

# Investment: What holds Romanian firms back?



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**EIB Working Paper 2019/07**

**August, 2019**

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## **Acknowledgement**

The authors would like to thank Áron Gereben for valuable comments and suggestions, and Florin Dragu for research support.

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## 1. Introduction

What is behind the low rate of firms investing in Romania? Despite strong economic growth in recent years and persistent needs for upgrading the capital stock, Romania records one of the lowest shares of firms investing in the European Union (EU). This paper draws on information from two surveys, the EIB investment survey and the survey on access to finance conducted by the National Bank of Romania, to analyse the reasons for subdued corporate investment activity. Focusing on Romania, we also contribute to the debate on why investment in the CESEE region has remained relatively subdued after the crisis.

We argue that in the case of Romania, for many firms a weak balance sheet structure (high leverage, low equity base) limits access to bank credit in turn hampering investment activity. At the same time, part of the firms having difficulties in access to finance are innovative and growing strongly.

The analysis finds that lack of access to finance has a strong impact on investment gaps: for firms facing financing difficulties the probability of reporting an investment gap is doubling. Moreover, uncertainty and limited availability of skills are major barriers in firms' operating environment, hampering corporate investment activity and increasing investment gaps. Results suggest that improving access to finance and skilled labour force for promising and innovative firms and reducing policy uncertainty for a better business environment are the key ways to foster higher investment activity in Romania and facilitate economic catch-up.

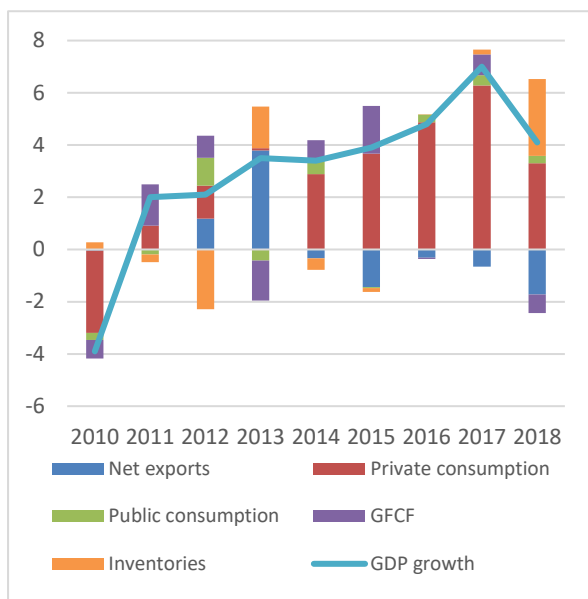
## 2. The investment situation in Romania

**Strong economic growth over the last years in Romania has been mainly driven by consumption while investment activity remained subdued.** Investment developments over the last five years have been volatile. Aggregate investment (gross fixed capital formation or GFCF) has been showing signs of recovery in 2014-2015 and 2017 but even in these years remained below 1 percentage point contribution to growth. Overall, economic growth in Romania has been primarily consumption-driven with decelerating private investment and subdued public investment (Figure 1a).

**The investment as a percentage of GDP is relatively high but this coincides with persistent investment needs.** Total investment in Romania amounts to about 23% of GDP in 2018, i.e. above the EU average (20.5%). However, this needs to be considered against the backdrop of the continuing catch-up needs of the Romanian economy. To graduate from middle-income status, high levels of

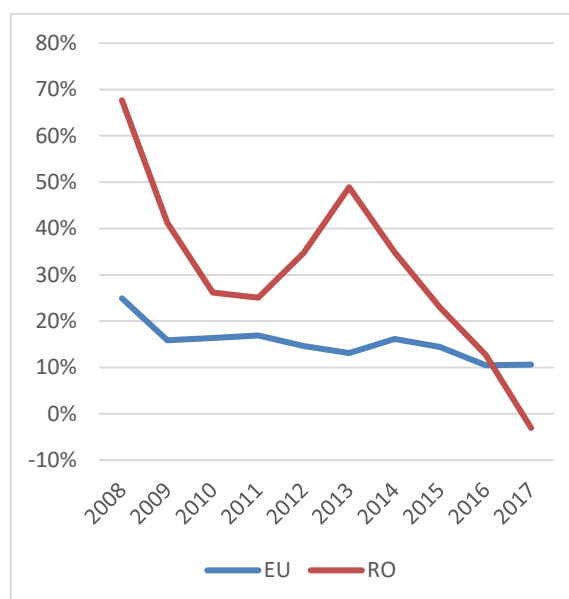
investment - i.e. above 25 per cent of GDP - are needed over a sustained period for about 15 years.<sup>1</sup> Investment in Romania as well as in the CESEE region remains too low against this benchmark. Notably, public investment falls short of what would be required (i.e. 3% of GDP compared to needed 5-7% of GDP), has been volatile and the quality of public investment remains low while investment needs are considerable. Moreover, beside the prioritization of large investment projects, Romania needs reforms of public spending efficiency and improvement of the EU Funds absorption (IMF 2018).

**Figure 1a: Real GDP growth and percentage point contributions of the demand side components**



Source: EIB calculations based on Ameco data. Figures represent % annual growth rate.

**Figure 1b: Net Investment rate evolution in the EU and Romania**



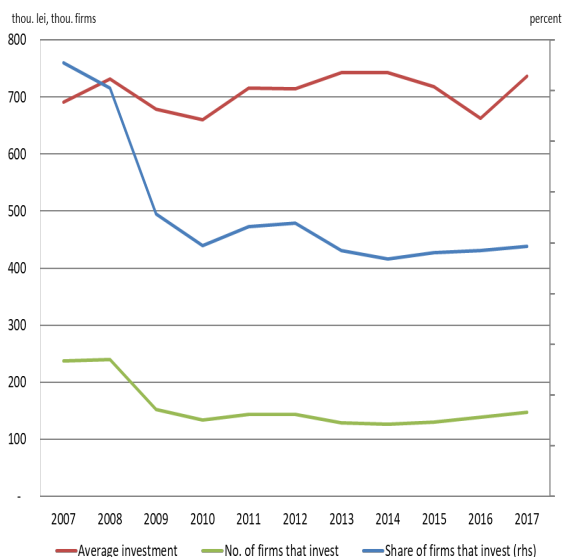
Source: EIB calculation based on ORBIS data (EIBIS sample matched with financial data from ORBIS database, 2007-2017/2018). Note: Net investment rate calculated as the difference in fixed assets between two subsequent years over fixed assets in the previous year.

**Corporate investment recovery has been slow despite strong economic growth and low interest rates.** The financial crisis strongly affected Romanian firms' investment (Figure 1b). Activity has been slow to recover. The investment rate of Romanian companies is four times lower compared to the booming period (2004-2007), while demand was boosted by domestic consumption and accelerated economic growth in Romania adding to needs for capacity expansion.

**Prior to the financial crisis, foreign direct investment and an optimistic outlook boosted investment.** The large drop in investment at the national level can be explained by the significant decrease in the number/ share of investing firms (Figure 2a) while the average size of investment per firm remained relatively unchanged. Only 25% of all Romanian firms invested annually more than 3% of their total assets in 2017 compared to the more than 40% in 2007. The FDI structure reveals that the strongest negative impact on FDI can be attributed to the accumulated losses of the foreign owned companies (Figure 2b).

<sup>1</sup> See Bubbico et. al (2017).

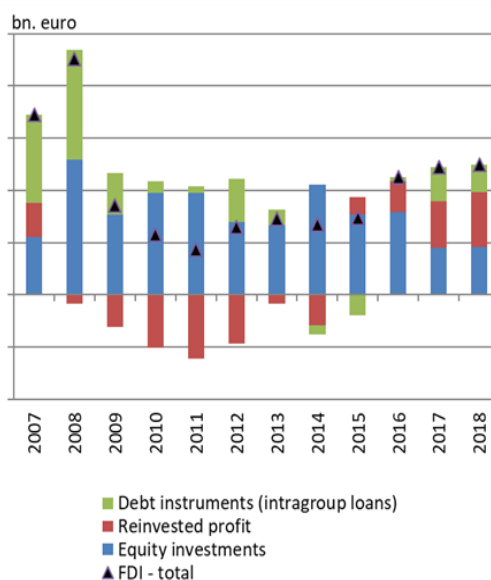
**Figure 2a: Investments Dynamics**



Source: NBR calculation based on INSSE data.

Note: Investments were computed as annual change in gross fixed assets of over 3% of the total assets.

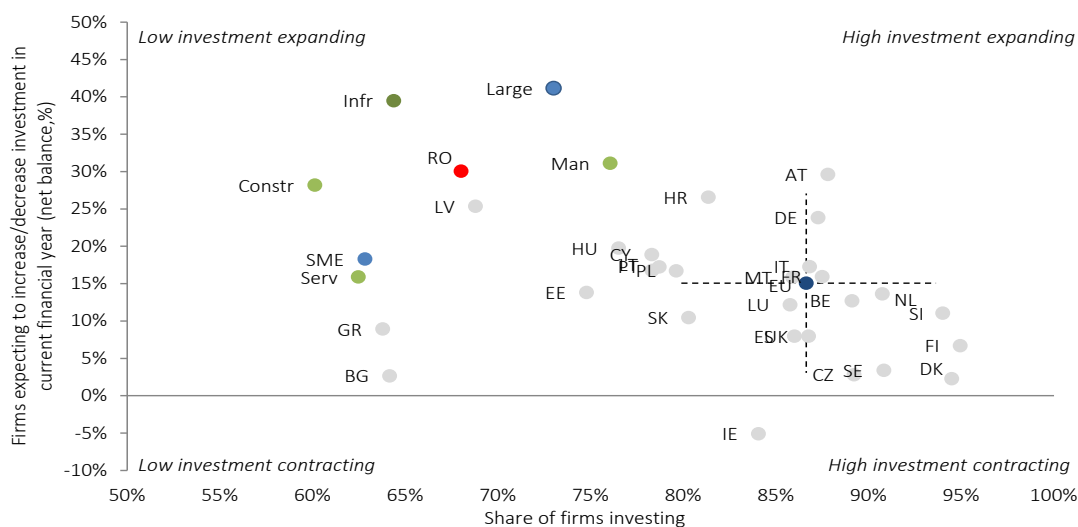
**Figure 2b: FDI flows structure**



Source: NBR calculation based on NBR data.

**Despite a recently improving investment outlook, Romania continues to have one of the lowest share of firms that invest in EU.** According to the EIBIS survey 2018, corporate investment activity also remains below regional peers. In Romania, less than seven in ten firms (68%) report having invested compared to 79% in CESEE and 87% in the EU respectively. In 2018, a majority of Romanian firms report that they plan to increase rather than decrease investment, marking a change to 2017 when a majority expected contraction (Figure 3). These gaps have persisted over the last three years, suggesting that there are structural factors in Romania holding back firms’ appetite for investment and their ability to undertake them.

**Figure 3: Corporate investment activity and outlook**



Source: EIBIS 2018.

Share of firms investing shows the percentage of firms with investment per employee greater than EUR 500

The y-axis line crosses x-axis on the EU average for 2016

Q. How much did your business invest in each of the following with the intention of maintaining or increasing your company’s future earnings?

Q. For the current financial year, do you expect your total investment spend to be 1) more than last year, 2) around the same amount as last year, 3) less than last year, 4) no investment planned.

**The subdued investment activity contrasts with the improving financing conditions, a high share of firms operating at or above capacity and a persistently high need for investment to catch up to the rest of the EU.** Despite strong GDP growth in the last years, convergence is hampered by the subdued investment trend and bottlenecks should be addressed. For this, we need a clear picture of the main investment barriers and problems Romanian corporations face.

**The low quality of assets emphasizes the urgent need of a higher investment rate.** Romanian firms judge the quality of their capital stock worse than EU peers. Firms' reported quality of assets and energy efficiency of buildings is among the lowest in the EU indicating replacement and upgrading needs (EIB 2018). Small firms in particular report investment gaps more often (29%), both compared to the EU and the CESEE average (14% and 24% respectively, see EIBIS 2018b).

**We investigate barriers to investment for Romanian firms using data from EIBIS and the Romanian National Bank's survey on access to finance.** EIBIS provides comparable information on investment activity and barriers for Romanian firms and EU peers. We complement findings from EIBIS with evidence based on NBR's bi-annual survey on access to finance of non-financial corporations in Romania, which provides additional information about firm-level financial conditions and Credit Register data on bank level financing. Both surveys allow identifying financially constrained firms and their characteristics as well as impediments to investment.<sup>2</sup>

### 3. Why are Romanian firms *not* investing?

**Reasons for firms not investing (enough) comprise financial and other obstacles.** Internal and external barriers can hinder firms' willingness and ability to invest. In a first step, we examine the financial soundness of firms and their ability to access external financing (Ferrando and Mulier 2013). Second, we focus on other external barriers perceived by Romanian corporations.

**Firms' financial soundness limits access to credit.** Romania has a considerable share of companies, which are undercapitalized or have equity below the regulatory minimum and turning even negative.<sup>3</sup> The share of firms with negative equity in the EIBIS sample is the second highest in European comparison (see Figure 4). Only Latvia exhibits a higher share of firms with negative equity while the country also has one of the highest share of financially constrained firms (EIB 2018a). When looking at the sample of all existing firms in Romania, the total amount of negative equity sums to RON 137.6 bn at the end of 2017 (about 18.1% of GDP). Negative equity is an issue particularly prevalent in the micro-enterprise segment. As a result, only a limited fraction of active enterprises is considered bankable.<sup>4</sup>

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<sup>2</sup> The **EIB Group Survey on Investment and Investment Finance** (EIBIS) is a unique, EU-wide, annual survey of some 12 300 firms out of which 475 are Romanian firms for a period of 3 years 2016-2018. EIBIS is representative across all 28 member States of the EU, as well as for firm size classes (micro to large) and 4 main sectors (manufacturing, service, infrastructure and construction). Further information on EIBIS can be obtained at <https://www.eib.org/en/about/economic-research/surveys-data/about-eibis.htm>

The **Survey on the access to finance of non-financial corporations in Romania** conducted by NBR covers a sample of approximately 10,500 non-financial corporations. It is representative at national and regional levels and is extracted using statistical procedures, in compliance with the following criteria: i) firm size class (microenterprises, small enterprises, medium-sized enterprises and large companies), ii) economic activity (based on NACE Rev. 2), and iii) development regions. Further information can be obtained at <https://www.bnr.ro/Publications-3194.aspx>

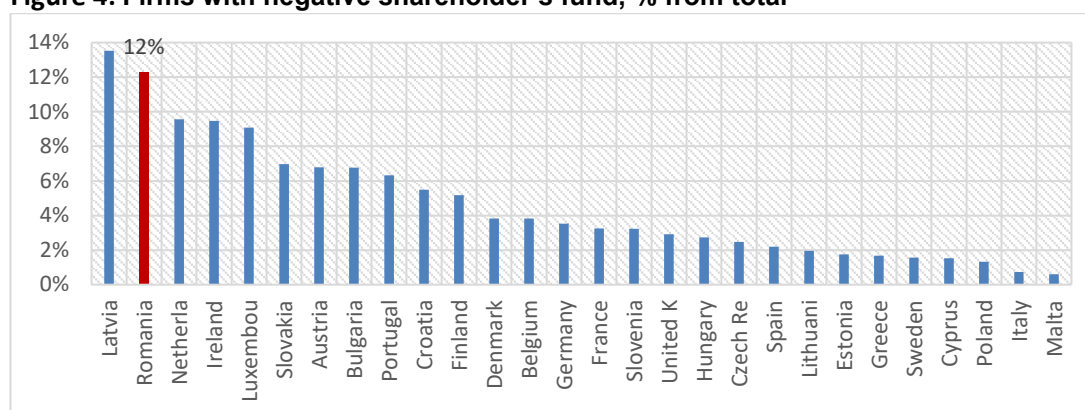
<sup>3</sup> See also [NBR \(2017\)](#) and World Bank (2018). Regulatory minimum of equity: 50% of the subscribed share capital.

<sup>4</sup> Estimates about 20%, according to the Worldbank (2018).



**The high share of firms with negative equity also reflects structural factors.** While the share of firms with negative equity increased after the financial crisis reflects accumulated losses, the persistently high levels also point to structural issues. These include weak payment discipline as well as the application of insolvency procedures. Weak payment discipline, a recurrent feature of the Romanian economy and reflected in high levels of (intercompany) arrears,<sup>5</sup> is both a result of firms' poor financial health and contributes to it. At the same time, prevalence of weak payment discipline makes it less likely that late payment will lead to insolvency procedures being triggered by business partners on grounds of presumed insolvency.<sup>6</sup> In addition, cross-country comparison suggests that insolvency procedures take relatively long and recovery rates are low. According to the World Bank's doing business assessment, recovery rates in Romania are below the regional average for Europe and Central Asia and the insolvency procedure takes about a year longer than the average (3.3 vs 2.3 years).<sup>7</sup> Both factors likely to discourage creditors to trigger procedures in the first place thereby contributing to a high number of companies that are in poor financial health but continue to exist.

**Figure 4: Firms with negative shareholder's fund, % from total**



Note: Total shareholders fund defined as capital plus other shareholders fund. % share of firms from total number of companies in the EIBIS sample of non-financial corporations with more than 5 employees in manufacturing, services, construction & infrastructure sector.

Source: EIB calculation based on ORBIS data (EIBIS sample matched with financial data from ORBIS database, 2008-2017/2018). Calculation refers to year 2016.

**Table 1: summary statistics of enterprises with equity below the regulatory minimum**

	% of all firms, 2017
Equity (without accrued income)	-29%
Provisions and accrued income	26%
External private financial debt	44%
Domestic loans (banks and NBF)	17%
Other debt (Trade credit and shareholder debt)	46%
Percentage of corporates with equity below regulatory minimum:	40%

Note: Regulatory minimum of equity is at 50% of subscribed share capital.

Source: NBR calculation based on the data Ministry of Public Finance (MPF) Romania. All existing 670 thousand companies as of 2017.

<sup>5</sup> See also NBR (2017).

<sup>6</sup> Romanian insolvency law distinguishes between imminent insolvency, i.e. when it is proved that the insolvent debtor will not have sufficient funds available at the due date and presumed insolvency, i.e. when the insolvent debtor has not paid debts towards the creditor for more than 60 days. In that case, insolvency can be requested by the creditor when he has claims of more than EUR 8000. The insolvency procedure can then lead to reorganisation or bankruptcy.

<sup>7</sup> See World Bank Doing Business 2019.

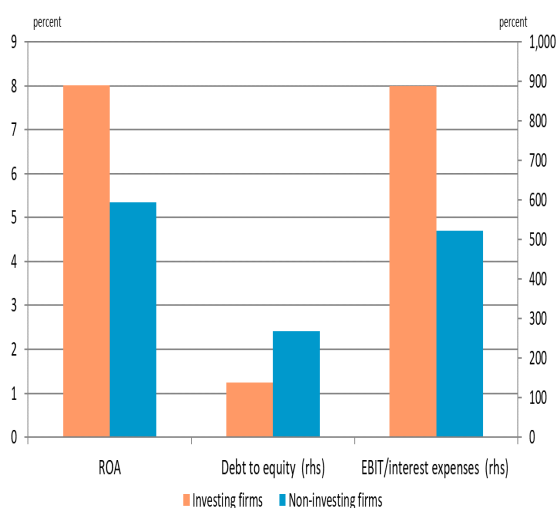
### 3.1 What are the characteristics of investing versus non-investing firms in Romania?

**Investing firms in Romania share several characteristics:**<sup>8</sup> They tend to be in a better economic and financial position. In contrast, non-investing firms have a lower return on assets and a relatively higher leverage ratio of almost twice as large for non-investing firms, and consequently face a higher debt burden.<sup>9</sup> They often have a precarious, sometimes even negative, capital position (Figure 5a).<sup>10</sup>

**Non-investing firms are less likely to fulfil their payment obligations** (Figure 5b). Enterprises that invested prove to have a better capacity to fulfil their obligations to suppliers, state budget or other creditors. While the non-investing firms represent about a three quarters of all Romanian firms, they generate more than 80% of total overdue-payments. The total level of arrears<sup>11</sup> generated by the investing firms was approximately 14.3 billion lei, while non-investing firms recorded a sum of 75.8 billion lei. The self-funding capacity of investing firms is higher than that of non-investing firms, this being one of the reasons which are the ground for taking the decision to invest or not.

**Analysing balance sheet information shows that companies that invest tend to be more profitable and productive.** Return on assets for investing firms was about 8% while non-investing firms record 5.3% on average. Investing firms also detain a better capacity to cover their interest expenses from their earnings (EBIT over interest expenses is approximately 8.9% for investing firms compared to about 5.2% for non-investing). Companies with investments contribute more to the economy, as they are generating a higher proportion of gross value added than firms that did not invest companies which did not invest (57% vs. 43% in 2017), even though the former account for only 23 % of total number of firms.

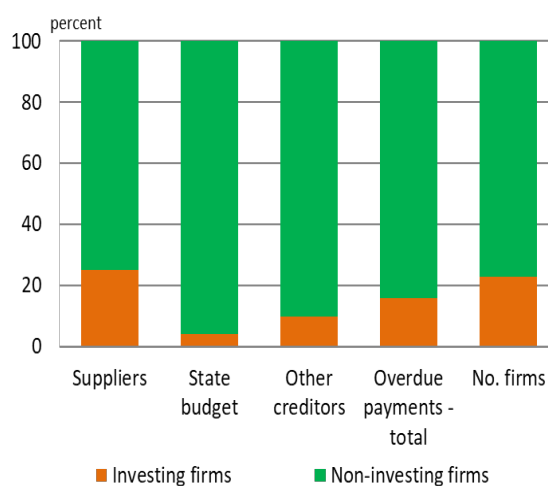
**Figure 5a: Financial soundness indicators, Investing versus non-investing firms**



Source: NBR calculation based on data from Ministry of Public Finance (MPF).

Note: All existing firms. 50 percentile. Investing firms are those with minimum of 3% net growth of fixed assets.

**Figure 5b: Structure of overdue payments, investing versus non-investing firms**



Source: NBR calculation based on data from Ministry of Public Finance (MPF).

Note: All existing firms. Investing firms are those with minimum of 3% net growth of fixed assets.

<sup>8</sup> A firm is considered as investing if it increases its fixed assets by more than 3% yoy, i.e. investment goes beyond replacement activities.

<sup>9</sup> Leverage ratio measured by debt to equity ratio.

<sup>10</sup> The average own capital for non-investing firms is approximately 20% of the level recorded by investing firms.

<sup>11</sup> Arrears represent payments that are overdue for more than 30 days.

**Further analysis shows that several firm characteristics and financial variables are associated with a lower probability of firms to invest.**<sup>12</sup> (Table 2) We examine a sample of all Romanian non-financial companies, based on data collected by the Ministry of Finance covering the period from 2009-2017. This group also includes micro firms.<sup>13</sup> We use a panel logit model to assess the impact of firm characteristics and key financial variables on firms' probability to invest.<sup>14</sup>

**Firm-specific characteristics pose barriers in getting (additional) financing and impact investment capacity both directly and indirectly.** In Romania, being a corporation is positively related to the ability of a company to invest, as a large firm has a better access to external funds due to overall financial soundness and better governance.<sup>15</sup> Companies that operate in the industry sector (manufacturing and mining industry) have a higher probability to invest, which could be explained by the large asset base of this type of companies and the need to upgrade their technology and equipment.

**Table 2: Logit model on firm characteristics impact on investment, marginal effects at means (dy/dx).**

Variables	Investment (dummy)
ROE	0.042***
Sales/Total assets	0.006***
Debt/Equity	-0.002***
Cash/Total assets	-0.117***
Value added/Number of employees	0.066***
Bank credit/Debt	0.264***
Dividend/Equity	-0.031***
Dummy_Large_Corporate	0.131***
Dummy_Industry	0.046***
Lags	1
Area under ROC curve	62.0%
Observations	1,293,290

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1 Source: NBR calculation based on data from Ministry of Public Finance (MPF) Romania.  
Note: Investment dummy is defined based on a threshold of minimum of 3% net growth of fixed assets.

**Firms' financial soundness and their ability to access bank finance increase the probability that the firm will be able to invest.** Balance sheet strength matters and companies with weak balance sheets invest less. Our findings suggest that companies' profitability is an important precondition in determining its investment propensity. Firms with more efficient use of capital, as measured by return on equity ratio (ROE), and higher productivity (value added per employees), are more likely to invest.

<sup>12</sup> The identification of investing firms is based on gross investment rates, as it covers the entire capital capacity of the firm. Gross investment ratios were computed as total assets annual variation, with depreciation and amortization expenses being added back, divided by total assets. We set a materiality threshold of 3% of total assets for the indicator, when selecting the investing firms. See also NBR (2019) for discussion.

<sup>13</sup> Micro-firms are defined as companies with fewer than 10 employees and with a total annual balance sheet that does not exceed EUR 2 mn.

<sup>14</sup> The initial database consists of the financial statements provided by companies to the Ministry of Finance, and covers around 652 thousand companies (end-2017). The sample used in the regression analysis is smaller, due to data cleaning and missing data. The explanatory variables were winsorized (at 5%), in order to minimize the influence of outliers. The remaining number of companies represent more than a half of the initial number, consisting of 2,230,439 firm-level observations over the period considered. In order to select the most relevant financial ratios from the 150 initial set of indicators, we ran a *bootstrapping* exercise based on 100 simulations.

<sup>15</sup> However, some previous analyses found that small firms have a higher investment rate (Gala and Julio 2016).

While profitability reflects the viability and success of firm's strategy and investment projects, it offers also an important source of financing.

**Companies with larger cash holdings have a lower propensity to invest.** Literature indicates that agency problems could be a cause for the firms to retain cash (Chen, Lu, 2016). However, some papers show evidence that availability of cash assets has a positive and significant impact on investment level (Kadapakkam et al, 1998). Other studies suggest that firms decide to hold cash instead of investing due to a lack of investment opportunities or due to uncertainty (Koo, Maeng, 2018). This is consistent with findings based on the NBR access to finance survey, which suggests that one of the most pressing problems that Romanian firms encountered over the past years in their activity relates to unpredictability of fiscal policies.<sup>16</sup>

**Furthermore, results show that dividend policy and the probability of capital expenditure are linked.** The increased use of dividend distribution is negatively related to the probability of a capital expenditure. Dividend policy can affect investment decisions in the sense that the more the company chooses to distribute its earnings as dividends to shareholders, the less funds it will have remaining to allocate to investment in order to develop.

**Companies with higher debt tend to invest less,** although the magnitude of the impact is relatively limited. When focusing only on companies with positive equity, the results show that debt has a direct relation with the investment probability. These findings are consistent with empirical evidences on debt overhang, meaning that highly indebted firms forego profitable investment opportunities due to lack of available resources. Other analyses similarly suggest that the link between debt and investment is non-linear, being significant for a level of indebtedness that exceeds a certain threshold (Gebrauer, 2017). Moreover, firms with high level of debt are also associated with a poor access to credit or other types of external financing that can enable investments.

**The use of bank loans has strong impact on corporate investments. Access to finance** from domestic banks, measured as credit to debt, is positively correlated with investment and has the strongest impact on firms' decision and ability to invest. Bank loans are the most common source of external financing for investment. Companies with strong balance sheet positions likely were in a better position to tap credit at an earlier stage (as the balance sheet figures reflect the stock of loans and not the current flow), and they have a higher probability to invest (defined as significant growth in their fixed assets).<sup>17</sup>

### 3.2 Finance constrained firms in Romania from a regional perspective:

**About 12% of Romanian firms can be considered finance constrained.**<sup>18</sup> Romania has been among the countries with an above average share of finance constrained firms over the last three years (9% on average compared to 6% for the EU) according to EIBIS. In 2018, the share of European firms that are external finance constrained declined slightly from 7% to 5% on average but funding conditions remain diverse across the EU. The lowest share of finance constrained firms can be found in Austria (2%) while several periphery and cohesion countries, among which is Romania, show a higher share of

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<sup>16</sup> NBR access to finance survey, several years.

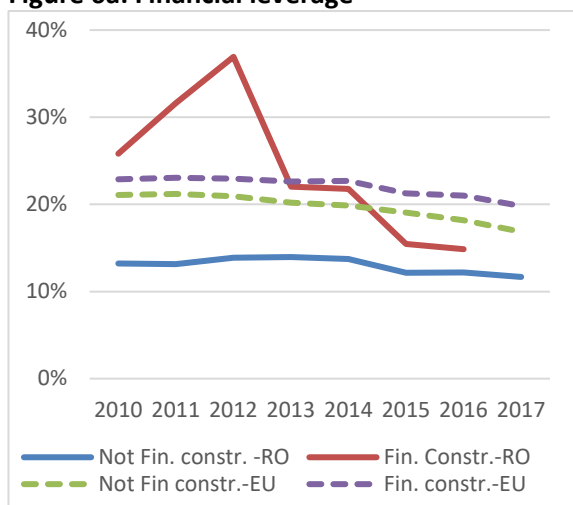
<sup>17</sup> This should hold despite relatively lax lending standards for non-financial corporations over the last years.

<sup>18</sup> Financially constrained firms are those that got their financing application rejected, received less than what it asked for, declined an offer because it felt it was too expensive and/ or did not even apply for external funding due to a fear of being rejected.

constrained firms. Romania had the third-highest share of finance constrained firms in the EU in 2018, after Latvia and Greece with more than 13%.

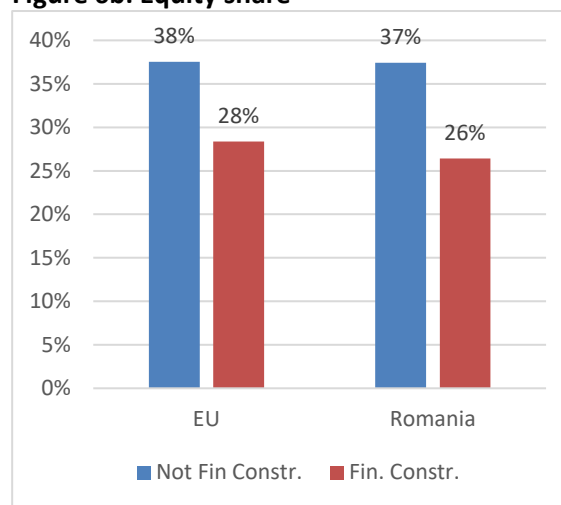
**In EU comparison, Romanian financially constrained companies stand out in terms of having higher leverage and a lower equity base** (Figures 6a, 6b). The deleveraging trend is visible in both EU and Romania. However, in EU developments are less pronounced and affect both financially constrained and unconstrained firms, whereas in Romania financially constrained firms have strongly deleveraged. If financial leverage is above a threshold or equity below an acceptable minimum, debt financing might be difficult to obtain. If traditional loans are not accessible, firms may focus on alternative source of external financing, such as leasing and factoring, which are more suitable mainly for financing working capital and equipment investments. For bigger investment projects, equity financing remains the only alternative for already leveraged companies but with promising and profitable investment projects.

**Figure 6a: Financial leverage**



EIB calculations based on EIBIS (2016-2018) and Bureau Van Dijk's Orbis database (2010-2017).  
 Note: Financial leverage is calculated as loans and long-term debt over total assets.

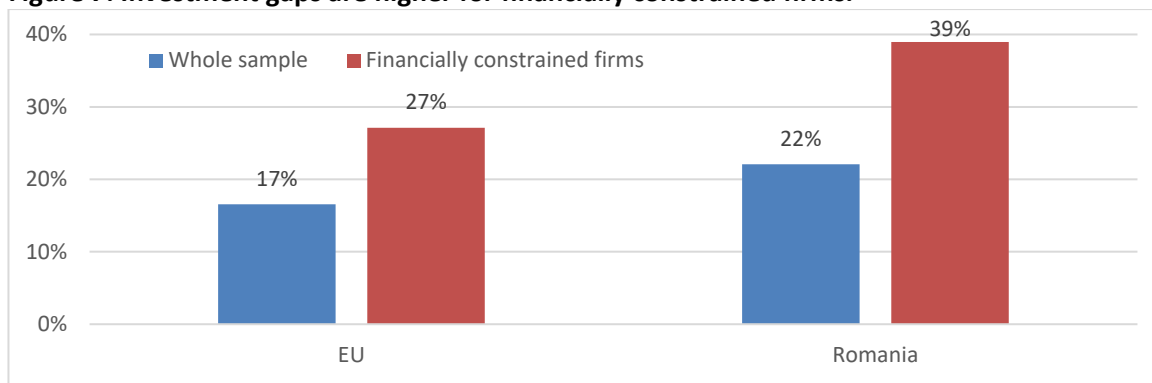
**Figure 6b: Equity share**



EIB calculations based on EIBIS (2016-2018) and Bureau Van Dijk's Orbis database (2015-2017).  
 Note: Equity share is calculated as capital plus other shareholders' fund over total assets.

**Financially constrained firms more often report investment gaps** (Figure 7). Bank financing plays an important role in firms' investment profile. In turn, financially constrained firms more often report having underinvested in Romania and the EU. While Romanian firms generally report investment gaps more often, the financially constrained companies are particularly likely to report investment backlogs.

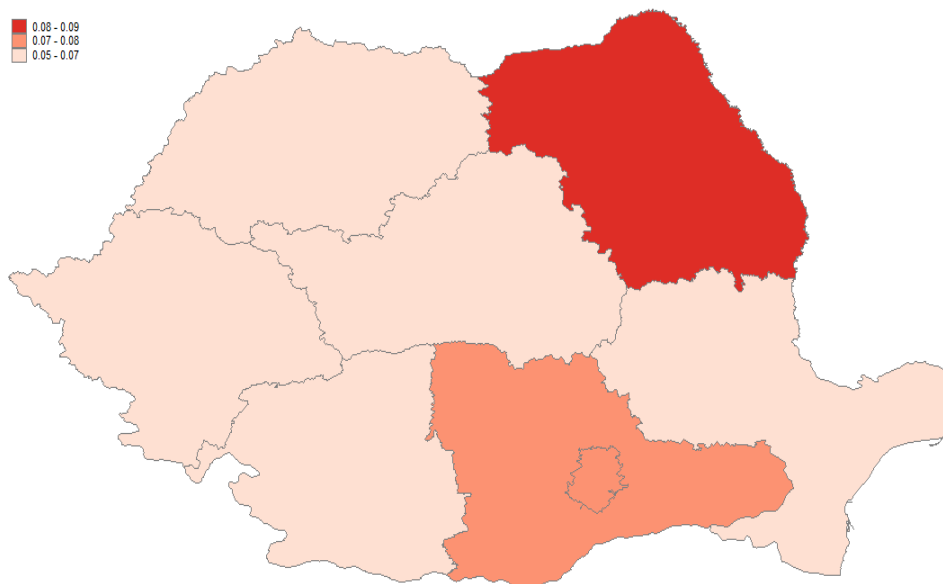
**Figure 7: Investment gaps are higher for financially constrained firms.**



Note: Q. Looking back at your investment over the last 3 years, was it too much, too little, or about the right amount? Investment gap=share of responses in percent of those answering "too little".  
 Source: EIB calculations based on EIBIS (2016-2018)

**From a regional perspective, financially constrained firms are concentrated in the North-East and the Bucharest-Ilfov region (Figure 8).** Distant location and limited financial access, less favourable economic environment and probably a lower share of companies fulfilling the risk assessment requirements to qualify for a loan can explain the high share of firms with financing constraints in the North East and South Muntenia regions. However, a completely different narrative should explain the results for Bucharest-Ilfov region: one factor might be the relatively high concentration of high tech knowledge –intensive services firms.

**Figure 8: Finance constrained firms by region**



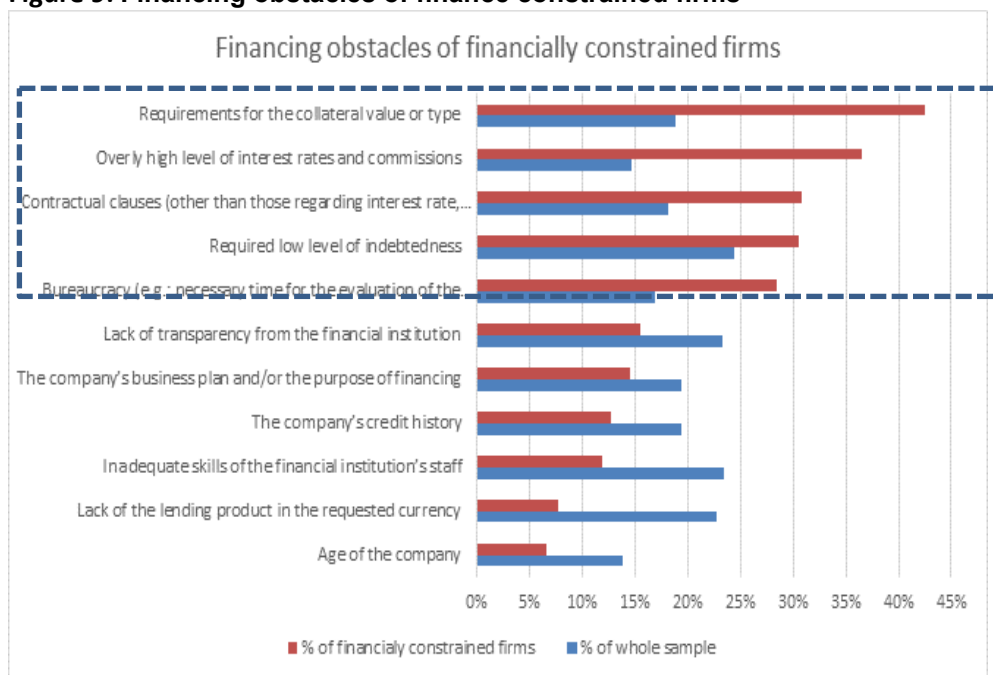
Source: NBR calculation based on NBR Survey on the access to finance of non-financial corporations in Romania June 2018.

**The higher share of financially constrained firms in the capital region may result from a combination of more firms seeking external finance and a higher concentration of companies with different financing needs.** The capital region is one of the most developed, most competitive regions of the country and the higher share of firms that are external finance constrained might reflect higher demand for external financing.<sup>19</sup> This is particularly true for high growth knowledge-intensive service companies in Romania, for which financing poses a particular obstacle.

**Collateral requirements pose the biggest problem for Romanian firms.** Both data from EIBIS and NBR’s survey show that collateral requirements pose an issue for Romanian firms when it comes to financing obstacles. They are the most frequent source of dissatisfaction with external finance (Figure 9). Collateral may be particularly an issue for very small firms or services companies.

<sup>19</sup> For a discussion of innovative and high growth companies facing stronger financing constraints see for instance Coluzzi et al. (2012), Ferrando et. al (2019).

**Figure 9: Financing obstacles of finance constrained firms**



Source: NBR calculation based on NBR Survey on the access to finance of non-financial corporations in Romania June 2018.

### 3.3 Financing constraints of some financially sound companies

**Innovative, high-tech companies with strong growth are more likely to face difficulties in obtaining additional external financing.** This is particularly relevant as these firms may have viable business (prospects) and may contribute significantly to economic dynamism and Romania's economic catch-up to more developed Europe. Our categorization of firms in terms of their innovativeness and growth performance is explained in Box 1.

#### Box 1: Innovativeness, technological intensity and high growth enterprises

While linked to some extent, a firms' innovativeness, technological intensity and firms' growth performance are different aspects and one may not necessarily imply the other. We use three approaches to assess the three different dimensions.

The innovation profile of a company is determined using the EIBIS survey questions on firms' investment in research and development and introducing new products, together providing indication of innovation activity. We identify two different profiles: **R&D active** firms report substantial R&D (i.e. at least 0.1% of firm turnover) and **R&D inactive firms**. Furthermore, according to the innovation activity (introduce new products, processes or service), we distinguish **R&D active firms** according to their innovation activity (introduce new products, processes or service). **Leading innovators** introduce new product for the country or globally, **incremental innovators** introduce products new to the company, and **developers** do not introduce any new products (yet) but invest substantially in R&D.

Among R&D inactive firms two different type can be distinguished: **basic firms** are not introducing any new products and **adopting firms**, although they do not invest in R&D, still introduce new products or processes developed by other firms.



**Figure A1. Innovation profiles in the EU and Romania**

Investment in R&D	R&D active	<b>Developers</b> EU: 7.2% RO: 4.5%	<b>Incremental innovators</b> EU: 12.5% RO: 6.0%	<b>Leading innovators</b> EU: 7.8% RO: 6.4%
	R&D inactive	<b>Basic</b> EU: 49.0% RO: 57.1%	<b>Adopting</b> EU: 23.5% RO: 26.0%	
		No	New to the company	New to the market or globally new
<b>Developing or introducing new products, processes or services</b>				

Source: EIB calculations based on EIB Investment Survey (EIBIS wave 2018). Number of observation: 8963 EU firms and 311 Romanian firms with data for 2017.

The latest wave of the EIBIS survey (2018) shows a highly skewed innovation profile of businesses in the EU and for Romania: 72% of firms report no (substantial) R&D; 56% did not introduce any innovation while for Romania 83% of companies have no substantial R&D and 62% did not introduce any innovation.

As an alternative or indirect way of determining the innovativeness of the company, we use the information on the level of technological intensity of the sector to which the company belongs. Eurostat aggregates the **manufacturing and service sectors according to the technological intensity** based on 2 digit NACE code as follows: **High-technology manufacturing sectors** include manufacture of pharmaceutical and computer, electronic and optical products (NACE codes 21 and 26); **medium-high-technology manufacturing sectors** include manufacture of chemicals; electrical equipment; machinery and equipment n.e.c., motor vehicles, and other transport equipment (NACE codes 20 and 27-30).

**Medium-low-technology manufacturing sectors** include sectors like manufacture of coke and refined petroleum products (NACE code 19), manufacture of rubber and plastic products, manufacture of other non-metallic mineral products, manufacture of basic metals, manufacture of fabricated metals (22-25) and repair and installation of machinery and equipment (NACE 33). **Low-technology manufacturing sectors** include manufacture of food products, beverages, tobacco products, textile, wearing apparel, leather and related products, wood and of products of wood, paper and paper products, printing and reproduction of recorded media (NACE code 1 to 18) and manufacture of furniture and other manufacturing (NACE 31 to 32).

**High-tech knowledge-intensive services** include television programme production, broadcasting, programming, telecommunications, computer programming, information service, scientific research and development activities (NACE codes 59 to 63 and 72). **Knowledge-intensive market services** include water and air transport, legal and accounting, activities of head offices; management consultancy, advertising and market research, architectural and engineering activities, other professional, scientific and technical activities, employment activities and security and investigation activities (NACE codes 50, 51, 69, 70, 71, 73, 74, 78, 80). **Other knowledge-intensive services** comprise publishing, veterinary activities, public administration, education, health, residential care, social work, arts and entertainment, libraries, gambling, sports activities (NACE codes 58, 75, 84-88, 90-93). **Less knowledge intensive services** include trade (NACE 45 to 47), transportation (NACE 49, 52 to 53), accommodation and food service activities (NACE 55 to 56), travel agency (NACE 79), office administrative, office support and other business support activities (NACE 81 to 82) and other services (NACE 94 to 99). The sectors financial services and real estate activities are not included.

**Table A1. Firm distribution by technological intensity, % of firms**

	EU	Romania
<b>High-tech and medium-high tech manufacturing</b>	17%	12%
<b>Medium-low tech and low- tech manufacturing</b>	29%	37%
<b>High tech and knowledge intensive and other knowledge intensive services</b>	8%	3%
<b>Low knowledge intensive services</b>	47%	48%
<b>Total</b>	100%	100%

Source: EIB calculations based on EIB Investment Survey (EIBIS wave 2016-2018) and BvD ORBIS 2007-2017. Note: no of observation: 149.325 firm-years in EU and 6.933 firm-years in Romania.



Examining the R&D intensity of the sectors in EIBIS for the available three years EIBIS (2016-2018), confirms that the high tech manufacturing and the high-tech and knowledge intensive service sectors have the highest share of firms that invest in R&D. Interestingly, the Romanian high-tech and knowledge intensive service sector is not just relatively lower in share as of total number of firms but their R&D intensity is also lagging behind the EU average.

**Table A2. Firms by technological intensity and R&D activity**

	% share of R&D active		% share of R&D inactive	
	EU	Romania	EU	Romania
<b>High and medium-high tech manufacturing</b>	58%	57%	42%	43%
<b>Medium-low and low- tech manufacturing</b>	38%	10%	62%	90%
<b>High tech and knowledge intensive and other knowledge intensive services</b>	42%	21%	58%	79%
<b>Low knowledge intensive services</b>	13%	15%	87%	85%
<b>Total</b>	29%	19%	71%	81%

Source: EIB calculations based on EIB Investment Survey (EIBIS wave 2016-2018) and BvD ORBIS 2015-2017. Note: no of observation: 19.195 firm-years in EU and 605 firm-years in Romania.

**High growth enterprises (HGEs)** are defined based on Ferrando et al (2019), referring to those enterprises with turnover growth above 10% per year over a period of three consecutive years (minimum) and having at least 10 employees at the beginning of the growth period. According to this classification, a company can change its status over time and periods of high growth might alter with periods of slower growth or even decline. Consequently, the firm is only considered as HGEs during the period of high growth. HGEs are of interest to both researchers and policymakers because of their important role in contributing to economic growth and job creation (Birch (1987)). According to Ferrando et al (2019), the contribution of HGEs to job creation and turnover growth in EU is high and proved to be more resilient during the economic downturns. Of the total new job creation between 2003 and 2016, 44% is taking place among HGEs and these companies generate one third (29%) of the turnover growth although they represent just around 8% of the firms. Looking at the HGEs across industries, the highest share is registered in high technology and knowledge intensive services. This share is even higher in Romania. While this sector is less represented in Romania and a lower share of them invest in R&D, the highest share of them are HGEs.

**Table A3. Distribution of high growth enterprises by technological intensity**

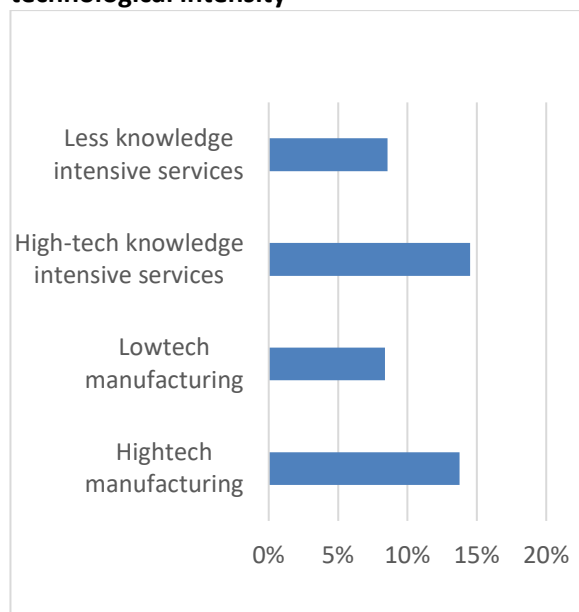
	% share of HGEs	
	EU	Romania
High-tech and medium-high tech manufacturing	5%	7%
Medium-low tech and low- tech manufacturing	4%	12%
High tech and knowledge intensive and other knowledge intensive services	9%	25%
Low knowledge intensive services	5%	9%
<b>Total</b>	6%	8%

Source: EIB calculations based on EIB Investment Survey (EIBIS wave 2016-2018) and BvD ORBIS 2007-2017. Note: no of observation: 119.806 firm-years in EU and 6.358 firm-years in Romania.

**Companies operating in high tech knowledge-intensive services and manufacturing are more prone to being finance constrained compared to firms operating in less knowledge intensive / low-tech areas.** Comparing firms within the same broad sectoral classification but at different levels of technological sophistication shows that both firms in high tech manufacturing and high tech knowledge intensive services have a higher share of finance constrained firms (figure 10a and 10b). This can be due to firms in high-tech and more knowledge intensive sectors seeking more finance and / or the financial system being less adapted to their needs. This might be particularly the case for firms in the area of knowledge intensive services, where for instance issues with collateral may be more

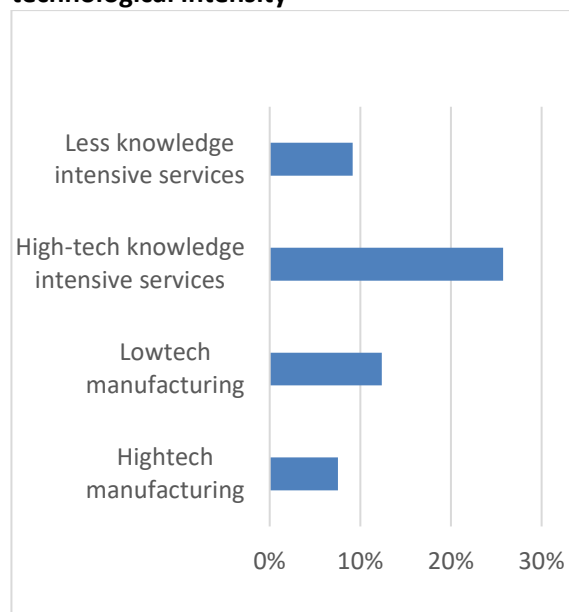
likely due to innovative business models than in high tech manufacturing. Firms in high-tech and knowledge intensive services are more often growing strongly, which might bring a higher risk profile from bank financing perspective (see Ferrando et. al 2019, Delmar et al., 2013).

**Figure 10a: Financially constrained firms by technological intensity**



Source: EIB calculations based on EIBIS (2016-2018) and Bureau Van Dijk's Orbis database (2007-2017).

**Figure 10b: High growth enterprises by technological intensity**



Source: EIB calculations based on EIBIS (2016-2018) and Bureau Van Dijk's Orbis database (2007-2017).

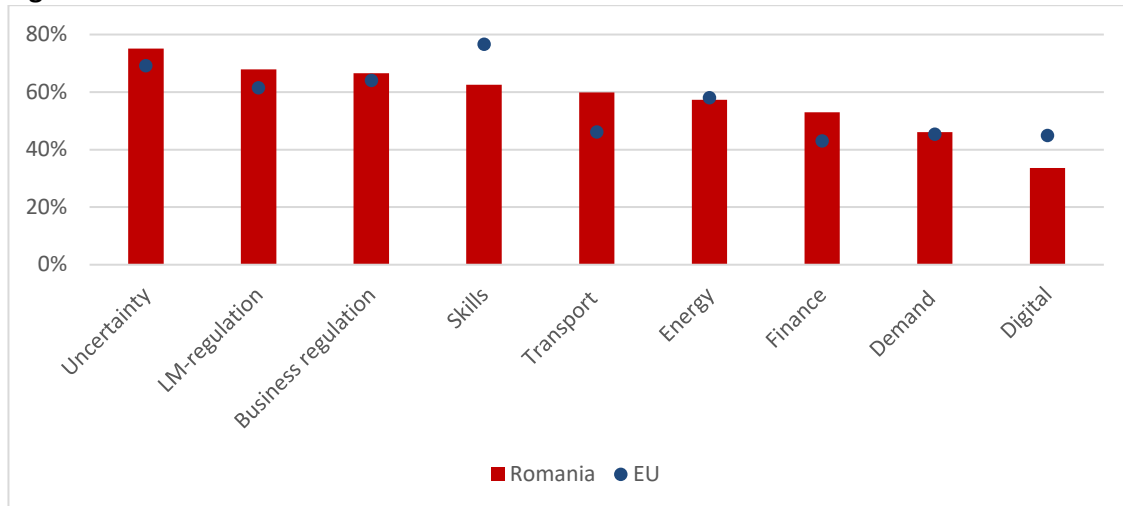
### 3.4 Investment barriers and their impact on investment gaps

**Beyond finance constraints, a number of obstacles in the operating environment can negatively affect corporate investment activity** (Figure 11). Examining firms' views on investment obstacles points to uncertainty, business and labour market regulation as the key issues for firms in Romania, with 75% reporting uncertainty and about two thirds naming regulation as an investment obstacle.<sup>20</sup>

**Concerns about uncertainty and regulation are likely connected**, in the sense that uncertainty also relates to domestic uncertainty about regulatory developments. Here, it is not necessarily the level of regulatory burden but often the frequency and predictability of regulatory changes that can pose problems for firms' long-term planning and hence hinder investment. In comparison with EU firms, uncertainty as well as regulation are more of a concern to Romanian firms. In Romania, all three obstacles have become more of a concern for firms compared to 2016.

<sup>20</sup> 68% and 66% according to EIBIS 2018.

**Figure 11: Investment barriers in Romania and the EU**



Source EIB calculations based on EIBIS (2016-2018).

Note: Share of firms responding that it is a major or minor obstacle.

Q. Thinking about your investment activities, to what extent is each of the following an obstacle? Is a major obstacle, a minor obstacle or not an obstacle at all?

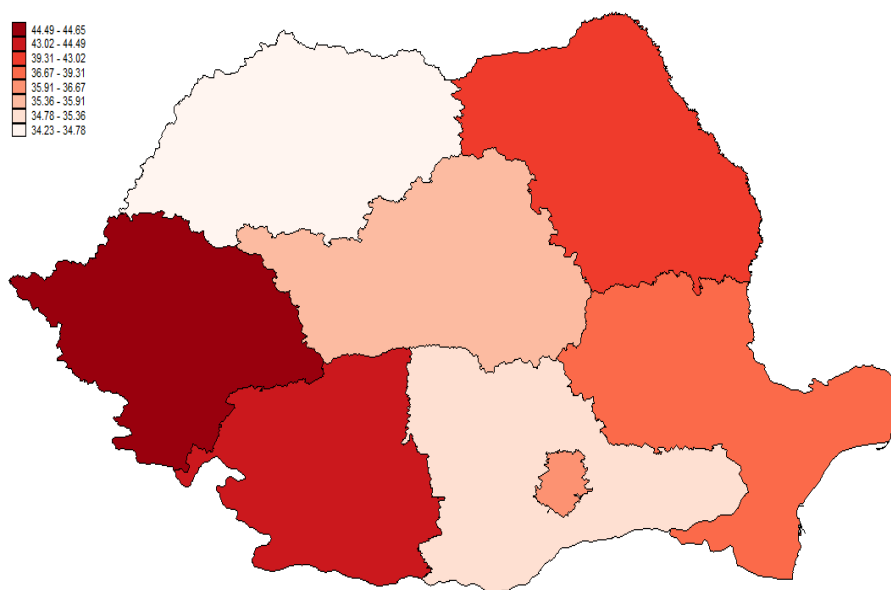
**Skills and transport add to structural barriers.** The share of Romanian corporates that regard access to adequate transport infrastructure as a problem remains well above the EU average (60% in Romania compared to 46% across the EU). This is in line with lower de facto quality of the transport infrastructure in European comparison,<sup>21</sup> suggesting persistent needs to upgrade capacity and quality of infrastructure. Although fewer Romanian firms report the availability of skills as a problem compared to EU peers, finding and keeping qualified staff is still among the top five concerns. Notably, a high share of small and medium sized corporates considers the issue to be major (49% compared to 31% for large firms).

**Shortages of skilled staff are most pronounced in the South West and West of Romania** (Figure 12). Examining the regional distribution of skill shortages based on NBR data shows that firms in South West and Western Romania particularly regard the availability of skilled staff as a problem.<sup>22</sup> This might reflect an (increasing) need for skilled staff in the area for instance by the automotive industry in South West Oltenia or IT firms in Timisoara, which has been emerging as one of the country's digital hubs coinciding with connectivity issues and a higher attractiveness of other regions (neighbouring Hungary and the capital). The Bucharest Ilfov region, where many of the innovative firms are located ranks in the middle. This might be the case because greater firm demand for particular skills can also be more easily met on balance given pull effects of the capital (domestic migration) and proximity of higher education institutions.

<sup>21</sup> Romania scores very low in in the European transport scoreboard assessment on efficiency of trains, seaports and particular on the quality of roads. See European Commission transport scoreboard.

<sup>22</sup> Based on responses to the following question: What are the most pressing problems your company faced in the past 6 months? Share of firms naming the availability of skilled staff as (H1 2018) as a great/high problem.

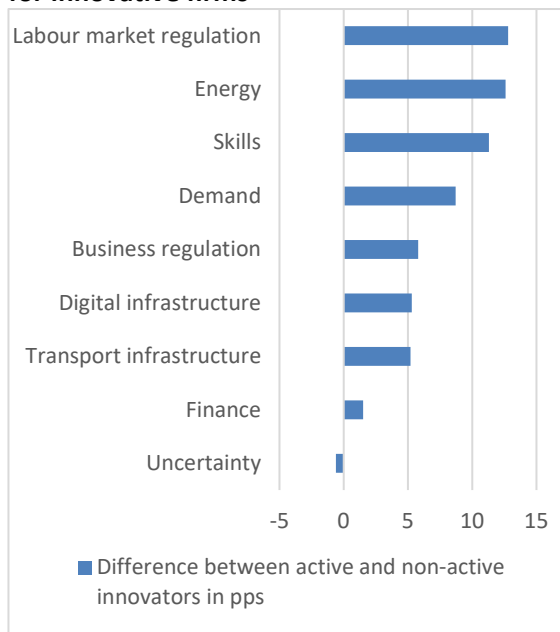
**Figure 12: Skill-constrained firms by region**



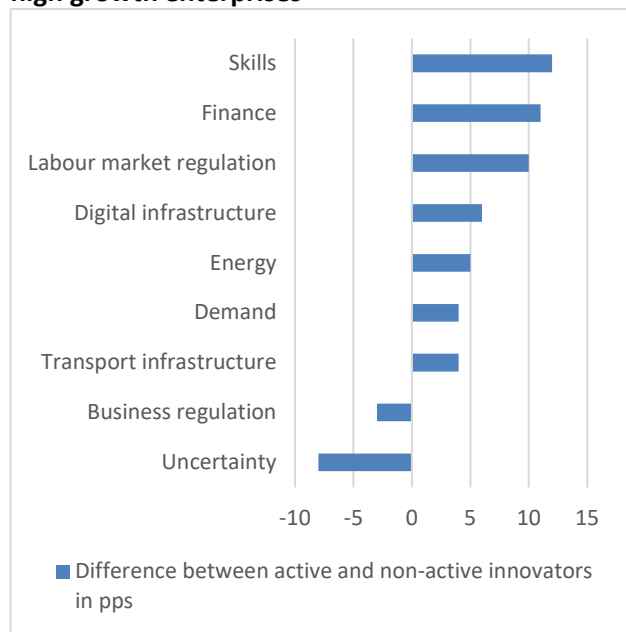
Share of firms that report the availability of skilled staff as a great/high problem for their company (for the past 6 months).  
Source: NBR calculation based on NBR Survey on the access to finance of non-financial corporations in Romania June 2018.

**Active innovators and high growth companies face barriers more often.** Examining what type of firms face more obstacles, we find that innovative firms report more impediments. This pattern can be observed across the EU and in Romania. Notably, active innovators in Romania find labour market regulation, energy and the availability of staff with the right skills to be more of a problem than non-innovative peers. The gaps between active and non-active innovators also point to different needs and hence perceptions of the investment environment and obstacles (Figure 13a). Innovative firms may grow more dynamically, making energy costs more of a problem. They may seek (more) personnel and their demand for staff may qualitatively differ, for instance requiring higher-skill and specific technical staff. Hence, innovative companies may be more prone to experience shortages against the backdrop of a tightening labour market and high-skill emigration in recent years and experience the availability of skills and labour market regulation more of a problem. Along these lines, we find that high growth companies similarly report more obstacles with a particular emphasis on finance (discussed above), skills and labour market regulations (Figure 13b). Further analysis corroborates that the availability of staff with the right skills is a particular barrier for dynamically growing companies (Ferrando et. al.2019).

**Figure 13a: Difference in investment barriers for innovative firms**



**Figure 13b: Difference in investment barriers for high growth enterprises**



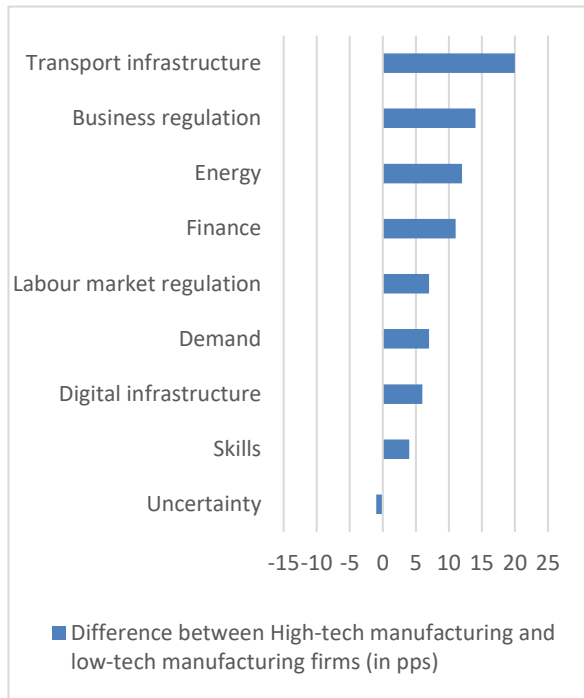
Source EIB calculations based on EIBIS (2016-2018).

Note: Share of firms responding that it is a major or minor obstacle.

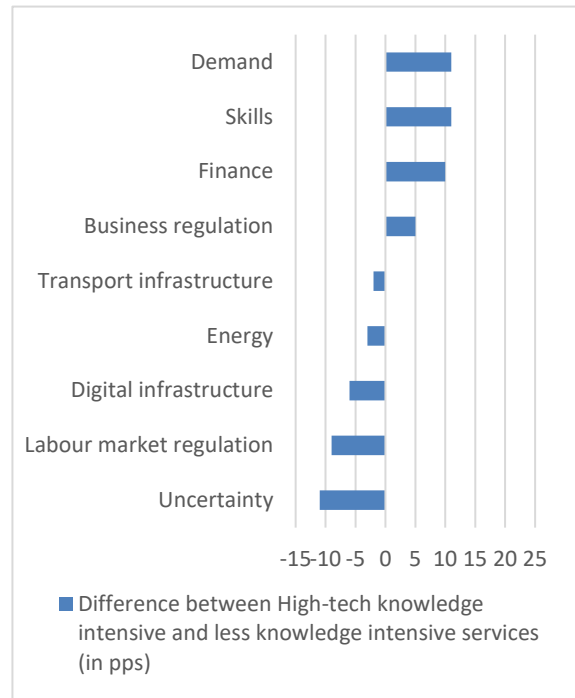
Q. Thinking about your investment activities, to what extent is each of the following an obstacle? Is a major obstacle, a minor obstacle or not an obstacle at all?

**Companies in high-tech and more knowledge-intensive sectors report more barriers.** Comparing firms by broad sector (manufacturing and services) but distinguishing by technological intensity suggests a similar pattern. Particularly firms in high tech-manufacturing report higher levels of impediments almost across the board compared to low-tech sectoral peers (Figure 14a and 14b). For services, the picture is more mixed. However, high tech services firms tend to emerge and cluster in specific locations – notably cities where for instance digital infrastructure is better. The higher share of high technology intensive services firms reporting skills as a problem rather than labour market regulation compared to peers points to a stronger qualitative component when seeking personnel. Notably, uncertainty appears to be less of an issue for high tech and knowledge intensive businesses, high growth enterprises and innovative firms. This might suggest that companies in Romania refer less to technological uncertainty but rather regulatory and policy uncertainty affecting businesses across the board. While the availability of finance is not among the most frequently reported obstacles in Romania, it is more of a concern for active innovators, companies in innovative sectors and fast growing firms.

**Figure 14a: Differences in investment barriers by technological intensity of manufacturing sectors**



**Figure 1b: Differences in investment barriers by technological intensity of service sectors**



Source EIB calculations based on EIBIS (2016-2018).

Note: Share of firms responding that it is a major or minor obstacle.

Q. Thinking about your investment activities, to what extent is each of the following an obstacle? Is a major obstacle, a minor obstacle or not an obstacle at all?

**Investment barriers are associated with larger reported investment gaps.** The share of companies with an investment gap, defined as perceived lower level of actual versus desired investment level, in Romania is higher compared to the EU (23% vs. 19%, 2016-2018). Previously we showed that among firms facing finance constraints the share of firms with investment gap doubles. In the next step, we estimate the impact of each type of obstacle on the investment gap, using the treatment effect estimation techniques.<sup>23</sup> The treated group are the enterprises, which face the given obstacle as a

1. <sup>23</sup> A simple predictive comparison might not be enough to estimate the causal impact of obstacles. Predictive inference relates to comparison between units in a simple regression context. Causal inference addresses comparison of different treatments if applied to the same unit. A positive relationship found on the basis of predictive comparison might be driven by confounding covariates, i.e. omitted predictors that can affect both obstacles to investment and investment gaps. For example, a company with very high cash flow is able to invest more in training; and consequently might face lower skills barrier and show lower investment gaps. Hence, the positive relationship using simple predictive comparison might show a false causality. To overcome this bias, the causal inference is measured with the help of the treatment effect estimation technique. Formally, the causal effect of a treatment  $T$  (facing the given barrier) on an outcome  $y$  (investment gap) for an observational unit  $i$  can be defined by comparisons between the outcomes that would have occurred under each of the different treatment possibilities. The binary treatment  $T$  is taking on the value 0 (control) or 1 (treatment). For a company assigned to the treatment condition of facing a particular barrier (that is,  $T_i = 1$ ),  $y_i^1$  is observed and  $y_i^0$  is the unobserved counterfactual outcome—it represents what would have happened to the same company if assigned to control, or in our case, not facing the given barrier (that is,  $T_i = 0$ ). The individual treatment effect for unit  $i$  is defined as:

long-term barrier while the outcome variable is the investment gap. Among the treatment effect estimation techniques, regression adjustment is used to estimate the investment gap as a causal inference of a particular obstacle.<sup>24</sup> Results are summarized in table 3.

**Firms with obstacles on financing and of skills have higher investment gaps, even after we control for profitability, leverage, liquidity, size and industry characteristics.** Although fewer firms report difficulties with access to finance as a problem compared to other impediments to investment, access to finance can be associated with significantly higher investment gaps. This is the case for both Romania and the EU: The probability of reporting an investment gap is increasing by 10 percentage points in the EU and by 15 percentage points in Romania for firms facing financing difficulties. Among Romanian firms with difficulties in terms of limited availability of staff, the probability of reporting an investment gap is by about 7 percentage points higher than for those that do not face problems in this respect. Other significant obstacles associated with investment gaps are uncertainty and demand for products, with more than 5 percentage points higher investment gaps in Romania and 3 percentage points in EU. Interestingly, although the availability of the adequate infrastructure is faced as a long-term barrier for Romanian enterprises, those reporting this barrier do not appear to have significantly higher investment gaps.<sup>25</sup>

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$TE_i = y_i^1 - y_i^0$  The potential outcome mean of counterfactual (no barriers) is:

$$POmean = \frac{1}{N} \sum_{i=1}^N y_i^0$$

<sup>24</sup> A list of variables are used in the outcome model: profitability as cash flow to total assets, liquidity measured as cash holdings to total assets, leverage as debt to total assets, size (as a dummy for micro, small, medium and large), age (as a dummy for age categories of less than 2 years, 2-5 years, 5-10 years, 10-20 years and above 20 years) and industry (as a dummy for the four big sectors: manufacturing, service, infrastructure and construction).

<sup>25</sup> As a robustness check, we re-estimate the treatment effect with an alternative methodology, the propensity score matching. For each unit in the treated group we find one or more units in the untreated group with the same or similar characteristics (in terms of profitability, liquidity, leverage, size, age and industry). We estimate the missing counterfactual potential outcome using the observed outcome of the matched observations. Estimation results confirm the findings presented in Table 3.

**Table 3. Treatment effect of obstacles on investment gap using Regression adjustment.**

		EU		RO	
		Coef: Inv gap	Robust Std. Err.	Coef: Inv gap	Robust Std. Err.
Treatment: obstacle=1 versus obstacle=0					
1) Obstacle: demand for products or services	ATET	0.032***	(0.005)	0.049**	(0.024)
	POmean	0.174***	(0.004)	0.205***	(0.017)
2) Obstacle: availability of staff with the right skills	ATET	0.039***	(0.006)	0.070***	(0.024)
	POmean	0.158***	(0.005)	0.182***	(0.019)
3) Obstacle: energy costs	ATET	0.016***	(0.005)	0.045*	(0.024)
	POmean	0.181***	(0.004)	0.204***	(0.017)
4) Obstacle: access to digital infrastructure	ATET	0.002	(0.006)	0.013	(0.026)
	POmean	0.187***	(0.003)	0.226***	(0.015)
5) Obstacle: labour market regulations	ATET	0.025***	(0.005)	0.032	(0.025)
	POmean	0.173***	(0.004)	0.212***	(0.020)
6) Obstacle: business regulations (e.g. licences, permits, bankruptcy) and taxation	ATET	0.026***	(0.005)	0.058**	(0.024)
	POmean	0.171***	(0.004)	0.192***	(0.019)
7) Obstacle: availability of adequate transport infrastructure	ATET	0.006	(0.005)	0.038	(0.024)
	POmean	0.184	(0.003)	0.241***	(0.019)
8) Obstacle: availability of finance	ATET	0.101***	(0.005)	0.147***	(0.024)
	POmean	0.140***	(0.004)	0.144***	(0.017)
9) Obstacle: uncertainty about the future	ATET	0.043***	(0.006)	0.059**	(0.028)
	POmean	0.156***	(0.005)	0.188***	(0.024)
No of obs.		21,752		1,241	

Source: EIBIS 2016-2018.

Note: Regression adjustment estimators run separate regressions for each treatment level. The potential outcomes are predicted for the whole sample including both treated and untreated units using the two regression lines. The Potential Outcome Mean (POmean) shows the average investment gap if no enterprise would face the given obstacle. ATET is the average treatment effect in the sub-sample of those facing the obstacle, that is, the impact of facing the given obstacle on investment gap compared to the hypothetical situation that the same sample of companies would not face that obstacle. As a robustness check, we present in appendix the results of an alternative estimation using the propensity score matching (PSM) together with the balance density plots.

## 4. Conclusions and policy implications

**Romania's reliance on a growth model based on consumer spending limits the country's ability for sustainable economic catch-up.** The most recent deceleration of growth points out the limits of the consumption-led model. Fostering investment is key to improve productivity and the country's long-term growth prospects.

**Reasons for the relatively low corporate investment activity in Romania are linked to firms' balance sheet situation and to barriers in firms' operating environment. The prevalence of firms being undercapitalized or having low (often negative) equity is one factor contributing to overall low investment rates in Romania.** Investing companies differ from non-investing ones in terms of financial soundness. Low equity is a problem for many firms and results in leverage ratios above the acceptable



threshold for possible bank financing. Consequently, their investment is limited to reinvested profits or attracting new equity.

**There are also firms that are profitable and promising but financially constrained due to their higher risk profile or low collateral as they are growing very fast, are innovating and have a higher share of intangibles.** Underfinancing of firms with strong innovative profiles and growth potential limits the overall investment rate of the country.

**We present evidence that barriers, both internal and external of the firm, are associated with larger reported investment gaps.** Moreover, the lack of availability of finance and staff with the right skills have the strongest impact on investment gaps, followed by uncertainty.

**Strengthening framework conditions and financial sector development can help to support the promising firms.** To support innovative firms and those growing strongly, complementing access to bank credit with additional financing sources via capital markets offers a promising strategy. Currently, capital market development in Romania is at an early stage. Broadening the use of financial instruments with an innovation component could similarly contribute to ease finance constraints for innovative firms in particular. The combination with customer-oriented non-financial measures targeting innovative small firms and start-ups such as business support services and building competences could boost effectiveness.

**Developing and preserving a skilled labour force is essential for improving productivity and long-term inclusive growth.** Productivity developments have only partially mitigated increases in labour costs in recent years and labour productivity in Romania is well below the EU average. High labour force emigration aggravates skill shortages. At the same time, skill shortages and mismatches limit the investment activity of firms, holding back innovative and growing companies in particular. Strengthening investment in education and improving access, quality and labour market relevance of education and training systems are needed to counter skill gaps. The use of active labour market policies could be improved to effectively address evolving skill needs.

**Reducing uncertainty, as a most often cited obstacle in the Romanian business environment, remains key to tackle investment bottlenecks.** Uncertainty, labour and skill shortages dampen firms' investment appetite and risk to undermine Romania's competitiveness. Unpredictability of policymaking and regulations hampers businesses' investment appetite through higher information costs and uncertainty on returns. It also limits the financial sector's capacity to finance the economy and is not conducive to capital market development. Moreover, it leaves the economy more vulnerable to changes in global investor sentiment. As a policy option with low fiscal costs, increasing predictability is thus essential.

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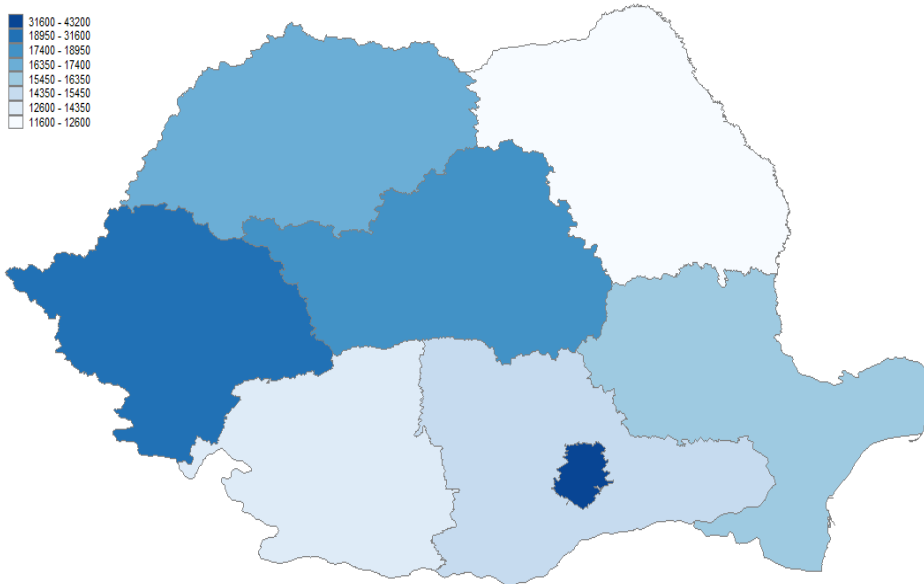
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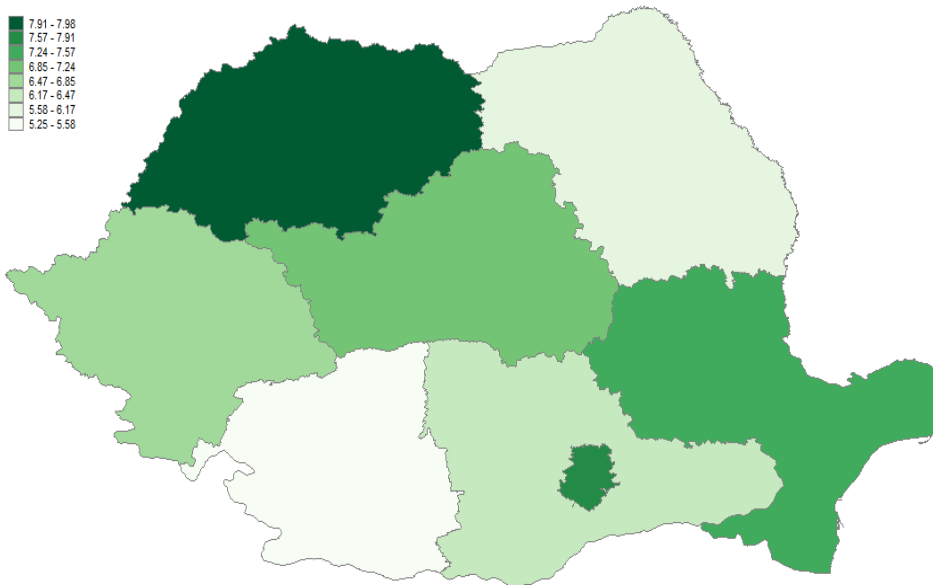
# Appendix

Annex 1:

Map A1: GDP pc by region, 2017 in PPS



Map A2: Regional GDP growth, 5 year average

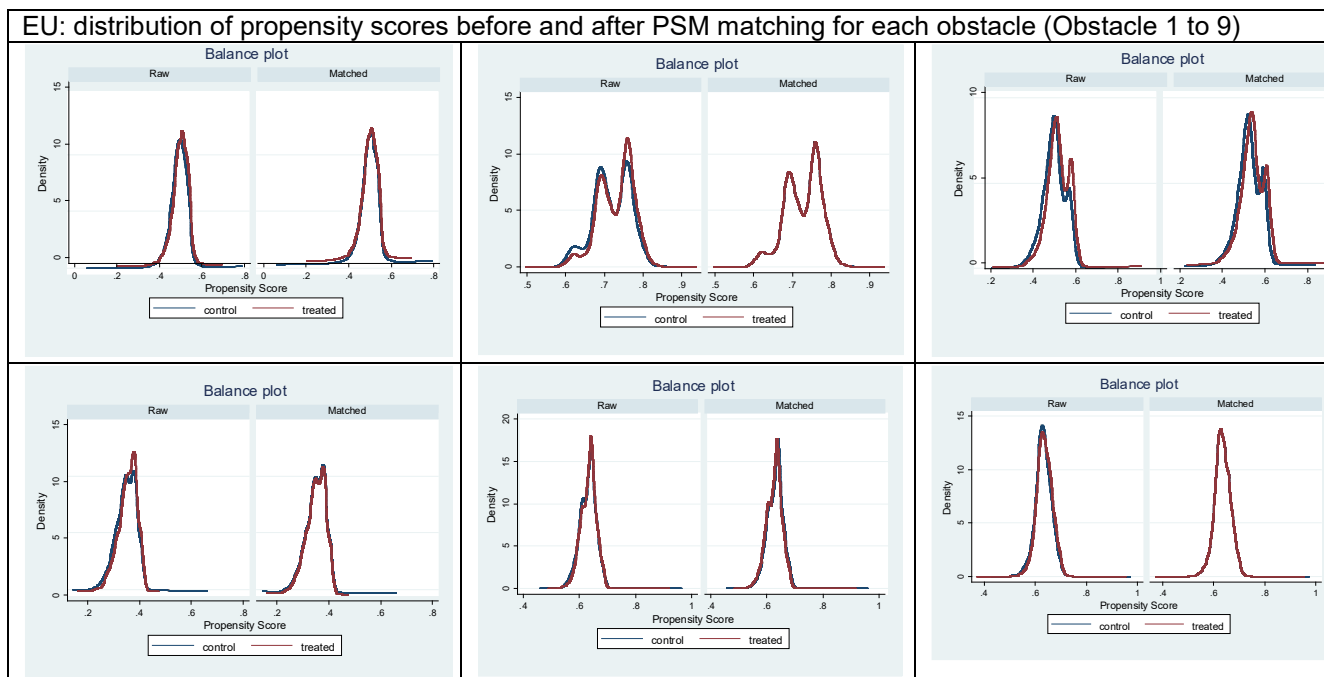


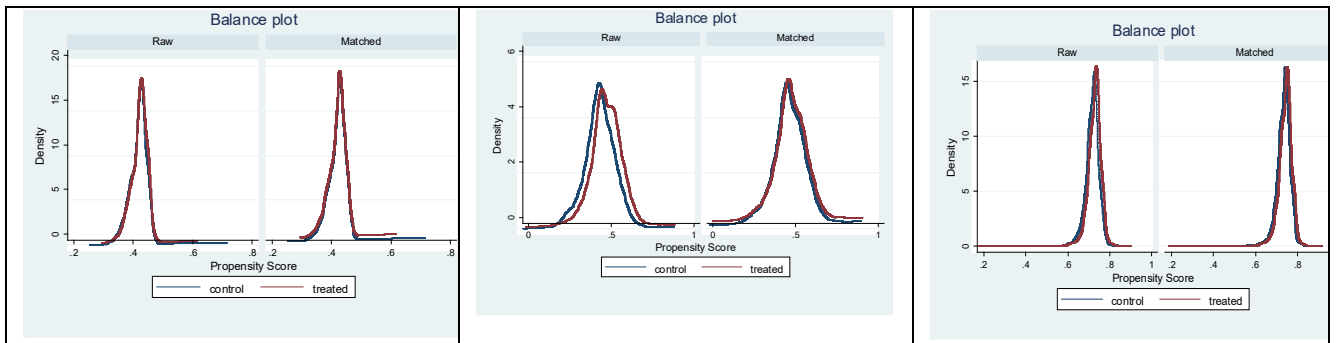
**Table A1. Robustness checks**

**Treatment effect of obstacles on investment gap using Propensity score matching (PSM)**

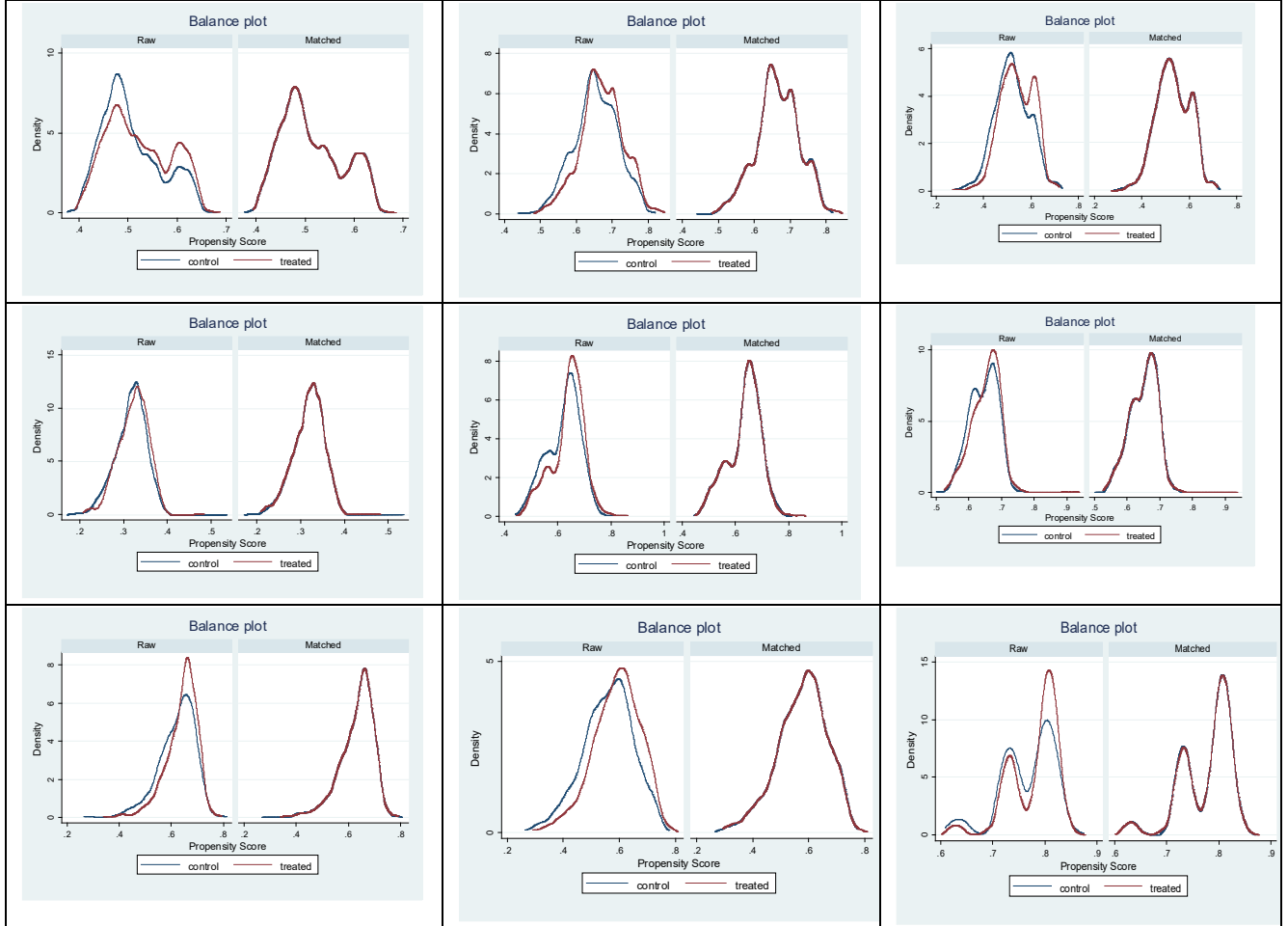
Treatment: obstacle=1 versus obstacle=0, ATE	EU		RO	
	Coef: Inv gap	Robust Std. Err.	Coef: Inv gap	Robust Std. Err.
1) Obstacle: demand for products or services	0.029***	(0.0057)	0.058**	(0.025)
2) Obstacle: availability of staff with the right skills	0.038***	(0.0061)	0.053**	(0.027)
3) Obstacle: energy costs	0.018***	(0.0056)	0.027	(0.024)
4) Obstacle: access to digital infrastructure	0.005	(0.0058)	0.007	(0.026)
5) Obstacle: labour market regulations	0.027***	(0.0056)	0.037	(0.027)
6) Obstacle: business regulations (e.g. licences, permits, bankruptcy) and taxation	0.025***	(0.0057)	0.025***	(0.006)
7) Obstacle: availability of adequate transport infrastructure	0.006	(0.0057)	0.042*	(0.025)
8) Obstacle: availability of finance	0.041***	(0.0062)	0.137***	(0.024)
9) Obstacle: uncertainty about the future	0.096***	(0.0061)	0.060**	(0.030)
No of obs.	21,752		1,240	

**EU: distribution of propensity scores before and after PSM matching for each obstacle (Obstacle 1 to 9)**





Romania: distribution of propensity scores before and after PSM matching for each obstacle (Obstacle 1 to 9)



Note: the mean of the difference of the observed values and the estimated counterfactual potential outcomes (values imputed through matching). For each unit there is an observed outcome and an estimated counterfactual potential outcome. The balancing after the PSM matching is satisfied for each treatment (barrier).

### Balancing: standardised differences (Romania)

	Obstacle 1		Obstacle 2		Obstacle 3		Obstacle 4		Obstacle 5	
	Raw	Match.	Raw	Match.	Raw	Match	Raw	Match	Raw	Match
Profitability	-0.044	-0.072	-0.001	-0.027	-0.005	0.071	-0.040	0.000	0.017	0.002
Leverage	0.010	0.005	0.020	0.012	-0.002	0.026	-0.012	-0.046	0.029	0.029
Liquidity	0.036	-0.094	0.028	0.004	-0.140	0.019	-0.112	0.002	0.078	-0.030
Small	0.060	0.008	0.047	0.015	-0.038	0.006	-0.051	-0.012	0.069	0.004
Medium	-0.073	0.037	0.083	-0.029	-0.006	-0.051	0.055	0.002	0.004	-0.008
Large	0.019	-0.022	-0.056	0.022	-0.021	0.044	-0.050	0.038	-0.049	0.008
Construction	0.209	-0.007	0.012	0.013	-0.090	-0.024	-0.005	0.010	0.035	-0.021
Services	-0.076	0.034	-0.015	0.005	0.031	-0.034	-0.002	0.023	0.046	0.054
Infrastructure	-0.150	-0.032	-0.151	-0.008	-0.136	0.040	-0.032	-0.042	-0.197	0.007
Number of obs.	1,240	1,274	1,255	1,670	1,253	1,330	1,251	796	1,247	1,580
Treated obs	637	637	835	835	665	665	398	398	790	790
Control obs	603	637	420	835	588	665	853	398	457	790

	Obstacle 6		Obstacle 7		Obstacle 8		Obstacle 9	
	Raw	Matched	Raw	Matched	Raw	Matched	Raw	Matched
Profitability	0.007	0.014	0.032	-0.064	-0.153	-0.050	0.005	-0.012
Leverage	0.077	0.034	-0.018	0.048	-0.192	-0.014	-0.038	-0.056
Liquidity	-0.021	0.032	-0.145	-0.052	0.098	0.011	0.074	0.008
Small	0.050	0.018	-0.067	-0.011	-0.044	-0.011	0.085	-0.063
Medium	-0.033	-0.036	0.090	-0.018	-0.152	0.010	0.034	0.055
Large	-0.080	0.009	-0.017	0.007	0.116	-0.003	-0.170	-0.028
Construction	0.069	0.036	-0.163	-0.008	-0.112	0.045	0.105	-0.026
Services	0.071	-0.052	0.070	-0.010	-0.044	-0.027	0.025	0.018
Infrastructure	-0.124	-0.002	-0.013	0.014	0.056	0.034	-0.184	0.031
Number of obs.	1,246	1,618	1,252	1,584	1,241	1,430	1,222	1,898
Treated obs	809	809	792	792	715	715	949	949
Control obs	437	809	460	792	526	715	273	949







# Investment: What holds Romanian firms back?



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