# Foreign Direct Investment in the Western Balkans:

# What role has it played during transition?[1]

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**Abstract**

The paper explores the impact of foreign direct investment (FDI) on the economies of the Western Balkans during their transition to a market system. The paper recalls the political and historical circumstances that have delayed transition in the Western Balkans economies, and draws attention to the specific features of FDI that have influenced their economic development. The main hypotheses are formulated and basic tests performed on data from the manufacturing sector. However, data limitations mean that we can only test for horizontal, rather than vertical, spillovers and in practice we are not able to identify many significant horizontal spillover effects. This finding can probably be explained by various factors – institutional, economic, and political – that have constrained FDI effects in the Western Balkan economies in comparison to the Central East European countries. Our work has important policy implications; in order to accelerate economic development, Western Balkan policy makers may need to implement more effective economic policies.

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**Keywords: foreign direct investment, Balkans, transition, spillover effects**

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## 1. Introduction

In this paper, we provide a preliminary exploration of how foreign direct investment (FDI) has affected the development paths of the Western Balkan economies – Albania, Bosnia and Herzegovina, Croatia, Kosovo, Former Yugoslav Republic of Macedonia (hereafter Macedonia), Montenegro and Serbia. More specifically, we try to answer the question: to what extent has FDI contributed to economic growth and development of the Western Balkan countries during their transition to market economy? Our approach is necessarily long-term including the period from the early 1990s onwards, since transition-related economic and political reforms effectively started in all the Western Balkan states at that time.[2] In order to address the question, we consider the nature and form of inward FDI to the region, as well as provide a simple test for horizontal spillovers in the manufacturing industry at the aggregate and sectoral level (Aitken and Harrison, 1999; Javorcic, 2004; Haskell, Perreira, Slaughter, 2007).

Our study therefore relates to the literature about the impact of FDI on recipient economies. This has stressed the distinction between direct effects of FDI on the growth and development process, via for example the provision of capital from abroad without adding to national debt, and the indirect effects which operate primarily through externalities such as the diffusion of technology or management and labour skills. Clearly in welfare economics terms, only externalities merit policy intervention because positive spillover effects from FDI may lead the social benefits to exceed the private ones. However, the evidence about the impact of FDI is mixed (Navaretti and Venables, 2004). The macro level analysis has explored whether countries that receive greater FDI grow faster, which is found to be the case in some situations (Blömstrom et al., 1994; Borensztein et al., 1998). The micro literature focuses on the effects of FDI on firms and industries (Aitken and Harrison, 1999), particularly on productivity spillovers to domestic firms, both horizontal (Haskell, Perreira, Slaughter, 2007) and vertical (Javorcic, 2004). Görg and Greenaway (2004) survey some 40 studies to conclude that the evidence for positive productivity spillovers is weak. Meta-analyses indicate that the scale and direction of the FDI impact on the host economy are conditional on

[2] The first more radical economic reforms aimed at introducing a fully-fledged market economy in the Balkan region started already in 1988-89 in the Socialist Federal Republic of Yugoslavia before it disintegrated and in Albania in 1991 (see Uvalic, 2010).

factors such as the level of development (Meyer and Sinani, 2009) or minimum levels of human capital, financial market development and market linkages (Bruno and Campos, 2014).

Turning specifically to the transition economies, the empirical evidence to date on spillovers from FDI is also mixed. Meyer and Sinani (2009) identify five studies covering the transition region. In three (Liu, 2002 on China; Yudaeva, Kozlov, Melentieva, and Ponomareva, 2003 on Russia; and Sinani and Meyer, 2004 on Estonia), positive spillovers are identified but in two others the effects are found to be negative (Konings, 2001 on Bulgaria and Romania and Djankov and Hoekman, 2000 on Czech Republic). Even so, it is widely argued that FDI played an extremely important role throughout most of the transition region, as a supplement to domestic savings and frequently as a major driver of enterprise restructuring during privatizations (Estrin et al, 2009). In the transition region, the ratio of FDI to gross fixed capital formation has tended to be higher than the world average and has increased over time (Kalotay, 2010, pp. 61-2). FDI has also played an important role in enterprise restructuring throughout Eastern Europe during privatizations, in this way strengthening the private sector and contributing to structural changes. Industrial restructuring usually tended to accelerate when privatization involving FDI was implemented (Estrin et al, 2009), frequently creating a dichotomy between modern foreign-owned enterprises and traditional industries. The dominant view has been that FDI into transition economies has had positive spillover effects in aggregate, though there have also been findings that run counter to such optimistic conclusions, such as those by Mencinger (2003). Due to the concentration of FDI in trade and finance, multinational companies investing in the Balkans may have contributed more to imports than to exports, as has often been the case in the Central East European countries (Mencinger, 2003). As convincingly shown by Moran (2011), FDI is not a single phenomenon but has very different effects in the various sectors (extractive sector, infrastructure, manufacturing and assembly, and services), presenting distinctive policy challenges; thus each broad category of FDI must be treated on its own terms. The contribution of FDI to structural change in various groups of transition economies has been very uneven, having been stronger in the new EU member states than in the Balkan countries (Kalotay, 2010, p. 73).

In fact, little direct attention has been paid to FDI in the Western Balkans, an area in which the transition process has been slower and less successful, though foreign capital has also been an important supplement to domestic savings (Estrin and Uvalic, 2014). The Western Balkans economies have a greater need for FDI given their limited domestic savings. However, they also have lower levels of income so the region may find it hard to exploit the potential technological and employment spillovers from FDI. The unfortunate recent political history of the Balkan region, with

conflicts, fragmentation and low growth, have exercised a long lasting and independent effect on the prospects for receipt of FDI. In a previous study, we found that even when the size of their economies, distance from the source economies, institutional quality and prospects of EU membership are taken into account, the Western Balkan countries received less FDI than other transition countries (Estrin and Uvalic, 2014). This implies that the Balkans may conjure troubled images of war and conflict, rather than investment opportunities and economic potential (Cviic and Sanfey, 2010). The present paper uses econometric methods to explore within the confines of available data the impact of FDI on economic development of the Balkan countries.

The rest of the paper is structured as follows. Section 2 briefly recalls why transition to a market economy has been delayed in the Western Balkans and points to the main consequences that these specific features of transition have had for FDI. Section 3 gives an overview of the main conclusions of the literature on the spillover effects of FDI in the transition region and proposes a method to measure the impact of FDI appropriate to the available data. Section 4 provides original empirical findings about spillovers in the region and Section 5 helps to interpret the findings by examining a number of indicators of the Western Balkan countries that explain why FDI spillovers may have been limited. The final section contains the conclusions and policy recommendations.

## 2. Western Balkans delayed transition: the consequences for FDI

The transition to a market economy in the Western Balkans was delayed by a series of unfortunate events which started with the disintegration of the Socialist Federal Republic (SFR) of Yugoslavia in mid-1991. The break-up of the Yugoslav federation was followed by a decade of military conflicts - in Slovenia (1991), Croatia (1991-95), Bosnia and Herzegovina (1992-95), Kosovo (1998-99) and Macedonia (2001). In addition to wars, several countries were under embargos: the Federal Republic (FR) of Yugoslavia (Serbia and Montenegro) was under severe UN and EU sanctions during 1992-96 and again in 1998-99 (Uvalic, 2010),[3] whereas Macedonia was under economic sanctions imposed by Greece. Political priorities and inward-oriented nationalistic policies rendered many transition-related economic reforms of secondary importance.

[3] Because of FR Yugoslavia's support of Serbs in Bosnia and Herzegovina, international sanctions were first introduced by the UN Security Council Resolutions no. 752 and no. 757 (May 1992), they were broadened and intensified by UN Security Council Resolutions no. 777 (September 1992), no. 787 (November 1992) and particularly no. 820 (April 1993), and were officially lifted only in October 1996. Due to the Kosovo crisis, a new package of UN sanctions was imposed on 31 March 1998, and these were reinforced on 30 March 1999 (for further details see Uvalic, 2010, pp. 50, 76).

These political events in the Western Balkan region have had very profound and long-lasting economic consequences (Uvalic, 2010). Political priorities frequently led to inappropriate economic policies, which in turn contributed to unsatisfactory macroeconomic performance throughout most of the 1990s: hyperinflation, reversals in growth recovery, high public deficits and depreciating exchange rates. Many transition-related economic reforms were deliberately postponed. The Balkan countries have also been integrating with the European Union (EU) at a slower pace than the Central East European countries. Only after the end of the Kosovo war in mid-1999 did the EU elaborate a more coherent and long-term strategy for the Balkans offering trade preferences, association agreements and specific financial assistance programs, which facilitated their faster political and economic integration with the EU. By now, all countries have concluded a Stabilization and Association Agreement with the EU,[4] although only Croatia has become an EU member (on 1st July 2013).

After a decade of high political and economic instability in the Western Balkan region, the 2000s brought a number of positive developments, including improved macroeconomic performance and acceleration of transition-related economic reforms. Until the global economic crisis in late 2008, the Western Balkan countries experienced rapid economic growth and increasing macroeconomic stability, particularly important after the episodes of hyperinflation in the 1990s. Trade liberalization after 2000, both with the EU and other countries in the region, has contributed to a remarkable increase in the volume of foreign trade, although trade still remains below potential (Sanfey and Zeh, 2012; World Bank, 2014: 11-12). Following the lack of interest of foreign investors in the Western Balkan economies during the 1990s, there was an upsurge in FDI in the 2000s, prompted by privatizations of enterprises and banks and improved economic prospects.

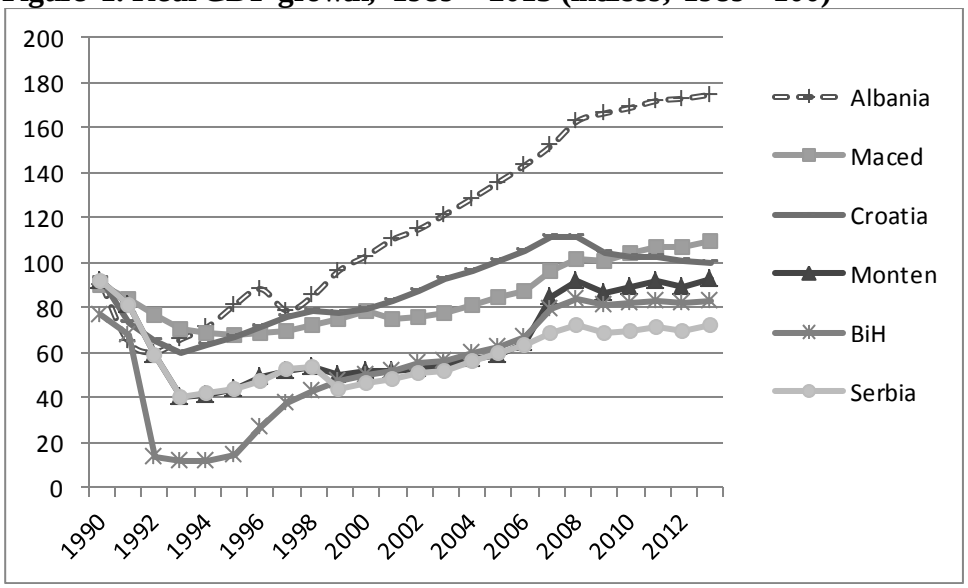
Nevertheless, the Western Balkan countries have also had persistent structural problems that became evident particularly after the outbreak of the global financial and economic crisis (see Bartlett and Prica, 2012, Uvalic, 2013). Over the years many problems have been accumulating that became unsustainable - consumption higher than production financed by foreign savings and investment, increasing current account deficits, huge unemployment, insufficient enterprise restructuring and inadequate structural changes that have favored primarily the fast expansion of services. The policy model based on fast trade and financial opening, rapid credit expansion and increasing dependence on foreign capital has been far less successful in the Western Balkans in the

[4] Following the Lisbon Treaty which conferred legal personality to the European Union, the Stabilization and Association Agreement between Kosovo and the EU was concluded on 27 October 2015 in the form of an EU-only agreement, involving the EU on the one side and Kosovo on the other, in order to avoid the problem of political non-recognition of Kosovo by five EU member states (Cyprus, Greece, Romania, Slovakia and Spain).

2000s than in Central Eastern Europe a decade earlier (Uvalic, 2013; Sanfey and Zeh, 2012). Despite the gradual integration of the Balkan economies into the EU and global economy, these countries have had rising trade deficits essentially due to insufficient competitiveness on global markets, as suggested by various indicators (Sanfey and Zeh, 2012). The labour market situation is also unsatisfactory, as most countries have low employment rates, a widespread informal economy[5] and unemployment rates that in 2012 were amongst the highest in Europe, particularly in Bosnia and Herzegovina (28 percent), Kosovo (45 percent), Macedonia (31 percent) and Serbia (23 percent) (Bartlett and Uvalic, 2013, eds.).

The outcome of twenty-five years of transition in the Western Balkans can be summarized by looking at the trend in growth rates and comparing real GDP in 2013 and 1989 (see Figure 1). The figure shows that strong growth during 2001-08 has not been sufficient to compensate for the very substantial output fall in the 1990s. By 2008 only three countries - Albania, Croatia, and Macedonia - had surpassed their 1989 real GDP level, while Montenegro was still at 92 percent, Bosnia and Herzegovina at 84 percent, and Serbia at only 72 percent of the GDP produced in 1989. Following the recent recession(s) caused by the global and eurozone crises, most countries have experienced a further setback. Croatia, after a number of years of negative (or zero) growth, has also seen its real GDP in 2013 drop back to its 1989 level.

**Figure 1. Real GDP growth, 1989 – 2013 (indices, 1989 =100)**




*Source:* Compiled on the basis of EBRD data.

[5] Estimates on the informal economy in the Balkan countries vary widely, depending on the method of measurement; for an overview of various estimates see Bartlett (2008), pp. 123-125.

The long-term account of growth recovery during transition reveals that most Balkan countries have experienced a quarter of a century of stagnation. Albania is the only exception, since by 2013 it has surpassed its 1989 real GDP by some 80 percent.[6] In the Western Balkan region we find today the poorest economies in Europe, with a GDP per capita (at purchasing power standards) in 2013 ranging from 22 (Kosovo) to 42 (Montenegro) percent of the EU-28 average. Croatia is the only country that is more developed, with a GDP per capita at 61 percent of the EU-28 average in 2013. The economic development record of the Western Balkans has therefore been rather disappointing.

What have been the consequences for FDI of these general features of the transition in the Western Balkans? Three specific characteristics should be singled out, related to privatization, deindustrialization and the sectoral distribution of FDI.

First, *privatization* in most Western Balkan countries was delayed by the particularly unfavorable political circumstances in the 1990s, contributing to very limited FDI in the early years of transition. During the 1990s, instead of enterprise restructuring often led by foreign investors as in Central and Eastern Europe (Estrin et al., 2009), in much of the Western Balkans productive capacity remained underutilized, was closed down or was destroyed in military conflicts. Moreover, both the initial legislation in former Yugoslavia and subsequent privatization laws adopted by its successor states relied quite substantially on sales at privileged terms to insiders, since this was considered necessary for obtaining popular support after decades of workers self-management (Estrin and Uvalic, 2008). The deliberate preference given to employee ownership as a privatization method is likely to have limited the amount of inward FDI, at least initially.

Second, the Balkan countries have gone through a significant process of *deindustrialization* (Bartlett, 2008). All the socialist economies had an over-represented industrial sector and a low share of services, which was viewed as a serious structural distortion reflecting over-industrialization (Turley, 2013, p. 21). After 1989, deindustrialization took place in parallel with the mushrooming of various types of services throughout the transition region, including the Western Balkans. However, in the 2000s the Central East European economies did experience some reindustrialization, also in recent years after the global economic crisis, whereas most Western Balkan countries on the contrary saw a continuation of the process of de-industrialization (Damiani and Uvalic, 2014). The Western Balkan countries are today much more de-industrialized than most Central East European and Baltic (CEEB) countries: the average share of manufacturing value

[6] Among the main reasons for a much better pre-transition GDP recovery record of Albania with respect to the other Western Balkan countries is its much lower level of development in 1989 and its non-involvement in the recent Balkan wars.

added in GDP for the six Western Balkan countries was less than 12 percent in 2014 as compared to 20 percent for the eight CEEB countries (World Bank, 2015; see Table 1). The Western Balkan countries have become largely service economies, with an average share of services that is higher than in the CEEB countries (see World Bank, 2015).

**Table 1. Manufacturing value added (% of GDP) in Western Balkan and CEEB countries (2014)**

| *Western Balkan countries* | | *Central East European countries* | |
|---|---|---|---|
| Albania | 6 | Czech Republic | 27 |
| Bosnia and Herzegovina | 13 | Estonia | 16 |
| Croatia | 15 | Hungary | 24 |
| Macedonia | 12 | Latvia | 12 |
| Montenegro | 5 | Lithuania | 19 |
| Serbia | 19 | Poland | 18 |
| | | Slovakia | 21 |
| | | Slovenia | 23 |
| *Average - 6 Western Balkan countries* | *11,7* | *Average - 8 CEEB countries* | *20* |

Notes: There are no recent data for Bulgaria and Romania, while for Serbia the data is for 2013.
*Source:* World Bank World Development Indicators.

Third, the *sectoral distribution of FDI* in the Western Balkans has probably contributed to the relative decline of manufacturing. By 2010 the services sector accounted for the largest part of inward FDI stock in all Western Balkan countries – 63 percent, on average, for the five countries[7] or 6 percent more than the average FDI stock in services in the Central East European countries. Foreign investors have invested mostly in non-tradable services of the Balkan economies, primarily banking, telecommunications, real estate and wholesale and retail trade (Estrin and Uvalic, 2014). The share of sectors exposed to the current crisis such as finance is relatively high, and so is trade, which has only a relatively moderate technological impact (Kalotay, 2013). In contrast, by 2010 most Western Balkan countries have not attracted a considerable amount of FDI in manufacturing – 26 percent, on average, for the five countries – as compared to the average of 28 percent for the seven Central East European countries (without the three Baltic states). Thus, the divergence between the Western Balkans and the more successful countries in Central Eastern Europe is in most cases substantial in this respect also. The Balkan countries have a long way to go in the competition for FDI not only in volumes but also in terms of composition of inflows (Kalotay, 2013, p. 254).

**Table 2. Sectoral structure of inward FDI stock in Western Balkan and CEEB countries, 2010 (in % of tota**l)

[7] Comparable data are not available for Kosovo and Montenegro; were data on FDI by sector of economic activity available for these two countries, the average FDI stock in services in the Balkan region would undoubtedly be even higher since, particularly in Montenegro, many foreign investors have invested in various services related to the tourist industry.

| *Western Balkans* | *Services* | *Manufacturing* | *CEEB* | *Services* | *Manufacturing* |
|---|---|---|---|---|---|
| Albania | 58 | 16 | Bulgaria | 68 | 17 |
| Bosnia & Herzegovina | 59 | 35 | Czech Republic | 57 | 30 |
| Croatia | 73 | 21 | Hungary | 53 | 25 |
| Macedonia | 51 | 31 | Poland | 61 | 32 |
| Serbia | 73 | 20 | Romania | 49 | 32 |
| | | | Slovakia | 46 | 36 |
| | | | Slovenia | 63 | 23 |
| *Average - 5 Western Balkan countries* | *63* | *26* | *Average - 7 CEEB countries* | *57* | *28* |

*Source:* Compiled on the basis of WIIW data, reported in Estrin and Uvalic (2014).

These features suggest that FDI may have been less an agent of structural change in the Western Balkans than in Central Eastern Europe, indicating why the former have not been more successful in developing export potential and integrating into global supply chains (Handjiski et al. 2010, p. 16; Becker at al., 2010; Estrin and Uvalic, 2014). Having gone through a deeper economic downturn and a stronger process of deindustrialization than the new EU member states (Uvalic, 2012), the Western Balkans actually needed *more* FDI for the purposes of industrial restructuring and consequently, a larger proportion of investment into manufacturing - yet they have received comparatively *less*. Since the bulk of FDI has been in non-tradable services, FDI could not have contributed in a major way to promoting exports or to industrial diversification and upgrading. One of the consequences is that the Western Balkans are today less integrated into the global economy than the more successful Central East European countries, as measured by their exports of goods and services/GDP ratio (see Estrin and Uvalic, 2014).

It could be argued that the sectoral composition of FDI in the Western Balkans should not be an obstacle to economic development, since services are as important as other sectors in facilitating national economic progress. Moreover, in the context of global supply chains, the distinction between "tradables" and "non-tradables" is less important, since many services add value to manufactured goods exported abroad. The dominance of services in the structure of the Western Balkan economies may therefore not be a problem *per se*, as it indicates that the region is following similar trends of structural change as other European countries. However, what needs to be stressed is that the Western Balkan countries have become predominantly service economies at a relatively low level of economic development: services have increased their share in GDP much before these countries were able to build a strong industrial base that would allow them to substantially increase exports, achieve a higher degree of trade openness and integrate through business networks and global value chains into the world economy. Given the sectoral structure of FDI so far, we can assume that foreign investors have contributed only marginally to speeding up these processes of integration. Since foreign companies and banks have invested primarily into non-tradable services,

such investments could have contributed only indirectly to developing these countries' export potential. The structure of services exported by the Western Balkans in 2012 reveals that 50-80 per cent is travel and transport (World Bank, 2015), which are sectors mainly related to tourism. Tourism is clearly important for Croatia and Montenegro, but even in these cases being a highly season-sensitive sector it contributes to exports only during some months per year. In the other Western Balkan land-locked countries, tourism is of marginal importance, despite their efforts to develop inland tourism. The most sophisticated part of service exports – insurance and finance – still represents a negligible part of Western Balkan exports of services (see World Bank, 2015). Despite the rapid privatisation of most Western Balkan banks and insurance companies primarily through foreign acquisition, their operations are mainly oriented towards the domestic market.

That FDI in manufacturing can be important for economic development is supported by the experience of many countries worldwide. According to detailed evidence examined in a recent study on FDI, among the twelve principal channels through which FDI impacts development (real income, standard of living and the growth rate of the host economy), as many as eight are through FDI in manufacturing and only one is through FDI in services (see Moran, 2011, pp. 6-7). We should also recall that in the European Union, manufactures account for a large proportion of tradables (75 per cent of EU exports), and their higher tradability combined with the increasing services intensity imply that they have assumed an important carrier function for services (European Commission, 2013). Despite the declining share of manufacturing in EU's GDP and employment, manufacturing is widely acknowledged as the engine of the modern economy (Berger, 2013). Firms in manufacturing are more inclined to undertake innovation and research, and productivity growth is higher in manufacturing than in the rest of the economy (European Commission, 2013). The recent economic crisis has underlined the importance of the real economy, particularly manufacturing, for economic growth, since countries that maintained a large manufacturing base have fared better during and after the crisis, while the recovery has been driven mainly by exports of manufactures (European Commission, 2013) These features of manufacturing are at the background of present initiatives of the European Commission to reindustrialize the EU economy and to increase the share of manufacturing value added from the current EU average of 15 percent to 20 percent by 2020 (European Commission, 2012).

The earlier mentioned features of the Western Balkan economies have guided our initial proposition that FDI may have had a limited impact on development in the region. With these premises in mind we concentrate our empirical analysis on the spillover effects of FDI in manufacturing, since this is

the sector that is responsible for the bulk of Western Balkan countries exports and through which FDI may be able to influence most their economic development.

## 3. Impact of FDI on economic development

The "Washington Consensus" held that the flow of capital, technology, knowledge and skills across national boundaries via FDI opens opportunities for all host economies, and that these might be greater for economies where the technology gap was larger so the gains from technological diffusion are greater (Caves, 1996; Markusen and Venables, 1999; Moran, Graham and Blomstrom, 2005). The literature identifies two types of effect: macro-economic and at the disaggregated level through improvements in productivity, usually via spillover effects (Bruno and Campos, 2014). The macro level analysis has explored the relationship between FDI and growth, investment and productivity where the central question has been to identify whether countries that get greater FDI grow faster. FDI can have a direct effect on economic growth from the enhanced levels of investment being financed from non-domestic sources. These effects of FDI are through the increase in investment above the levels of domestic savings leading to the creation of jobs and growth in the economy. The economy can also be stimulated indirectly through spillover effects diffusing more productive methods via access to advanced technology systems, skills and training and management which raise total factor productivity. Moreover, international competitiveness may be improved with rising productivity levels, allowing the host economy to increase exports and strengthen the balance of payments, perhaps enhancing the ability to borrow (Borenzstein et al, 1998).

In general, the evidence suggests that economic growth is positively associated with FDI but only under certain conditions: for example when countries have sufficiently high incomes (Blömstrom et al., 1994); have a minimum threshold stock of human capital (Borensztein et al., 1998); or are financially developed (Alfaro et al., 2004). However, even at the aggregate level, there are also possible negative effects from FDI, which may reduce or even outweigh the potential benefits. Most importantly, foreign investment intensifies competition in the host economy. In many ways, this might be seen as an unambiguously positive effect, putting pressure on local firms to improve the performance or be driven out of business. However, this assumes that the foreign firms do not resort to non-competitive practices, for example predatory pricing, exploiting their greater financial muscle to drive domestic firms out of the host market. Furthermore key national institutions, such as Anti-Trust authorities, are often weak in developing economies (Meyer and Surani, 2009), which

makes the likelihood of anti-competitive behavior post-investment more likely. In addition, domestic firms may not have the absorptive capacity to raise their productivity to the levels attained by their new foreign competitors; the technological gaps may be too large and the availability of human capital too limited for competitive processes to raise performance across the economy (Zahra and George, 2002). Such problems may be exacerbated if there are shortages of key skills in the host economy, including managerial ones, and foreign firms are in a position to offer more attractive employment contracts, thereby attracting many of the most skilled workers from domestic firms. As a result, despite the additional investment from abroad, domestic investment may decline and expected employment gains from the foreign investment may be more than matched by employment falls from former domestic suppliers. These arguments find some empirical support in the literature; Carkovic and Levine (2005) take into account the problem of reverse causality and do not find evidence in support of a relationship between FDI and growth.

However, the literature on the host country effects of FDI mostly addresses the possibility of productivity spillovers. As noted by Haskell et al. (2007), spillovers from FDI are of particular significance for policy makers because in their absence there is no case for policy intervention in support of FDI. Foreign firms generally possess more advanced technology and have more advanced management practices compared to domestic competitors (Caves, 1996). Once foreign firms have entered a domestic market, the diffusion of ideas and transfer of technology resulting from interaction with the local economy are likely to occur via a variety of formal and informal contacts and exchanges (Haskel et al., 2007; Javorcik, 2004). These are the source of externalities to domestic firms, and are typically considered to operate either within an industry (horizontal) or up and down a value chain of industries (vertical). The literature has concentrated on both forms of externalities, although until fairly recently hardly any empirical studies analyzed vertical spillovers (Javorcik, 2004, p. 606). In our paper, data limitations resulting from the focus on the Western Balkans, where information about economic performance, especially at the sectoral level, is relatively scarcer, lead us to restrict our attention to horizontal spillovers.

Examples of mechanisms for positive external spillovers from FDI in the literature include those through the dissemination of new higher levels of technological productivity on locally-owned firms (Ayyagari and Kosova, 2010; Barrios et al., 2005), via demonstration effects or reverse engineering (Barry et al., 2003). This can occur when foreign firms augment the knowledge base in the local market by introducing new products, processes, management techniques and workforce skills. Interaction with foreign firms increases awareness of the availability of new knowledge, and enables domestic firms to learn about these technologies and market opportunities so as to raise

their productivity by imitating the superior manufacturing techniques of foreign firms in their industry (Kokko, 1992). Local firms may also be able to exploit the knowledge of workers poached from foreign owned firms and trained in new technological or managerial methods, either vertically or horizontally (Fosfuri et al., 2001). Vertical spillovers may occur because foreign owned firms seek to raise the productivity of their local suppliers so as to reduce wastage rates and raise product quality. However, as for the macro-economic impact, some authors also highlight that there could be negative externalities from FDI for domestic firms (Aitken and Harrison, 1999; Barrios et al., 2005). We have also noted above the possibility of the crowding out of domestic firms in an industry through the use of uncompetitive practices such as predatory pricing or entry-deterrence (Caves, 1996).

In this paper, we will explore the indirect, or spillover, impact of FDI on various measures of performance at the level of the manufacturing sector as a whole and at the more disaggregated industrial level for the Western Balkan economies. FDI can have positive direct effects on the host macro-economy, for example allowing investment in excess of domestic saving and alleviating balance of payment constraints on growth (Borensztein et al., 1998). The literature however has tended to concentrate on micro-economic externalities generated by foreign direct investment, seeking to isolate these spillover effects on firm level performance both within an industry (horizontal spillovers) and up and down supply chains (vertical spillovers). In this paper, we test for evidence of these spillover effects on an economy wide basis as well as within sectors (horizontally). As noted above, the available data for this region is limited so we are unable to test for vertical spillover effects in this paper. This is the first time that the spillover effects of FDI on the performance of firms in the host economies have been investigated for the countries in this region.

# 4. FDI spillovers in the Western Balkans

## *4.1 Model Specification*

The literature has developed a number of ways to test for the impact of FDI on firm performance (Javorcic, 2004; Blacock and Gertler, 2008; Moran, 2011). The most sophisticated models estimate production functions augmented by measures of the foreign presence in the given industry (horizontal spillover) and of the foreign presence backward and forward in the industries' supply

chain (vertical spillovers) (Javorcic, 2004). Unfortunately, our data for the Western Balkans do not contain measures of the capital stock, so we cannot estimate a production function in order to derive TFP. Moreover, we do not have data about foreign presence in supply chains and therefore cannot estimate vertical spillovers. These data limitations lead us to follow a less data intensive estimation strategy and test for horizontal spillovers by estimating equations of the form:

$$Y_{it} = a_0 + a_1 FDI_{it-1} + a_2 Z_{it} + e_{it} \qquad (1)$$

where i denotes the level of aggregation (national, industry, supply chain), t denotes time and Y is a measure of performance, for example industry productivity (Aitken and Harrison, 1999; Haskell et al, 2007). FDI represents the foreign presence in the country or sector depending on the level of aggregation i and is considered in period t-1 since it takes time for FDI to have effects on performance. Z is a vector of control variables, such as factor inputs if Y is sectoral productivity (Haskell et al, 2007), and e is the error term.[8] Our estimates are undertaken at two levels of aggregation. First, at the aggregate manufacturing level, we consider three performance variables (Y); output (manufacturing value added), employment in manufacturing and manufacturing exports. The equation (1) is estimated in levels and in first difference form, with the latter therefore considering output, employment and export growth in manufacturing. The growth equations represent a more demanding empirical specification with clearer underlying causality because they explore the ways that changes in FDI influence (subsequent) output, employment and export growth. The FDI variable measures FDI inflows into the manufacturing sector as a whole (or its rate of change in the first difference specification) and is lagged by one period. The control variables in the aggregate specification are country and time specific fixed effects.

Second, we explore horizontal spillovers from FDI by analyzing the relationship between FDI and performance across a variety of manufacturing sectors. Once again we use the same three performance variables (Y); sectoral output (value added), sectoral employment and sectoral exports. The equation is again estimated in two forms, for the level of sectoral performance and for its rate of change (first differences) respectively, and we consider output, employment and export growth in each manufacturing sector. The independent (FDI) variable of interest is FDI flow (once again lagged by one period) into the relevant sector (or its rate of change) and the controls are again time and sector dummies.

[8] This equation would be the same as that in Javorcic (2004) if the dependent variable for performance were value added, the Z vector contained labor and capital input and FDI measured both horizontal and vertical spillovers.

### *4.2 Data*

We use three measures of performance in our estimates of equation (1). The first is manufacturing value added, the second is employment in manufacturing and the third is manufacturing exports. The data for manufacturing value added and manufacturing exports are derived from the World Bank (World Development Indicators), and manufacturing employment from national statistics.[9] Our FDI inflow data are derived from the Vienna Institute for International Economic Studies (WIIW) database. This variable is lagged by one period.[10] All variables are entered in logs to address issues of non-normality. The dataset covers five countries (Albania, Bosnia and Herzegovina, Croatia, Macedonia and Serbia) for the period 2002-2012, since for Kosovo and Montenegro no reliable comparable FDI data by sector are available. Our disaggregated analysis is undertaken separately on five manufacturing sectors: chemicals, food and beverages, machinery and transport, textiles and clothing and other manufacturing. We have data on the three performance variables and FDI inflows at this level of aggregation, approximating the SIC three digit level.

### *4.3 Results*

The results of our regression analysis are reported in Tables 3-6. In Tables 3 and 4 we show estimates of equation (1) at the level of the manufacturing sector as a whole. The performance variable, Y, in equation (1) is specified by manufacturing value added, employment and exports in columns 1-3 respectively. In Table 3, we show the results for the static version of the equation and in Table 4 we report the first difference version.

[INSERT TABLE 3 HERE]

It can be seen that there is no evidence of spillover effects on any of the measures of performance either with respect to the level of FDI or its change. The pattern of performance is almost entirely determined by country and time specific factors.[11] In general, macro-economic and more aggregated data such as manufacturing as a whole tend to yield less significant results than more disaggregated

[9] Albanian Institute of Statistics, calculated from Labour Force Survey; Statistical Yearbook of Federation of Bosnia and Herzegovina, calculated from RAD survey on enterprises; Croatian Bureau of Statistics, calculated from RAD survey on enterprises; Macedonian Statistical Office, calculated from RAD survey on enterprises; Serbian Statistical Office, calculated from RAD survey on enterprises.

[10] We experimented with the use of longer lags, to take account of the possibility that FDI takes longer than one year to have an effect. This experiment caused a trade-off. Longer lags allow us to detect perhaps longer term effects of FDI. However, to capture them reduced the degrees of freedom markedly on our relatively small sample. In practice the results of longer lags equations were not as significant but the pattern of our findings was unchanged. We therefore have chosen to report the one lag results, but other estimates are available from the authors on request.

[11] In further equations (unreported), we sometimes find weak significance and a positive sign on the FDI inflow term if the fixed effects are excluded, and these results indicate that FDI is time and country specific.

studies because of the balancing effects of aggregation[12]. Even so, the absence of a relationship between output, employment or exports and foreign presence in the manufacturing sector is striking, and indicates that such FDI as has been received in the manufacturing sector in the Balkans has had very limited spillover effects.

[INSERT TABLE 4 HERE]

In Table 5 we report the disaggregated results, the estimates of equation (1) at the sectoral level for each of the five manufacturing sectors, and for each of the three performance measures. Thus columns 1-5 show the impact of (lagged sectoral) FDI on sectoral value added, 6-10 on sectoral employment and 11-15 on sectoral exports. For the most part the results at the sectoral level are consistent with those at the aggregate level, with almost no evidence of horizontal spillovers within industries in the Western Balkans. The coefficients on almost all the FDI terms in almost every regression are not statistically significant. However, we do observe a positive significant effect of FDI inflows in the "other manufacturing" sectors (on value added) and in the chemical sector (on employment and exports), perhaps due to specific privatization deals. However, there is also a negative significant impact on employment in the textile sector, probably due to workers layoffs following enterprise privatization and restructuring.

[INSERT TABLE 5 HERE]

Finally in Table 6 we show results for the same regression as in Table 5, but estimated in rate of change form. As one might expect in this more demanding specification, there is even less evidence of horizontal spillovers at the industry level; there are even fewer significant coefficients on the FDI term. There is only one weakly significant effect identified, but it is negative: thus the lagged change of FDI inflows is found to reduce manufacturing value added in the machinery and transport sector.

[INSERT TABLE 6 HERE]

## 5. Explaining the results

Our empirical findings indicate that FDI inflows have had almost no significant impact on manufacturing value-added, manufacturing employment and manufacturing exports of the Western Balkan countries during 2002-12 at the aggregate level. At sectoral level, we were also unable to identify many horizontal spillovers, though there were a few cases of positive, but also a few cases

[12] We thank Jan Svejnar and an anonymous referee for pointing out this effect.

of negative effects. This does not mean that FDI cannot contribute to economic efficiency, growth, and welfare in the host country, even if there are no identifiable horizontal spillovers, because FDI can have direct effects via capital accumulation. Moreover, these findings must be considered preliminary because data limitations have meant that we have not been able to estimate spillover effects via an augmented production function, nor did we take account of potential vertical spillovers. Even so, our findings are consistent and robust across a variety of specifications and indicate that FDI has had almost no horizontal effects on key measures of performance of the manufacturing industry, a sector of fundamental importance for strengthening export potential and accelerating economic growth of the Western Balkan countries. In addition, although FDI inflows to this region have increased during the 2000s, they remain fairly limited in comparison with inflows to other transition and post-transition economies in Eastern Europe (Estrin and Uvalic, 2014).

What are the main reasons for the low impact of FDI on Western Balkan countries' economic development? An obvious starting point is to consider the main constraints – institutional, economic, political – that have possibly limited the potential beneficial effects of FDI in the Western Balkans economies. Potential benefits of FDI for the host economy depend amongst other things on national infrastructure, market size, systems of education and training and institution quality. Having in mind the recent history of wars and sanctions in the region, particularly important for the Western Balkans might be political stability and the control of corruption. FDI spillovers are also likely to be influenced by the general business climate and guarantee of fair competition.

We have taken into account thirteen indicators that evaluate the institutional, economic and political characteristics of the Western Balkan economies that might influence FDI spillovers (see Table 7). These indicators have been used to compare the rankings/scores of the Western Balkan countries with those of the ten Central East European and Baltic (CEEB) countries that today are EU member states (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia).

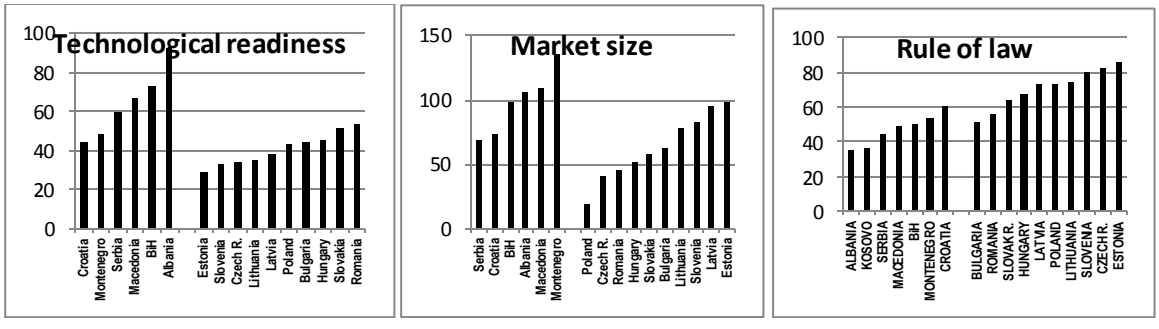
**Table 7. Some indicators likely to influence FDI spillovers in the Western Balkan countries**

| ***Institution/source*** | ***Indicator*** | ***Measure*** |
|---|---|---|

| | | |
|---|---|---|
| World Economic Forum<br>*Global Competitiveness Report*[13] | (1) Institutions<br>(2) Infrastructure<br>(3) Higher education and training<br>(4) Technological readiness<br>(5) Market size | Ranking of 148 countries<br><br>The higher the rank, the worse is a country's position |
| World Bank<br><br>*Governance Indicators* | (6) Political Stability and Absence of Violence<br>(7) Government Effectiveness<br>(8) Regulatory Quality<br>(9) Rule of Law<br>(10) Control of Corruption | Ranking of 215 countries<br><br>The higher the rank, the better is a country's position |
| The Fund for Peace<br><br>*Fragile States Report* | (11) Fragile States Index | Ranking of 178 countries<br><br>The lower the score, the better is a country's position |
| World Bank<br><br>*Doing Business* | (12) Ease of Doing Business | Ranking of 189 countries<br><br>The higher the rank, the worse is a country's position |
| EBRD<br>*Transition Indicators* | (13) Competition policy | Scores 1 - 4; 1 indicates no progress in reforms, 4+ a situation comparable to a developed market economy |

These institutional, economic and political indicators highlight a substantial gap between the Western Balkan and CEEB countries. We illustrate these issues on the basis of a selection of only three indicators - on Technological readiness, Market size[14] and Rule of law (see Figure 2). All three indicators – as well as others not presented[15] - clearly show the large gap that exists between most Western Balkan and CEEB countries.

**Figure 2. Comparing Western Balkan and CEEB countries: Indicators on Technological readiness, Market size and Rule of law**




[13] Since the most recent global competitiveness indicators (WEF, 2015) do not include one Western Balkan country – Bosnia and Herzegovina – we have used last year's WEF Competitiveness Report (WEF, 2014) that does give an overview for all countries, but in 2012.

[14] As explained in the World Economic Forum's methodology, the size of the market affects productivity since large markets allow firms to exploit economies of scale. Both domestic and foreign markets are included in the measure of market size; in today's globalized world, international markets have become a substitute for domestic markets, so exports can be thought of as a substitute for domestic demand in determining the size of the market.

[15] Full information about the indicators is available from the authors on request.

*Note:* The vertical axes are country rankings. For Technological readiness and Market size, the higher the rank the worse is a country's position, whereas for Rule of law the higher the rank, the better is a country's position.
*Source:* Compiled on the basis of World Economic Forum (2014) (Technological readiness and Market size) and World Bank on-line database (Rule of Law).

Despite the wide variety of individual countries rankings regarding each indicator, there seems to be a high degree of convergence in their assessment of the institutional, political and economic characteristics of the Western Balkan countries as a whole. In comparison with the ten CEEB countries, the Western Balkan countries are on average lagging behind. In most cases, there is almost a linear trend from the best performers represented by the CEEB group, towards the worst performers represented by the Western Balkan countries. However, Croatia seems to be an outlier, having better ranks, on average, than the other Western Balkan countries, sometimes ranking better than the two worst performers within the CEEB group, Bulgaria and Romania.[16]

There are several reasons for this. First, Croatia in 1989 was one of the two most developed republics of former Yugoslavia (along with Slovenia) (Uvalic, 2010, p. 32); although its economy has also been negatively affected by the political events in the region in the 1990s, it remains the most developed among the Western Balkan countries and is also more developed (in terms of GDP per capita in Purchasing Power Standards) than Bulgaria and Romania. Second, Croatia has implemented transition-related economic reforms faster than the other Western Balkan countries, in some areas faster than Bulgaria and Romania (see EBRD Transition Indicators 2014). Third, Croatia is the only Western Balkan country that attracted at least some FDI during the 1990s (Estrin and Uvalic, 2014), which has probably indirectly positively affected some features of the Croatian economy. Some of the listed advantages derive from Croatia's main comparative advantage - its beautiful Adriatic sea that has for decades been an important tourist attraction securing both substantial foreign currency revenues and major interest of foreign investors. These features have probably affected many aspects captured by the discussed indicators of the Western Balkan countries, placing Croatia in an advantaged position.

[16] These indicators must be interpreted with caution for several reasons. First, because most of them are based on perceptions of progress in a given area that often diverges from reality. Moreover, these indicators have a specific purpose, not related to this use, namely to shape the Western governments policies of aid and intervention (Woodward, 2009, pp. 152-157). Third, a country's annual change in position is not necessarily determined by its own progress, but by the deterioration of performance of other countries. Finally, if we shift to global comparisons, the Western Balkan countries are not doing as badly as when compared with the ten CEEB countries; thus on a global scale, none of the Balkan countries are on the UNDP list of 64 worst performing countries or in DFID's proxy list of fragile states (Woodward, 2009).

In addition to these general features of the Western Balkan countries that may have limited the spillovers to domestic firms from FDI, other factors must be taken into account. Some have already been noted, such as the late arrival, relatively limited quantity and specific sectoral structure of FDI (Estrin and Uvalic, 2014). We also must consider the specific objectives of multinational companies and the political agendas of international organizations (such as the European Union) that determine the general climate for FDI. In practice, multinationals decide to invest in the most profitable locations, usually without reference to the host country's needs, unless they have a strong incentive to the contrary (as was the case of the generous subsidy offered to FIAT for its investment in Serbia's car industry Zastava in Kragujevac). For this reason, the Western Balkan governments need to consider how best to incentivize FDI towards sectors that are considered important for their country's development. Important guidelines on how to implement a "soft industrial policy" that would help direct FDI towards priority sectors are offered by Moran (2014; see concluding section).

Furthermore, the different general climate for FDI in the 1990s in Central Eastern Europe (CEEB) and in the 2000s in the Western Balkans is also relevant. During the 1990s FDI inflows to the CEEB region were stimulated by the widespread enthusiasm and wide international support of the new democracies after the fall of the Berlin Wall. European Union policies were pro-active in sustaining transition in the CEEB countries via substantial financial assistance, association agreements (concluded with the ten countries during 1993-96) and the launch of accession negotiations in the second half of the decade. These factors positively influenced foreign inward investors in this part of Europe (Bevan and Estrin, 2004). The Western Balkans have received similar forms of support from the European Union as the CEEB countries. However, this came a decade later and under more stringent EU conditionality (Uvalic, 2010, p. 228). Moreover, the general political climate has been much less enthusiastic - because of the residual political problems in the region, EU enlargement fatigue and the various problems that have inflicted the EU since the outbreak of the global economic crisis.

## 5. Conclusions and policy implications

We have not been able to identify many spillovers from FDI on the performance of firms in particular manufacturing sectors or industry as a whole in the Western Balkan countries between 2002 and 2012. Although FDI may contribute to economic growth and welfare in the host country via capital accumulation, our empirical analysis indicates that the relevant FDI inflows have had almost no significant impact on manufacturing value-added, manufacturing employment and manufacturing exports of the Western Balkan countries during 2002-12. We were also unable to

identify many horizontal spillovers on firm performance at the sectoral level, though there were a few cases of positive, but also a few cases of negative effects. The literature suggests that FDI spillovers will be conditional on the host economy institutions, as well as general economic and political conditions. We have argued on the basis of numerous indicators that institutional, economic and political features of the Western Balkan countries have probably restricted the potential spillovers from FDI. Furthermore, spillover effects may have been limited because this region has attracted relatively small amounts of FDI and because relatively little FDI has gone into manufacturing as the main sector responsible for these countries' exports. Finally, the fact that within manufacturing, FDI has gone into predominantly non labour-intensive sectors may explain the weak impact on employment.

Our analysis raises important policy issues both for the Western Balkans and for the ongoing wider debate on the "new growth model" in transition economies (Becker et al, 2010). The first question regards *policy-makers perceptions* about inward FDI into the Western Balkan region and in particular what governments can or cannot do to attract more FDI (Demekas et al., 2005). Our earlier work has shown that FDI in the Balkans is influenced not only by government policies such as institutional reforms and tax incentives, but also by exogenous factors such as size, level of development and geographical position (Estrin and Uvalic, 2014). Fragmentation leading to a lack of scale economies is a serious handicap of the Western Balkan countries (Kalotay, 2013) that cannot be easily overcome, except through more intensive regional cooperation and integration.[17] Following the global economic crisis FDI has fallen sharply and global flows in early 2015 were still only around 66 percent of their peak in 2007 (UNCTAD on-line database). The Western Balkans have also experienced a strong reduction of FDI and other capital inflows after late 2008 (Bartlett and Prica, 2012), but the expectations regarding the quick return of FDI have nevertheless been too optimistic. Given the continuing unfavorable global climate for FDI, the exhaustion of privatization opportunities in most Balkan countries and the still unsettled political issues, a substantial increase of FDI is probably unlikely over the next years. Improving the business climate alone will not be sufficient to attract more FDI, as illustrated by the case of Macedonia that in 2015 had an exceptionally good ranking (30$^{th}$) in World Bank's Ease of Doing Business, yet has attracted modest amounts of FDI. Microeconomic, macroeconomic and institutional reforms may be a necessary condition to attract FDI, but are likely not to be sufficient (Moran, 2014, p. 5). This

[17] The Regional Cooperation Council (previously the Stability Pact for South East Europe - SEE), has been promoting a series of objectives at the regional level, included in the recently adopted Southeast Europe-2020 Strategy that should reinforce cooperation among countries in the region (see: www.rcc.int).

implies that governments ought to reflect on how to influence potential domestic investors as well to start investing more in the region.

One must consider further the *type of government policies* that ought to be implemented in order to influence the quality of investment – both foreign and domestic - particularly its sectoral distribution. The relationship between the quantity and the quality of FDI is not yet well understood (Kalotay and Filippov, 2009, p. 32). Foreign investors have tended to focus on the banking sector rather than manufacturing industry or agriculture and in this way have not helped remove some of the long-run structural weaknesses of the Western Balkan economies. Given the limited contribution of FDI to economic development so far, governments should play a more active role regarding inward FDI. Recent experience in the Western Balkans suggests, in particular, that there is a need for a stronger link between investment promotion and industrial policy. This indicates the potential role of a more pro-active industrial policy that would use investment in general to diversify and upgrade the production and export base, in this way also accelerating economic development of the Balkan countries.

Such policies would be in line with the empirical literature on investment promotion which suggest that policy makers should not wait to see what international market forces bring to them; recent findings by Harding and Javorcik (2012) show that sector targeting by investment promotion agencies – not simply opening the host economy to FDI – doubles FDI flows into the chosen sectors and results in higher unit-value exports (see Moran, 2014, p. 32). This suggests the need for a more interventionist state role, with some kind of mechanism for selecting industries and providing packages of public sector support to address coordination externalities, overcome imperfections in information markets and provide investors with public goods in the form of a well-trained labour force. Such an approach is what Moran calls "light-form industrial policy" that could harness FDI to development and generate backward linkages as deep as possible into the host economy (Moran, 2014, pp. 32-33).

This type of industrial policy can indeed be recommended to the Western Balkan countries. In order to develop further their export potential, the Western Balkans countries ought to strengthen the fastest growing (and new potentially promising) manufacturing sectors, that are also likely to give an important push to domestic commercial services. Without some leading manufacturing industries, it will be difficult for the service sector alone to ensure increasing exports and a faster integration into the global economy. Investment promotion policies directed towards both potential

foreign and domestic investors therefore need to be linked to these important objectives of national economic development.

After more than six years of economic crisis and bleak prospects of a more sustained economic recovery, it seems risky for the Western Balkan governments to merely wait for the return of foreign investors and to continue relying on their capabilities to restructure their economies. In the short term, one of the main challenges of policy makers is to counterbalance the negative overhang of the crisis on FDI which is coming partly from source countries that are deeply affected by the crisis (Greece, Italy) and in industries that are also negatively impacted, such as banking (Kalotay, 2013). Legal harmonization with the EU *acquis* presently in course could improve attractiveness of the Balkan region, but a challenge remains to implement more appropriate government policies, including an industrial policy that would lay the basis for an investment promotion strategy directed towards both foreign and domestic investors, with the aim of attracting not only more but also better quality investment.

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**Table 3. Aggregate Manufacturing Spillovers: Level Regressions**

| Variables | (1) Total manuf VA (log) | (2) Total manuf EMP (log) | (3) Total manuf EXP (log) |
|---|---|---|---|
| **Total manuf FDI inflow, lag 1 (log)** | 0.006 | -0.004 | 0.020 |
| | (0.018) | (0.011) | (0.016) |
| **Observations** | 30 | 30 | 29 |
| **R-squared** | 0.995 | 0.994 | 0.994 |
| **Time FE** | Yes | Yes | Yes |
| **Country FE** | Yes | Yes | Yes |
| **Adjusted R-squared** | 0.988 | 0.988 | 0.988 |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

**Table 4. Aggregate Manufacturing Spillovers: Rate of Change Regressions**

| Variables | (1) Total manuf VA (log) Rate of change | (2) Total manuf EMP (log) Rate of change | (3) Total manuf EXP (log) Rate of change |
|---|---|---|---|
| **Total manuf FDI inflow, lag 1 (log), Rate of change** | -0.000 | 0.000 | -0.000 |
| | (0.000) | (0.000) | (0.000) |
| **Observations** | 28 | 28 | 26 |
| **R-squared** | 0.890 | 0.725 | 0.905 |
| **Time FE** | Yes | Yes | Yes |
| **Country FE** | Yes | Yes | Yes |
| **Adjusted R-squared** | 0.802 | 0.802 | 0.802 |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

## Table 5. Sectoral Manufacturing Spillovers: Level Regressions

| FDI inflow, lag1 (log) | (1) chem | (2) food & bever | (3) mach & transp | (4) textile | (5) other | (6) chem. | (7) food & bever | (8) mach & transp | (9) textile | (10) other | (11) chem | (12) food & bever | (13) mach & transp | (14) Textile | (15) Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | VA | | | | | EMP | | | | | EXP | | |
| Chem | 0.054 | | | | | 0.042** | | | | | 0.104* | | | | |
| | (0.061) | | | | | (0.008) | | | | | (0.045) | | | | |
| Food & bever | | 0.007 | | | | | 0.007 | | | | | 0.007 | | | |
| | | (0.033) | | | | | (0.033) | | | | | (0.033) | | | |
| Mach & transp | | | -0.052 | | | | | 0.007 | | | | | -0.001 | | |
| | | | (0.043) | | | | | (0.026) | | | | | (0.049) | | |
| Textile | | | | 0.034 | | | | | -0.096*** | | | | | 0.114 | |
| | | | | (0.118) | | | | | (0.027) | | | | | (0.075) | |
| Other | | | | | 0.055** | | | | | 0.009 | | | | | 0.042 |
| | | | | | (0.025) | | | | | (0.018) | | | | | (0.026) |
| Observations | 21 | 24 | 26 | 25 | 25 | 17 | 24 | 23 | 22 | 23 | 23 | 24 | 27 | 28 | 28 |
| R-squared | 0.988 | 0.996 | 0.996 | 0.951 | 0.993 | 0.999 | 0.996 | 0.997 | 0.990 | 0.994 | 0.995 | 0.996 | 0.993 | 0.987 | 0.978 |
| Time FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Adjusted R-squared | 0.954 | 0.954 | 0.954 | 0.954 | 0.954 | 0.954 | 0.954 | 0.954 | 0.954 | 0.954 | 0.954 | 0.954 | 0.954 | 0.954 | 0.954 |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

## Table 6. Sectoral Manufacturing Spillovers: Rate of Change Regressions

| FDI inflow, lag1 (log) Rate of change | (1) chem | (2) food & bever | (3) mach & transp | (4) textile | (5) other | (6) chem | (7) food & bever | (8) mach & trans | (9) Textile | (10) other | (11) chem | (12) food & bever | (13) mach & transp | (14) textile | (15) Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | VA | | | | | EMP | | | | | EXP | | |
| Chem | -0.001 | | | | | -0.001 | | | | | 0.003 | | | | |
| | (0.008) | | | | | (0.002) | | | | | (0.003) | | | | |
| Food & bever | | 0.005 | | | | | 0.000 | | | | | 0.004 | | | |
| | | (0.003) | | | | | (0.001) | | | | | (0.003) | | | |
| Mach & transp | | | -0.006* | | | | | 0.001 | | | | | -0.003 | | |
| | | | (0.004) | | | | | (0.002) | | | | | (0.004) | | |
| Textile | | | | -0.001 | | | | | -0.009 | | | | | 0.002 | |
| | | | | (0.020) | | | | | (0.005) | | | | | (0.028) | |
| Other | | | | | 0.002 | | | | | -0.001 | | | | | -0.001 |
| | | | | | (0.001) | | | | | (0.005) | | | | | (0.001) |
| Observations | 23 | 23 | 23 | 21 | 23 | 21 | 21 | 21 | 19 | 21 | 26 | 26 | 25 | 24 | 26 |
| R-squared | 0.656 | 0.806 | 0.885 | 0.871 | 0.898 | 0.504 | 0.646 | 0.574 | 0.905 | 0.735 | 0.855 | 0.779 | 0.869 | 0.878 | 0.848 |
| Time FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Adjusted R-squared | 0.684 | 0.684 | 0.684 | 0.684 | 0.684 | 0.684 | 0.684 | 0.684 | 0.684 | 0.684 | 0.684 | 0.684 | 0.684 | 0.684 | 0.684 |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1