**Box 2. The impact of foreign direct investment in the Romanian economy**

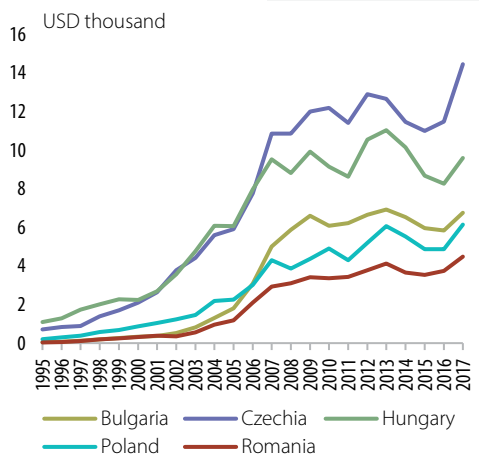
Attracting foreign direct investment[1] (FDI) is a goal for most countries, especially developing countries, considering the potential benefits the FDI may generate in the host economy: job creation, connecting to global production networks, diversification and streamlining of production capacities, enhancing the sophistication of the business environment, given the accompanying technologies and know-how, etc. Additional gains may also arise from possible spillover and learning effects on local companies, which may result in increasing the efficiency of their activity. The experience of countries in the Central and Eastern Europe shows that foreign direct investment played an important part in bridging the development gaps vis-à-vis countries in Western Europe (Bijsterbosch and Kolasa, 2009), with the caveat that not all types of FDI may have the expected effect on the economy, so that well substantiated policies need to be put in place in order to maximise the benefits of foreign capital infusion.

In this environment, the present box seeks to assess the net impact of foreign companies present in Romania. For a start, the box identifies the direct contribution made by this category of firms in the Romanian economy, analysing, based on regional comparisons, the main macroeconomic indicators (value added, employment, investment, etc.), whereas the second section is aimed at measuring to what extent spillover effects are generated on the productivity of domestic firms.

## Direct effects – regional comparisons

After 1990, the countries in Central and Eastern Europe (CEE)[2] were an important destination for FDI flows amid the start of privatisation and a limited domestic capital, insufficient to support economic transition; the prospects of joining the European Union played, in turn, an important part in attracting these investments.

**Chart A**
FDI stock per capita



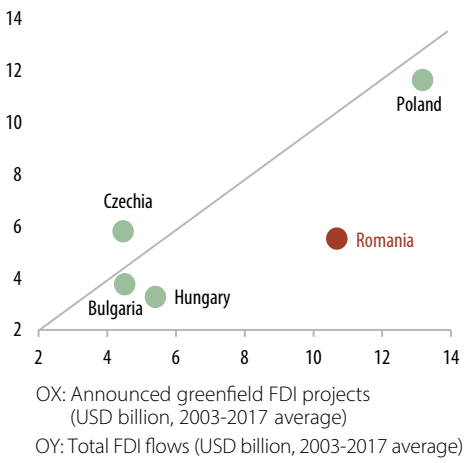

Source: UNCTAD

In the post-communist era, Romania recorded consistently the lowest FDI stock per capita, given that the pace of privatisation was slower than in the other emerging countries in the region, the significant flows attracted starting with the 2000s being insufficient to bridge the gaps vis-à-vis the comparable countries (Chart A). In this respect, it is relevant to mention the considerable difference between the value of the announced projects and that of actual projects, visible only for Romania, most likely owing to investors viewing the Romanian economy as less attractive (Chart B). According to the data released by the World Economic Forum (WEF) for 2007-2018, despite some progress, Romania reported

1 According to the international methodologies (IMF, OECD), foreign direct investment is defined as the long-term investment relationship between a resident and a non-resident entity, which involves a significant degree of influence exerted by the direct investor on the management of the direct investment enterprise – the direct investor holds at least 10 percent of voting power, financial flows coming in the form of paid-up capital and reserves, loans given, as well as reinvested earnings.

2 Within this analysis, the countries in Central and Eastern Europe referred to are Poland, Czechia, Hungary, Romania and Bulgaria.

**Chart B**
Announced vs. actual greenfield FDI




Source: UNCTAD, NBR calculations

some of the lowest competitiveness scores among CEE countries covered by the analysis, with competitiveness deficits under most pillars, particularly infrastructure, labour market and product market, as well as the general level of technological adoption of the economy. This picture painted by the WEF indicators is supported and extended by the outcomes of a World Bank survey among 754 executive directors of multinational companies[3], showing that a predictable government policy and the legislative and regulatory framework are pivotal to substantiating (dis) investment decisions for both the existing foreign investors, as well as for those who plan to develop new businesses, with more than 85 percent of the polled managers claiming to pay special attention to these parameters. Foreign companies prone to efficiency-seeking investment (i.e. those export-oriented and integrated in global value chains) seem to be sensitive to an even larger range of factors when making their business plans, alongside the quality of infrastructure, both the available skilled workforce and the low operating expenses counting as extra features that are crucially important in this process. The mentioned assessments may explain the loss of opportunities in favour of other countries in the region or the tendency to relocate some activities to areas around the globe where labour market is less tight or costs are lower (Asia) – especially in more labour-intensive sectors, such as light industry, which are sensitive to the increase in the minimum wage economy-wide.

The main FDI destinations across CEE states were manufacturing and services, with foreign capital coming to hold the prevailing share[4], overall, in medium- and high-tech business sectors such as the automotive industry and the related sub-sectors (manufacture of rubber, electrical equipment, machinery and equipment), the manufacture of other transport equipment, the chemical industry, as well as ICT (information and communication technology). A substantial share of total FDI stock for each country comes from the Netherlands, Germany, Luxembourg, Austria, France, Italy and the United Kingdom, in many cases cumulating up to two thirds.

Relative to the activity carried out, Eurostat data point to the significant contribution of foreign firms[5], their small number notwithstanding, in the economies under review. Compared to local companies, foreign companies are generally larger, more productive, more capital-intensive and use a larger share of highly-skilled workforce amid higher staff costs[6]. Although accounting for less than 10 percent of the total number of firms, foreign firms generate almost half of the value added across the economy, with Poland and Bulgaria reporting lower contributions thereto

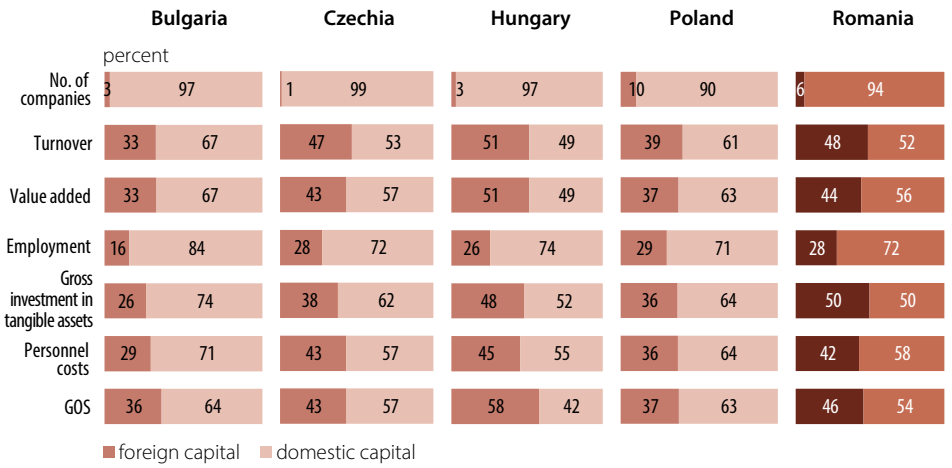
3 For more details on the survey, see *Global Investment Competitiveness Report 2017/2018*.

4 The latest available data refer to the year 2016 and do not cover the financial sector.

5 The analysis is based on the data provided by Eurostat on foreign subsidiaries (primarily held by a non-resident institutional unit).

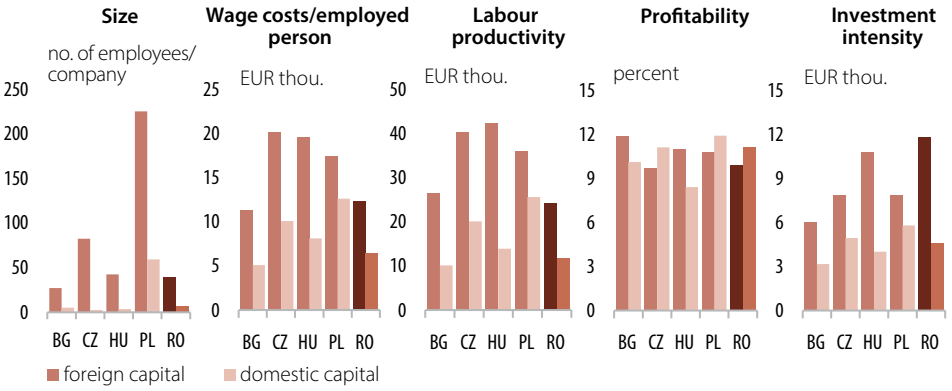
6 The assumption considered was that upskilled workforce requires higher remuneration. In the countries under review, the wages paid by foreign firms are, overall, more than double those paid by local companies (except for Poland, where they are only 30 percent higher).

(37 percent and 33 percent respectively). Foreign companies were less affected by the financial crisis and continued to create jobs at a fast pace during the economic recovery, coming to concentrate, in 2016 overall, approximately a quarter of the labour force (except for Bulgaria with 16 percent). Poland and Romania saw the fastest growth rates (hiring went up by 45 percent and 35 percent, respectively in 2016 versus 2007), while local companies failed to make up for the job losses recorded during the crisis, with payrolls remaining below the pre-crisis level for all of 2016 in most countries under review. Moreover, foreign subsidiaries account for a large share of firms' investment[7] (between 26 percent in Bulgaria and 50 percent in Romania) and make a significant contribution to the gross operating income in the economy (between 36 percent in Bulgaria and 58 percent in Hungary). However, gross operating margins (used as proxy for profitability) stand below those reported by local companies in Czechia, Poland and Romania (Charts C-D), the lack of microeconomic data hampering the identification of expenses positions that generate these differences in the CEE region[8].




Source: Eurostat

**Chart C**
Economic activity of CEE-based companies in 2016




Note: Labour productivity is calculated as a ratio of value added at factor cost to employed persons, profitability as a ratio of gross operating surplus to turnover, while investment intensity as a ratio of investment in tangible assets to employed persons.

Source: Eurostat, NBR calculations

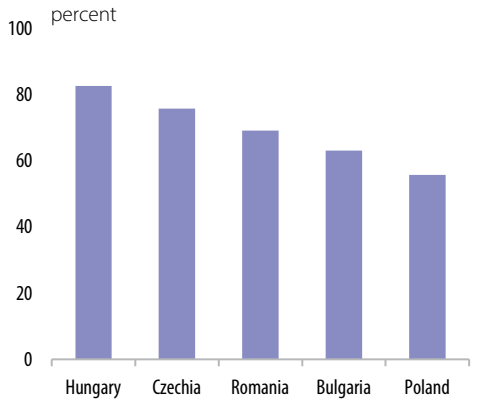
**Chart D**
Profile of CEE-based companies in 2016

7 Investment in tangible assets.

8 In Romania, according to firm-level data for 2016 from the MPF and NTRO, foreign companies incur larger costs compared to local companies under "other operating expenses" (including expenses on advertising and publicity, marketing, market studies and research, staff training, insurance premiums, etc.). Nevertheless, in the absence of a detailed structure, it is difficult to identify the clear purpose of these expenses.

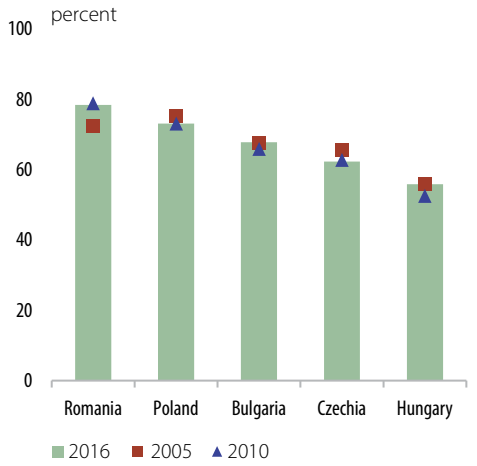
value added captured at national level as a share of external demand stands high, i.e. from around 50 percent for Hungary to 75 percent for Romania, which hints at possible spillover effects on local companies (Chart F).

**Chart E**
Exports of CEE-based foreign companies*




*) the latest data refer to 2011 for Bulgaria, 2013 for Hungary and 2016 for Czechia, Poland and Romania

Source: OECD




Source: OECD

**Chart F**
Domestic value added embodied in exports

## Indirect effects – Romania's case

Apart from their direct contribution in the economy, foreign firms may exert indirect effects on local firms through stronger competition, business model emulation, the improvement in the quality of human capital as a result of workforce training, the integration of local companies into supply chains of foreign companies (transfer of technology and know-how, economies of scale), etc. Depending on the diffusion direction of technology/externalities, the effects can be horizontal when firms belong to the same sector, and/or vertical, along the production chain, for local suppliers in upstream sectors or for local customers in downstream sectors (Figure A).

The literature shows fairly various conclusions on the cumulative indirect impact of foreign capital on local firms. For instance, Havránek and Irsova (2014) analyse a large number of studies revealing the existence of a technology transfer on upstream suppliers that is both statistically significant and considerable in terms of size, while downstream effects appear to be of a low to insignificant scale amid evidence that firms with foreign capital are generally export-oriented or rather produce final consumption goods (Damijan *et al.*, 2013). In this light, the present analysis will focus on identifying horizontal and upstream effects. At the same time, the mixed results revealed by research studies brought to the forefront the heterogeneity of domestic firms and the possibility that (positive) spillover effects may become visible only for some of them, based on firms' technological absorption capacity (Jude, 2012; Damijan *et al.*, 2013).

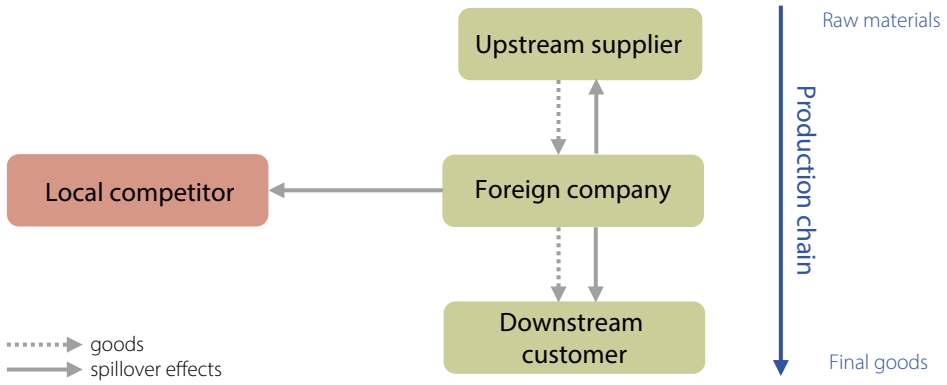



**Figure A**
Spillover effects along the production chain

Thus, the empirical analysis aimed first at estimating the total factor productivity (TFP) for each firm based on a full panel sample built using financial statements data[9]. Subsequently, based on the methodology developed by Javorcik (2004), the productivity of the domestic companies thus determined was factored into the equation alongside measures of foreign capital in the same sector (a competition relationship), and measures of foreign capital in downstream sectors (local supplier – foreign firm relationship). The specification was extended by including other determinants of TFP (control variables), both sector-specific (such as import intensity and export intensity), as well as firm-specific (age, size, origin of capital), in order to capture as accurately as possible the effects associated with FDI. The period used for the estimation is 2005-2014, determined by the availability of data, and the sample includes the corporate sector[10].

$$\ln(TFP)_{ijrt} = \beta_1\left(horizontal\ effects_{jt}\right) + \beta_2\left(upstream\ effects_{jt}\right) + \gamma Z_{jt} + \delta_1 X_{ijrt} + \alpha_r + \alpha_j + \alpha_t + \varepsilon_{ijrt}$$

The $horizontal\ effects_{jt}$ variable is the percentage associated with foreign capital production within the same sector $j$, while the $upstream\ effects_{jt}$ variable should, theoretically, stand for the share of the production of local firm $i$ sold to foreign subsidiaries operating in Romania. In the latter case, however, given the lack of microeconomic data on firms' bilateral transactions, the indicator was calculated for the sector as a whole, by using the WIOD database and stands for the share of the production of sector $j$ (where the local company is located) destined for intermediate consumption supplied to foreign companies in the upstream sectors[11].

*Vector* $Z_{jt}$ includes sectoral variables (NACE division) and refers to import intensity defined as a ratio of imports to the total supply of intermediate goods of sector $j$, and to the intensity of exports as a ratio of exports to the production of sector $j$.

*Vector* $X_{ijrt}$ comprises the characteristics of economic agents, such as age, size (four classes based on the number of employees, considering thresholds of 10, 50 and 250 employees respectively), majority state ownership or not and the share of foreign capital.

Finally, $\alpha_r$, $\alpha_j$ and $\alpha_t$ are fixed effects specific to each region, sector and year, their role being to capture the shocks specific to the county where the firms is located,

9 Data are provided by the Ministry of Public Finance. The sample covers the 2003-2016 period and comprises over 3 million observations, including firms which reported strictly positive turnover, number of employees and fixed assets, as well as a positive intermediate consumption. The estimation was made according to the methodology of Wooldridge (2009), by considering the endogeneity problems arising from correlating productivity innovation with the selection of production factors; for further details see CompNet (2014) and Van Beveren (2012).

10 NACE divisions 1-82, except for financial services, insurance activities and the activities auxiliary to financial services and insurance activities.

11 The calculation formula is $\sum_{c\ if\ c\neq j} \gamma_{jct} * \frac{\sum_{i\in c} \rho_{it} * Y_{it}}{\sum_{i\in c} Y_{it}}$, where $\gamma_{jct}$ stands for the percentage of the production of sector $j$ destined for intermediate consumption supplied to every downstream sector $c$ (except for final consumption, imports and sales in the same sector); the second factor is the share of the foreign capital production in the downstream sectors – where $\rho_{it}$ is the share of foreign capital in firm $i$ and ranges between 10-100 percent according to the OECD definition, while $Y_{it}$ is the turnover of firm $i$.

to its scope of activity and to every year in the estimation sample respectively, while $\varepsilon_{ijrt}$ is the unobservable (error) term, whose variance can differ across firms.

The results obtained show a negative influence exerted by foreign firms on local competitors, and the most affected seem to have a similar technological intensity as foreign subsidiaries, the competition within the sector causing local firms to lose their market position and less productive units to even discontinue their activity. Another channel via which foreign capital in the same sector exerts a negative impact on local firms is that of highly-skilled workforce absorption by offering more generous wages (the so-called brain drain effect). However, in the longer run, this phenomenon can lead to an improvement in productivity at aggregate level, amid a more efficient reallocation of resources[12].

**Table A**
Results of estimates

| Dependent variable | ln(TFP) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Sample containing all companies | | Sample containing domestic companies | | | | | |
| | | | | Technological gap vs foreign companies | | | Using highly-skilled workforce vs foreign companies | |
| | | | | <90% | 90%-110% | >110% | <100% | >100% |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Horizontal effects | -0.011* (0.007) | -0.0109* (0.007) | -0.0117* (0.007) | -0.00442 (0.007) | -0.0124* (0.007) | -0.00354 (0.008) | -0.0098 (0.007) | -0.0124* (0.007) |
| Upstream effects | 0.011* (0.007) | 0.011* (0.007) | 0.0115* (0.007) | 0.0117* (0.007) | 0.0160** (0.007) | 0.0173** (0.008) | 0.0096 (0.007) | 0.0147* (0.008) |
| Import intensity | 0.02*** (0.005) | 0.02*** (0.005) | 0.022*** (0.006) | 0.02*** (0.005) | 0.018*** (0.005) | 0.019*** (0.006) | 0.021*** (0.005) | 0.022*** (0.006) |
| Export intensity | 0.013*** (0.005) | 0.013*** (0.005) | 0.013** (0.005) | 0.01* (0.0053) | 0.02*** (0.0053) | 0.03*** (0.0062) | 0.012** (0.0053) | 0.013** (0.0057) |
| Size | 0.547*** (0.0234) | 0.546*** (0.0235) | 0.557*** (0.0224) | 0.19*** (0.0100) | 0.16*** (0.0116) | 0.0319*** (0.0112) | 0.457*** (0.0206) | 0.426*** (0.0230) |
| Age | -0.0014* (0.0008) | -0.0013* (0.0008) | -0.000006 (0.0007) | 0.0327*** (0.0042) | -0.0099*** (0.0029) | -0.0499*** (0.0056) | -0.029*** (0.0060) | -0.0297*** (0.0079) |
| State-owned capital | -0.437*** (0.06) | -0.436*** (0.0632) | -0.454*** (0.0629) | -0.194*** (0.060) | -0.0637** (0.029) | 0.051 (0.042) | -0.12 (0.107) | -0.614*** (0.059) |
| FDI dummy | 0.370*** (0.012) | | | | | | | |
| FDI | | 0.0043*** (0.0001) | | | | | | |
| No. of observations | 1,643,627 | 1,643,627 | 1,523,676 | 552,551 | 868,346 | 99,687 | 935,612 | 584,972 |

Robust standard errors in brackets, by year and sector.

Each equation contains fixed effects by year, sector and county.

***) p<0.01, **) p<0.05, *) p<0.1

Note: (i) For (4)-(6) specifications, the techological gap was measured as a ratio of TFP related to domestic companies to average TFP related to foreign companies within the sector. (ii) For (7)-(8) specifications, an alternative measure was calculated, given the absence of data on the distribution of employees by education level. Assuming that there is a positive correlation between skills and wages, the firms paying higher wages than their sector and county average were deemed to hold a larger share of highly-skilled workforce.

Source: MPF, NTRO, WIOD

[12] See Box entitled "Total factor productivity (TFP) from a macro- and a microeconomic perspective" in the May 2016 *Inflation Report*.

By contrast, the estimations show the existence of positive upstream effects, the absolute value of their magnitude being relatively similar to that of horizontal effects. Under the circumstances, a one percentage point increase in foreign capital in downstream sectors would lead to an improvement by about 1.2 percent in the productivity of local suppliers, which can be associated with a technology or know-how transfer. For instance, a foreign company asks for more sophisticated or higher-quality inputs, thus driving the local supplier to revamp the production process, on which occasion the foreign partner can provide assistance in installing and using high-tech equipment, including through workforce training. Productivity gains can be also obtained due to economies of scale, given the growing demand from multinational customers, or to the provision of clear working procedures, with the aim to firmly observe the order delivery deadlines. A relevant aspect emphasised by estimations refers to the increase in the positive effect once with the rise in local firms' absorption capacity (know-how or human capital endowment), providing evidence in support of the assumption that the best-performing local firms (at the national frontier) will be the first to benefit from the foreign capital presence (as they are deemed to be closer to the global frontier – World Bank, 2018), with the know-how subsequently being transferred to the other firms in the host economy.

The estimates on the indirect effects of the foreign capital presence on domestic firms are in line with those featured by other literature studies on Romania (Javorcik and Spatareanu, 2008; Lenaerts and Merleverde, 2018). Beyond the positive direct contribution that foreign firms have in the economy, the estimates led to a cumulative indirect impact close to zero, but, in this case too, measures can be taken to maximise the benefits that may stem from the partnerships between local suppliers and multinational companies – for example, national programmes can be developed with the aim to facilitate the supply of foreign companies locally. As a matter of fact, the previously mentioned World Bank Survey shows that 61 percent of the investors polled see as essential the possibility to be partners with local firms; 74 percent of the pollees who deem it important find local suppliers' capacity and abilities to be pivotal, suggesting that government's initiatives to promote such partnerships can prove effective only if domestic firms comply with multinational companies' requirements (Chart G). Other policies that could be implemented in order to facilitate that foreign companies be locally supplied with inputs refer to the improvement in the business environment or the initiation of assistance programmes for local producers providing the latter with the abilities necessary to meet foreign customers' requirements.

The results of the estimations also show that firms operating in increasingly export-intensive sectors reported higher productivity, which thus confirms two assumptions: it is either through access to the external market that firms get the know-how and expertise which help them improve production efficiency or it is only productive firms that can embark on export activities and deal with competition on the extremely competitive international markets. The explanatory power of the variable associated with import intensity is, however, stronger in many specifications; this can be explained by the importance of foreign, high-tech

and high-yield equipment, and possibly of certain inputs also from abroad, to companies' activities. The results also show that productive firms based in Romania are large, young companies operating in the private sector, with majority foreign capital (deemed to be by roughly 37 percent more efficient than local firms).

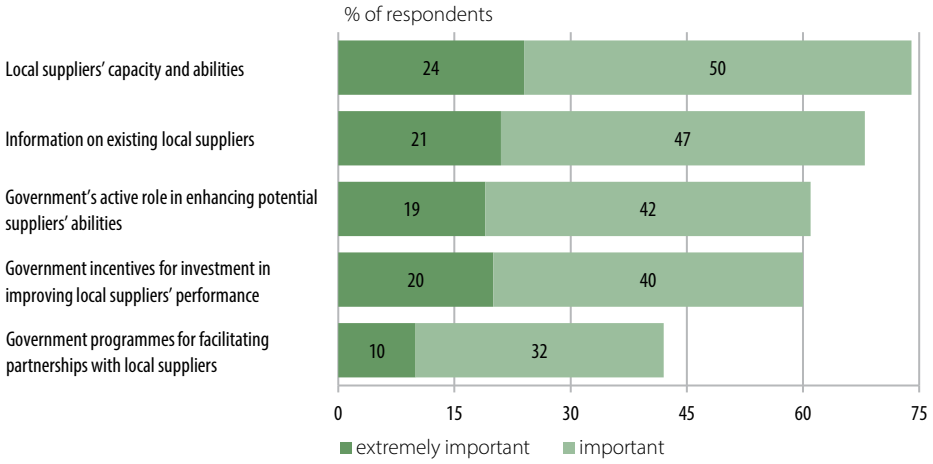



**Chart G**
Key factors in foreign companies' decision to invest relative to local suppliers

Source: *Global Competitiveness Report 2017/2018*

## Conclusions

The present analysis highlights that firms with foreign capital based in Romania (as well as in other countries in the region) make a significant, positive direct contribution to the economy, with the benefits of FDI inflows coming in the form of higher investment, production, employment and labour compensation, which ultimately result in economic (as well as structural) growth.

At the same time, a cumulative indirect impact close to zero was identified for the Romanian economy: positive spillover effects on the local supplier – multinational customer relationship and negative horizontal effects, among competitors. In order to improve the results for the indirect influences, it would be appropriate to implement policies designed to maximise the effects that may arise from partnerships between local suppliers and multinational companies. To this end, national programmes could be developed to promote partnerships between foreign and local companies or to provide assistance to local producers for the latter to acquire the abilities necessary to meet foreign customers' requirements.

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