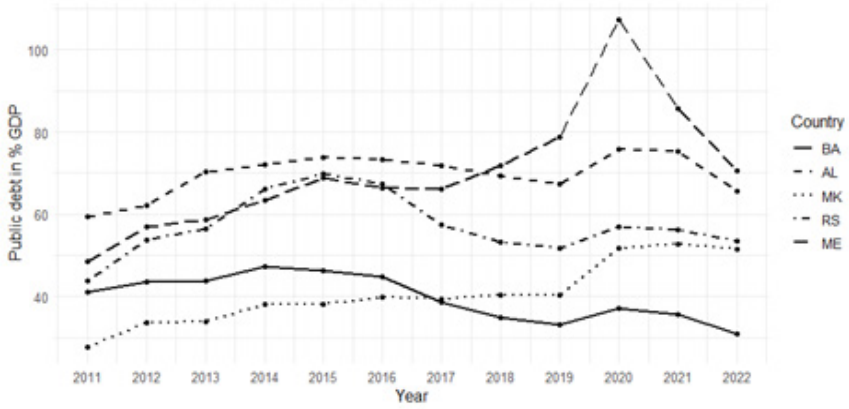
Source: Own elaboration based on data from UNCTAD (2023), the World Bank (2023).

Figure 4 illustrates the outward foreign direct investment stock from Western Balkan countries to China between 2007 and 2022, expressed as a percentage of GDP. In most countries across the region, the share of outward FDI directed towards China remains very low and shows little variation over time.

A notable exception is Montenegro, which recorded a sharp spike in 2015, when the outward FDI stock briefly exceeded 0.25% of GDP. However, this sudden increase appears to be a one-off event, as the level returned to previous values the following year.

Other countries, including Albania, North Macedonia, Bosnia and Herzegovina, and Serbia, consistently exhibit only marginal and stable levels of outward FDI to China throughout the observed period, suggesting limited engagement with the Chinese market.

Figure 5: Public debt in Western Balkans in the period 2011–2022



Source: Own elaboration based on data from International Monetary Fund (2023).

Finally, we illustrate the public debt in Western Balkans countries from 2011 to 2022 (see Figure 5). As the Western Balkans are candidate countries for the EU and potentially the Eurozone, it is reasonable to assess their public debt levels based on the nominal Maastricht criterion, which stipulates that public debt should not exceed 60% of GDP.

Figure 5 reveals that North Macedonia and Bosnia and Herzegovina consistently maintained public debt levels below 60% of GDP throughout the observed period. This suggests their potential eligibility for Eurozone membership in the future. In contrast, Serbia, Montenegro, and Albania exceeded the 60% threshold set by the Maastricht Treaty. Notably, in 2015, Serbian public debt reached 75% of GDP, possibly due to the Chinese project involving the Hungary-Serbia railway. Since then, Serbia has gradually reduced its public debt.

Meanwhile, North Macedonia's debt has increased, diverging from Serbia's trend. Albanian public debt has also shown a slight upward trajectory since the inception of the 14+1 and BRI Initiatives.

3.2 Revealing the relationship between Western Balkans' public debts and Sino-Western-Balkans trade activities

To address our research question, we estimate a linear regression model. The estimation results are provided in Table 2.

Table 2: *Estimation results*

	Dependent variable: PD_t			
	ChEF: Trade intensity		ChEF: FDI intensity	
	(I)	(II)	(III)	(IV)
PD_{t-1}	0.8116*** (0.1020)	0.8259*** (0.0468)	0.7473*** (0.1144)	0.8246*** (0.0442)
ChEF	-0.0018 (0.0066)	0.0024 (0.0061)	0.0027 (0.0049)	0.0001 (0.0020)
Balkan	-0.2717** (0.0866)	-0.2613 (0.1983)	-0.1935** (0.0669)	-0.0766 (0.1138)
ChEF X Balkan	0.2403** (0.1182)	0.3516* (0.2009)	0.1191** (0.0499)	0.1185* (0.0680)
Milit	0.0311 (0.0598)	-0.0246 (0.0646)	-0.0020 (0.0686)	-0.0342 (0.0682)
Bnl	0.1332*** (0.0274)	0.0883** (0.0328)	0.1676*** (0.0524)	0.0869** (0.0309)
Infl		-0.1866 (0.1423)		-0.1607 (0.1056)
Corrupt		-0.0067 (0.2163)		0.0122 (0.1056)
GDPg		-0.0098*** (0.0010)		-0.0092*** (0.0010)
FiscBal		-0.0157*** (0.0032)		-0.0171*** (0.0026)
Constant	0.5740 (0.3769)	1.4646* (0.8797)	0.7722* (0.4642)	1.3267* (0.7577)
AR(1) (p-value)	0.0001	0.0290	0.0001	0.0240
AR(2) (p-value)	0.0040	0.1530	0.0004	0.1240
Hansen test (p-value)	0.1760	0.1540	0.1130	0.1380
No. of observations	345			

*Note: Standard errors in parentheses. * p<0.1, ** p <0.05, *** p< 0.01.*
Source: Own calculations based on data from World Integrated Trade Solution, UNCTAD, International Monetary Fund, and the World Bank.

The columns present the results for the proxy of the Chinese economic footprint in terms of trade intensity (columns (I)-(II)) and FDI intensity (columns (III)-(IV)), while alternating the set of control variables. We present the baseline model ((I),(III)) and subsequently the model with the full set of controls ((II),(IV)).

Firstly, the results confirm a statistically significant relation between current and lagged public debt levels (columns (I)–(IV)), indicating debt persistence, consistent with previous empirical studies (see, e.g., Shah et al., 2024). It is therefore reasonable to pay increased attention to strategies for long-term debt sustainability.

Regarding the Chinese economic footprint (ChEF), whether measured by trade or FDI intensity, the results do not confirm that increased Chinese activity contributes to the growth of public debt across the entire sample of studied countries. This suggests that the Chinese economic footprint may not have a direct effect on public debt levels in all examined countries. Additionally, in some model specifications, it seems that Western Balkan countries exhibit statistically significant lower levels of public debt on average compared to other studied countries (see negative coefficients related to the variable Balkan). These findings confirm that many EU countries, such as Greece, have higher levels of debt compared to the Western Balkans, as seen in the descriptive statistics provided in Table 1. However, their high debt levels are not primarily determined by increasing trade or investment cooperation with China, but rather due to various structural reasons, including economic structure, fiscal policy, and previous events such as economic crises (see, e.g., Armendariz et al., 2024; Cahen, 2023).

On the other hand, regarding the trade and FDI linkages between China and the Western Balkans, we observe a positive relation with public debt levels. The statistically significant coefficients associated with the interaction variable ChEF X Balkan in columns (I)-(IV) indicate that Western Balkan countries with higher trade or FDI intensity with China tend to have higher public debt levels. This finding remains quantitatively consistent and robust even with the incremental addition of control variables (refer to Table A2 in the Appendix). While this finding does not establish a causal relationship, it raises important questions regarding the economic and political strategies for countries in this region.

While trade openness and FDI theoretically supports economic growth, it is essential to closely monitor how they might be may be related to public debt and debt trap risks. Frequently, trade and investment agreements with China include substantial infrastructure projects funded partially or entirely through loans from Chinese banks or financial institutions. As we previously mentioned, these projects may contribute to the rise in public debt. Moreover, when imports from China surpass exports from Western Balkans countries, it can also result in trade deficits. To finance these deficits, increased borrowing becomes necessary, leading to higher overall public debt, which validates these results and previous geo-political discussions (see, e.g., Brinza et al., 2024; Hurley, Morris, Portelance, 2018).

Given these findings, Western Balkans nations should be cautious when enhancing trade and FDI with China. It is crucial to weigh the potential long-term consequences of such economic relationships. Expanding trade and

investment ties with China presents a significant challenge that demands vigilant monitoring and strategic planning by governments to avoid potential debt traps and secure a sustainable economic future.

Finally, regarding our control variables, we observe a statistically significant, positive effect of the share of non-performing bank loans in total gross loans (columns (I)-(IV)), and negative effects of real GDP growth and primary fiscal balance (columns (II), (IV)). The first relationship is consistent with the findings of Gargouri and Keantini (2016) and can be explained by the fact that a higher share of non-performing loans within banks may lead to financial instability and an increased need for government interventions, which frequently results in higher public debt. On the other hand, real GDP growth and primary fiscal balance help mitigate public debt as expected (see, e.g., Filip, 2019). Economic growth leads to an increase in government revenues from taxes, fostering a sustainable fiscal policy, which reduces the need for borrowing and, consequently, the rise in public debt. Similarly, an improvement in the primary fiscal balance indicates that the government has sufficient revenue to cover its expenditures, thereby helping to reduce the overall debt burden.

CONCLUSION

This paper aimed to investigate the economic footprint of China on the public debt of the Western Balkans countries during the period from 2011 to 2022. The system GMM estimation, which also considers other factors, reveals that increasing trade and FDI cooperation with China appears to contribute to rising debt levels in the Western Balkans. The evidence obtained thus points to the debt trap phenomenon, which emerges mainly due to large infrastructure projects in the Western Balkans financed via Chinese loans.

It is important to note that our analysis has certain limitations, such as data availability and the inability to establish true causal relationships. Despite these limitations, our findings highlight the need for careful consideration of economic and political strategies in the region to mitigate potential risks associated with increased Chinese economic presence.

As China's trade and FDI cooperation appear to have implications for public debt in the Western Balkans, countries should navigate these dynamics carefully to prevent falling into a debt trap while promoting economic growth.

Moreover, the Western Balkan countries are currently candidate states for the EU, for which it is essential to discuss Chinese involvement in the region. Such activity could significantly affect their potential progress toward joining this integration grouping.

The Western Balkan countries are integrating EU legislation into their national law and already meet several convergence criteria. For instance, inflation rates in all Western Balkan countries do not exceed the average of three EU countries with the highest inflation (Austria, Slovakia, and Romania) by more than 1.5% (Eurostat, 2023). However, they do experience higher long-term interest rates (primarily in Albania and Montenegro) and public debts. In Figure 5, we graphically illustrate the public debt levels in the Western Balkan countries, highlighting non-compliance with the convergence criterion for sound and sustainable public finances in some countries. Bosnia and Herzegovina, North Macedonia, and Serbia are just below the 60% threshold required for entering the Eurozone.

It is also worth mentioning that not all citizens of the Western Balkans countries want to be part of the EU, even though they have already become candidate countries for joining this integration group. In this regard, a survey conducted by Ipsos (Jasnić, 2022) found that the majority of Serbian citizens are against their country's inclusion in the EU. This negative attitude could be related to China's soft power, which is trying to influence public opinion through various means, and because of the strict norms set by the EU, Serbian leaders tend to prefer Chinese investments in infrastructure.

Beyond our findings related to the potential negative effect on public debt, we recognize that Chinese involvement in the Western Balkans region may also pose challenges concerning the EU's future enlargement. Consequently, representatives of this group should proactively address these issues to ensure the region's stability.

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APPENDIX

Table A1: Correlation matrix of input variables for the period 2011-2022

	TO	FDI	Milit	Bnl	Infl	Corrupt	GDPg
FDI	-0.2144						
Milit	0.0529	-0.2692					
Bnl	-0.2785	-0.1070	0.1586				
Infl	0.1970	-0.0762	0.2449	0.0430			
Corrupt	-0.0906	0.3312	-0.2160	-0.4267	-0.2863		
GDPg	0.0578	0.0131	-0.1793	-0.1023	0.0470	-0.0267	
FiscBal	-0.0761	0.1356	-0.1936	0.1481	-0.1248	0.0538	0.3593

Source: Own calculations based on data from World Integrated Trade Solution, UNCTAD, International Monetary Fund, and the World Bank.

Table A2: Complete estimation results

	Dependent variable: Public debt									
	ChEF: Trade intensity					**ChEF: FDI intensity**				
	(I)	**(II)**	**(III)**	**(IV)**	**(V)**	**(VI)**	**(VII)**	**(VIII)**	**(IX)**	**(X)**
PD_{t-1}	0.8116*** (0.1020)	0.7829*** (0.0787)	0.7433*** (0.0663)	0.8175*** (0.0508)	0.8259*** (0.0468)	0.7473*** (0.1144)	0.7790*** (0.0768)	0.7826*** (0.0589)	0.8150*** (0.0422)	0.8246*** (0.0442)
ChEF	-0.0018 (0.0066)	0.0090 (0.0102)	0.0082 (0.0104)	0.0040 (0.0067)	0.0024 (0.0061)	0.0027 (0.0049)	0.0032 (0.0041)	-0.0029 (0.0036)	-0.0008 (0.0021)	0.0001 (0.0020)
Balkan	-0.2717** (0.0866)	-0.4371* (0.2250)	-0.2172 (0.2407)	-0.2611 (0.2249)	-0.2613 (0.1983)	-0.1935** (0.0669)	-0.1143 (0.0849)	0.1813* (0.1031)	-0.0137 (0.1201)	-0.0766 (0.1138)

ChEF X Balkan	0.2403** (0.1182)	0.6315* (0.3807)	0.5609* (0.3111)	0.4466* (0.2441)	0.3516* (0.2009)	0.1191** (0.0499)	0.2021* (0.1059)	0.2127** (0.0959)	0.1441* (0.0745)	0.1185* (0.0680)
Milit	0.0311 (0.0598)	0.0361 (0.0841)	0.0894 (0.0809)	0.0305 (0.0646)	-0.0246 (0.0646)	-0.0020 (0.0686)	0.0080 (0.0834)	0.0927 (0.0896)	0.0215 (0.0676)	-0.0342 (0.0682)
Bnl	0.1332*** (0.0274)	0.1514*** (0.0400)	0.1497*** (0.0425)	0.1042** (0.0347)	0.0883** (0.0328)	0.1676*** (0.0524)	0.1381*** (0.0402)	0.1235** (0.0412)	0.1011** (0.0329)	0.0869** (0.0309)
Infl		-0.3766* (0.2248)	-0.4084** (0.1484)	-0.2624 (0.1645)	-0.1866 (0.1423)		-0.2790 (0.1744)	-0.4429** (0.1401)	-0.2271* (0.1267)	-0.1607 (0.1056)
Corrupt			0.3764 (0.2805)	0.0994 (0.2403)	-0.0067 (0.2163)			0.5552** (0.2417)	0.1453 (0.2204)	0.0122 (0.1056)
GDPg				-0.0118*** (0.0013)	-0.0098*** (0.0010)				-0.0114*** (0.0012)	-0.0092*** (0.0010)
FiscBal					-0.0157*** (0.0032)					-0.0171*** (0.0026)
Constant	0.5740 (0.3769)	2.3727** (1.0905)	1.9660** (0.7686)	1.6297* (0.9391)	1.4646* (0.8797)	0.7722* (0.4642)	1.9971** (0.9006)	1.7148* (0.9740)	1.4134* (0.8556)	1.3267* (0.7577)
AR(1) (p-value)	0.0001	0.0010	0.0010	0.0100	0.0290	0.0001	0.0001	0.0010	0.0060	0.0240
AR(2) (p-value)	0.0040	0.0030	0.0030	0.1950	0.1530	0.0004	0.0001	0.0010	0.1620	0.1240
Hansen test (p-value)	0.1760	0.4180	0.4310	0.1150	0.1540	0.1130	0.1060	0.7760	0.1010	0.1380
N. of observations	345									

*Note: Standard errors in parentheses. * p<0.1, ** p <0.05, *** p< 0.01.*
Source: Own calculations based on data from World Integrated Trade Solution, UNCTAD, International Monetary Fund, and the World Bank.