The impact of selected elements of the business environment on employment and production of companies in the EU - a comparison of companies controlled by domestic and foreign persons

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Abstract: Previous studies focused on identifying key dimensions of the business environment that affect FDI, at the same time, there is a deficiency of literature that would examine how the business environment affects indicators such as employment and production. This research looks for the business environment dimensions that most frequently influence the distinct types of business activities. By using a cross-sectional regression analysis, we examined how the number of jobs, the turnover of companies and the volume of production were shaped by the business environment of selected countries. Key findings reveal that the business environment affects employment areas more than production. The greatest impact on production and employment stems from paying taxes, getting electricity, resolving insolvency, and enforcing contracts. These findings can help in the future policymaking process.

Keywords: business environment; competitiveness; foreign control of enterprises.

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1 Introduction

If we sought to know how the business environment affects a companies' production and employment, we would call for two distinct classes of published research results. Firstly, empirical research results which focused on the impact of the business environment on FDI (Jovanovic and Jovanovic, 2018; Morris and Aziz, 2011; Munemo, 2014). Then we would need to study research results that provide details about how the FDI affects employment and the production of companies. (Rong et al., 2020; Abor and Harvey, 2008; Rozen-Bakher, 2017) When investigating this 'two-oculus' literature apparatus, we may highly likely see the final picture as quite distorted compared to the real state of the world. The reason is modest. FDI is constructed to monitor the inflow or outflow of foreign direct investment. FDI itself is not capable of giving a more detailed look at how, through FDI, employment and production would affect employment indicators. When inspecting present day literature, we are aware of a significant presence of a knowledge gap, namely there is a noticeable gap in the research and the literature described above. It is for this reason that we have settled on the research question of whether there is a direct connection between the business environment and companies' production and employment. The benefit of this approach consists of an unbiased view of the direct relationship between the business environment and the state of production or employment. Furthermore, while FDI focuses only on foreign investments, our research focuses on domestic as well as foreign companies operating in selected countries. This approach allows us to bring a more concise view on the topic. We are aware of the necessity to monitor and attract foreign investors or companies. However, most of the overall production and employment is still formed by domestic companies. In case of a remarkable extent of research aimed barely at FDI inflow, our viewpoint absents. We believe that it is essential not to neglect that domestic companies and their performance is also affected by the business environment in their home countries. Our research is innovative as it put forward a concise view on the relationship between the business environment and production or employment without any intermediary phases. In addition, our research results make available details about which segments of the business environment and in which way they affect distinctively domestic and foreign controlled companies.

2   Literature review

This section starts with a description of the role of government regulations in shaping and co-creating the business environment. Then there is an overview of methods to measure the business environment and a review of the literature that applies one of the best-known indicators of business environment quality – DBI in empirical research. In this part we present that existing literature describes the relationship between business environment and employment or companies' production only indirectly. Namely, to disclose existing research results about the impact of business environment on employment or companies' production it is required to study empirical literature which focuses on the relationship between business environment and FDI. Because of this, and to view how business environment affects real economy indicators such as production and employment, we opted to apply innovative approach, investigate their direct relationship, and by doing so fill the literature gap in this area.

Important segments of the business environment include taxes, administrative burdens and bureaucracy, infrastructure quality, transport, protection of competition, access to production resources such as energy, the development of financial institutions, as well as law enforcement and dispute resolution, and there are many other examples. (Qerimi and Sergi, 2021) The business environment of a country affects the productivity and efficiency of companies located in the country. (Eling and Schaper, 2017; Bilan et al., 2020), (Tahir et al., 2020) Many segments of the business environment are significantly influenced by governments through their regulatory measures, which are mostly in the form of legislation. Behaviour of companies in accordance with government regulations is binding, and compliance by companies is enforceable by the state. With its regulatory measures, the government consequently co-creates the business environment in which companies operate.

Research on improving government regulatory measures and the business environment has traditionally focused on researching the determinants, incentives, and factors of foreign direct investment inflows. Several empirical papers have therefore examined which factors influence FDI inflows, including the impact of taxes on FDI inflows. (Kubicová, 2013). We can therefore state that there is evidence of the business environment and government regulatory measures impact especially on the inflow of FDI. Until the present, many countries, including EU Member States, have sought to create a favourable business environment to attract foreign investors, in which they find opportunities for capital inflows, investment in emerging sectors, business start-ups and the associated creation of new jobs. Finally, they see FDI inflows as opportunities to penetrate foreign markets and increase exports from developing countries. (Baykal, 2003). One of the potential benefits of the arrival of foreign companies in host countries is the increase in investment in the domestic market (Stern and Mattoo, 2003). As we have previously mentioned, there are many reasons for countries to attract foreign companies.

To monitor and evaluate the quality of the business environment, several indicators were created. To name some of them, to begin with, there is the doing business index, that was crafted and calculated by the World Bank (Doing Business, 2019), the Global Competitiveness Index (Trading Economics, 2020) invented by the World Economic Forum, and the Business Confidence Index (OECD, 2020) that was published by the OECD. An overview of the most well-known indicators dealing with evaluation and quality measures of the business environment is shown in Table 1.

Table 1   Review of indicators measuring business environment

Index name	International dimension	Origin/author	Number of countries involved in the last year of measurement	Number of monitored areas of the business environment
Doing business[1]	Yes	The World Bank	190	10
Global competitiveness index[2]	Yes	World Economic Forum		12
Business confidence index[3]	Yes	OECD		12
Corruption perception index[4]	Yes	Transparency International	180	1
Business environment index	No	Business Alliance of Slovakia	1	33

Notes: 1 (Business, October 24, 2019), 2 (Trading Economics, 2020), 3 (OECD, 2020), 4
        (Transparency International, 2020).

Source: Author's own compilation and (Gordiaková, 2011)

The method of evaluation of business environment applied by the Doing Business Index (from here and on DBI) consists of several sub-indices: paying taxes, TaB, enforcing contracts, starting a business, dealing with construction permits, generating electricity, registering property, getting credit, protecting minority investors, and resolving insolvency. One of the disadvantages of using the DBI indicator is that it is based on the subjective evaluation of entities operating in the business environment. On the contrary, advantages arise from the fact that the methodology of the index evaluation is the same in 190 countries located all around the world, which enables international comparisons.

Data from the Doing Business Index have been applied in several empirical studies for example Morris and Aziz (2011), Hossain et al. (2018), Vogiatzoglou (2016), Munemo (2014), Jovanovic and Jovanovic (2018) and others. In an empirical study which focuses on the relationship between the DBI and the inflow of FDI in the former states of the communistic bloc compared with 22 OECD countries, authors have found that the only significant sub-index was the economic openness sub-index. (Jovanovic and Jovanovic, 2018). Another empirical analysis used DBI sub-indices to examine the determinants of FDI inflows and found that higher ratings by DBI attract more foreign direct investment and provide some evidence that some sub-indices are vital while others do not. (Jayasuriya, 2011). Another example is research on the relationship between FDI and national DBI rankings (Corcoran and Gillanders, 2015). There are other studies that have observed the effect of DBI on FDI using regime type, tax incentives, and property rights (Li, 2006; Jensen, 2006).

As can be learned most of the empirical research that used DBI data examined the impact of DBI on FDI. In various research projects, the authors have already used the DBI index and its individual subindexes, chiefly in connection with the influx of the already mentioned FDI (Morris and Aziz, 2011; Vogiatzoglou et al., 2016). However, if we want to take a closer view of the relationship between the business environment represented by DBI and production or employment, FDI is not able to provide us with

this perspective. We must first use FDI as a mediatory stage to obtain a better perspective. The drawback of this attitude is that there is an ambiguous interpretation of such findings. This motivates us to introduce and apply other way of investigation, specifically, our research focuses on the direct impact of DBI sub-indices on several indicators of production and employment directly without using FDI as an intercessor. This approach differs from the one that has been used in previous research. Its advantage is that it provides the opportunity to see a closer and more detailed effect of the business environment on several indicators of employment and production for both domestic and foreign controlled companies. To reach these two perspectives, for domestic and furthermore for foreign controlled enterprises, FDI cannot be used. This gap in literature can be satiated by our research results. In addition, it can offer a wider perspective on how the business environment affects production and employment, due to several indicators of production and employment used in our research. We choose to offer an unconventional approach, and instead of examining the impact of government regulatory measures shaping the business environment on FDI inflows, we are shifting the subject of our research to several production and employment indicators, instead of only one indicator, i.e., FDI. We do not consider the FDI indicator to be incorrect, but the same volume of incoming foreign investment (FDI) may be found in a different number of companies, with a different effect on employment and production. Our goal is to capture several indicators of business activities to be able to identify which areas of the business environment have a significant impact on the number of companies, their production, and their rates of employment.

3   Variables, data, and methodology

3.1   Dependent variables and data

The subjects of our research are enterprises located in EU Member States in the year 2017. Data is sourced from Eurostat, and it has several advantages in terms of our research and its objectives. First, the data reported by Eurostat are evaluated uniformly, and thus the methodology for monitoring them is identical in all 28 EU countries. Second, data is provided by Eurostat separately for enterprises controlled by foreign persons and domestic persons. This makes it possible to specifically measure and compare the impact of segments of the business environment on foreign-controlled and domestic-controlled enterprises. Based on such an empirical analysis, we will be able to reveal whether the government's regulatory measures should differ according to enterprises controlled by domestic or foreign persons.

To measure and identify whether and which segments of the business environment affect the performance and employment of enterprises, we chose the following dependent variables: NO_E number of enterprises, production value (PV), turnover (TO_GP), value added (VA_FC), persons employed (PE) and personnel costs (PC).

We assume that government regulatory measures shaping the business environment should have a greater impact on production indicators than on the number of established companies. One of the indicators of a company's performance is the PV. We examine PV because it affects the size of the GDP. In addition, higher production may mean that companies also achieve higher profits and potentially higher tax revenue. Data on the value of enterprises' production do not record gross written premiums. Therefore, we

decided to also measure the impact of the business environment on turnover or gross premiums written (TO_GP). In addition to business performance, indicator employment in companies is also important for society and the economy. The aim of our research is therefore to identify the impact of the business environment formed by government regulations on two variables: firstly, the number of employees in enterprises (PE) and secondly the cost of enterprises per unit of work PC.

All five selected indicators refer to the same NO_E. An overview of dependent variables and data through which we monitor them is given in Table 2.

Table 2   List of dependent variables and their description

Variable	*Data (Eurostat name)*	*Units*	*Source*	*Eurostat code*
NoE	Number of enterprises	Nr.	Eurostat	[fats_g1a_08]
PV	Production value	mill. euro	Eurostat	[fats_g1a_08]
TO_GP	Turnover or gross premiums written	mill. euro	Eurostat	[fats_g1a_08]
VA_FC	Value added at factor cost	mill. euro	Eurostat	[fats_g1a_08]
PE	Persons employed	Nr.	Eurostat	[fats_g1a_08]
PC	Personnel costs	mill. euro	Eurostat	[fats_g1a_08]

Notes: All dependent variables are sourced from Eurostat for the year 2017. Detailed description of individual statistics is sourced/taken directly from Eurostat see here: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ: L:2009:086:0001:0169:EN:PDF

3.2   Independent variables and data

The aim of our research is to identify the impact of government regulatory measures, which play a significant role in shaping the business environment, concerning the number of companies located in EU Member States, their production and employment.

Table 3   List of independent variables and their description

Variable	*Data (doing business name)*	*Units*
PT	Paying taxes	0–100 points
TaB	Trading across borders	0–100 points
EC	Enforcing contracts	0–100 points
SB	Starting a business	0–100 points
DvCP	Dealing with construction permits	0–100 points
GE	Getting electricity	0–100 points
RP	Registering property	0–100 points
GC	Getting credit	0–100 points
PMI	Protecting minority investors	0–100 points
RI	Resolving insolvency	0–100 points

Notes: All independent variables are sourced from Doing Business, and they are presented for the year 2017. A detailed description of individual statistics is sourced/ directly from Doing Business – see here: https://www.doingbusiness.org/en/methodology

The results of previous research on the determinants influencing the decision-making of companies when locating their branches abroad differ significantly. Many multinational companies, such as Google, often base their decisions on tax advantages, such as low corporate income tax or access to networks of bilateral tax treaties (Smith, 2017).

In the case of independent variables, for the purposes of our research we make use of data from the Doing Business Indicator. We consider the advantage of measuring the quality of the business environment through DBI due to its uniform methodology and comparability of measurements in 190 countries. Our independent variables are the DBI sub-indexes, listed in Table 2. A detailed description of individual DBI sub-indexes can be found online (The World Bank, 2021)

Coefficients of the independent variables are expected to have a positive sign. This means that improving the assessment of government regulatory measures that shape the business environment has a positive impact on personnel costs, production, and the NO_E. As companies do not incur other costs generated by the shortcomings of the business environment (administration costs, tax calculation, legal acts and similar), there is a presumption that to motivate employees, companies will be able to pay higher wages.

However, a negative sign is possible in the case of trading across borders (TaB) index (Greenaway et al., 2008). It can be caused by the fact that the indicator includes an assessment of the 'simplicity' of processes in both exports and imports. As an example, we can mention the Slovak Republic, which is a country with an open economy where imports predominate, so start-ups may perceive this fact as a negative. From their viewpoint they face global competition because the competitive environment is shaped not only by domestic but also by foreign supply. A similar phenomenon was also addressed by the authors, who observed companies in Sweden. They found that with increasing globalisation, the intensity of competition in Sweden increased to create a more competitive environment, resulting in the liquidation or acquisitions of many companies. However, these factors were not based on voluntary decisions, but were the result of the economic situation that forced them to do so. Businesses operating in a country that is increasingly opening to the international market are facing increasing competition, which is why companies have been forced to make acquisitions to stay in the market. What is more, companies unable to face competition from the global environment were closed. (Greenaway et al., 2008)

3.3   Methodology

The aim of our research is to measure the impact of those segments of the business environment that are shaped by government measures on the number of companies in the EU Member States, their production and employment. We measure the impact of the business environment on companies controlled by foreign persons and compare them with those controlled by domestic persons.

We examine how the NO_E and their production and employment in the EU 28 are affected by government regulatory measures that co-shape the business environment and are represented by DBI sub-indices. The intuition behind this is that selected segments of the business environment that are shaped by government regulatory measures have a significant impact on the number of companies, their performance and employment. The formulation of the equations can be expressed as follows:

$$NoE_{D/F} = \beta_0 + \beta_1 \cdot PT + \beta_2 \cdot TaB + \beta_3 \cdot EC + \beta_4 \cdot RI + \beta_5 \cdot SB$$
$$+ \beta_6 \cdot DvCP + \beta_7 \cdot GE + \beta_8 \cdot PMI + \beta_9 \cdot RP + \beta_{10}.GC \quad (1)$$

$$PV_{D/F} = \beta_0 + \beta_1 \cdot PT + \beta_2 \cdot TaB + \beta_3 \cdot EC + \beta_4 \cdot RI + \beta_5 \cdot SB$$
$$+ \beta_6 \cdot DvCP + \beta_7 \cdot GE + \beta_8 \cdot PMI + \beta_9 \cdot RP + \beta_{10}.GC \quad (2)$$

$$TO\_GP_{D/F} = \beta_0 + \beta_1 \cdot PT + \beta_2 \cdot TaB + \beta_3 \cdot EC + \beta_4 \cdot RI + \beta_5 \cdot SB$$
$$+ \beta_6 \cdot DvCP + \beta_7 \cdot GE + \beta_8 \cdot PMI + \beta_9 \cdot RP + \beta_{10}.GC \quad (3)$$

$$VA\_FC_{D/F} = \beta\beta_0 + \beta_1 \cdot PT + \beta_2 \cdot TaB + \beta_3 \cdot EC + \beta_4 \cdot RI + \beta_5 \cdot SB$$
$$+ \beta_6 \cdot DvCP + \beta_7 \cdot GE + \beta_8 \cdot PMI + \beta_9 \cdot RP + \beta_{10}.GC \quad (4)$$

$$PE_{D/F} = \beta_0 + \beta_1 \cdot PT + \beta_2 \cdot TaB + \beta_3 \cdot EC + \beta_4 \cdot RI + \beta_5 \cdot SB$$
$$+ \beta_6 \cdot DvCP + \beta_7 \cdot GE + \beta_8 \cdot PMI + \beta_9 \cdot RP + \beta_{10}.GC \quad (5)$$

$$PC_{D/F} = \beta_0 + \beta_1 \cdot PT + \beta_2 \cdot TaB + \beta_3 \cdot EC + \beta_4 \cdot RI + \beta_5 \cdot SB$$
$$+ \beta_6 \cdot DvCP + \beta_7 \cdot GE + \beta_8 \cdot PMI + \beta_9 \cdot RP + \beta_{10}.GC \quad (6)$$

Data on individual DBI sub-indices observed in time series of several consecutive years show autocorrelation. In this case, it is not appropriate to apply the method of panel regression analysis. Also, breakdown in DBI index evaluation methodology did not allow us to use panel data analysis. The overlap in available data from Eurostat and DBI index could be found only in the year 2017 at the time of authoring this paper. Considering the nature of the data, the quantitative analysis in this research put in operation the method of cross-section analysis. The advantage of cross-sectional regression is that it can be used for several countries at once. The allows the model to be more easily generalised for a given set of several countries. The estimation is based on data for 28 EU countries for the year 2017, benefiting from the advantages of a uniform methodology for measuring statistical data in Eurostat and a uniform methodology for measuring the Doing Business index.

Our dataset, containing observations for dependent and independent variables, contains high values of individual observations, especially on the side of the dependent variables. As a result, the coefficients of regression may also be estimated at higher values. To reduce the values of these coefficients, it might be promising to convert the given values into a logarithmic form. Algorithmising of data is implemented when the data is inaccurate. However, in our case, the data for the independent variables were skewed even more after the algorithmising, and as a result the algorithmising invalidated the data. Because of this, algorithmising of our data is not suitable. For this reason, we decided not to use logarithmic data in our research, on the contrary, it is more appropriate to use the original data even in the place of higher estimated coefficients in regression. Data for inaccuracy comparison before and after algorithmising and the inaccuracy formula used for calculations are displayed in Appendix, Table 5.

4 Results and discussion

Results of cross-section analysis are presented in Table 4 in Appendix of this paper. In the Appendix of this paper can also be found correlation table, Table 6, and multicollinearity results in Table 7. There is no correlation among variables or

multicollinearity of variables. In this part of our research, we initially present profiles that are most influential on segments of production and then employment. Results are displayed using spider net figure. Then, we discuss the economic reasoning behind these results in the case of the most influential areas of the business environment and its effect on employment and production.

4.1   *Profiles of most significant business environment segments for production*

For the NO_E controlled by domestic persons GE, RI, PT are statistically significant. In case of PV GE, PT, EC, RI have a statistically significant influence on the value of production of enterprises controlled by domestic persons, while three of them GE, PT and RI are statistically significant for all enterprises regardless of whether the person controlling them is foreign or domestic. Unlike domestic enterprises, the EC does not have a statistically significant influence on the value of the output of enterprises that are controlled by foreign persons. On the other hand, TO_GP or gross premiums written of domestic companies is affected by PT, GE, EC, and RI. In contrast, the TO_GP of foreign companies is significantly affected by only two of them: PT and RI. Increased value at factor costs is positively impacted, namely by GE and RI, in the case of companies controlled by domestic and by foreign persons. The PT indicator has a negative significant effect on VA_FC. It can thus be partially concluded that these elements of the business environment have a significant impact on the added value of all companies and need to be given special attention. Another element of the business environment EC has a statistically significant and negative impact only on the VA_FC by enterprises that are controlled by domestic persons.

Figure 1   Profiles of most significant business environment segments for production (see online version for colours)
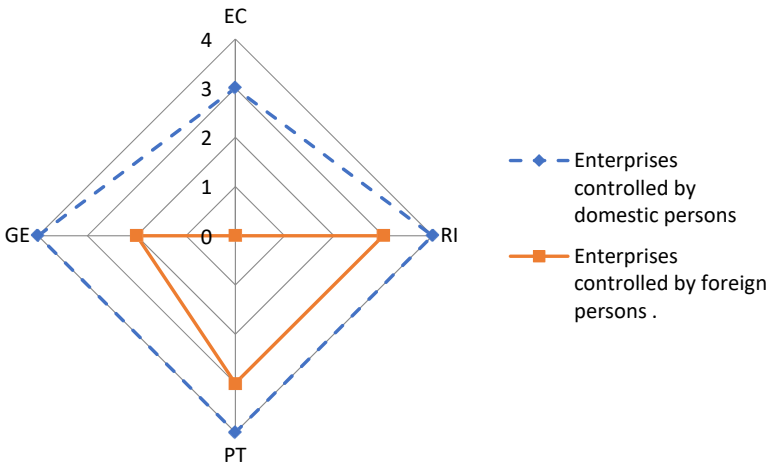
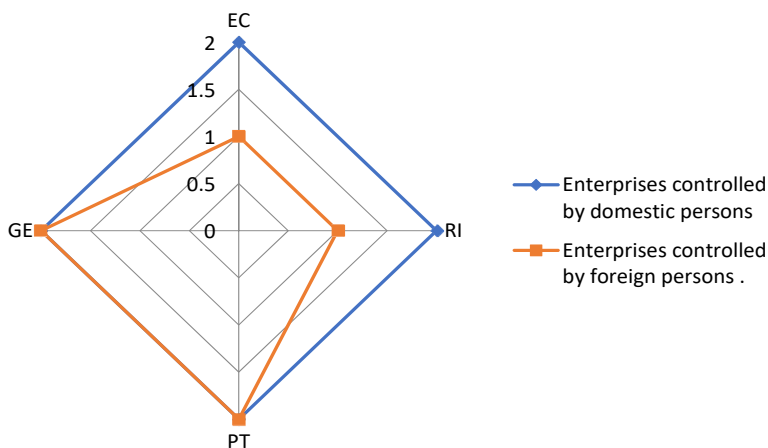Source: Authors' own work

For better illustration, to show which business environment areas captured by DBI subindexes are the most influential for production, we present our results in the spider web chart below.

The maximum possible number of remarkable results for each segment of the business environment is 4, which is the number of regressions that has been made in the field of production and enterprises number. The most influential in the various areas of production (PV, TO_GP, VA_FC) are RI and PT, while at GE the degree of influence is stronger for domestic companies and weaker, but still present in foreign-controlled companies. In the case of the EC, the degree of influence in the conditions of domestic companies is strong, but the impact on the production indicators of foreign-controlled companies was not affected.

4.2 Profiles of the business environment important for employment

PC form an important part of production factors costs. They have a significant impact on the overall costs of companies, final product price, competitiveness, but also on the ability of companies to hire well skilled employees, as well as to keep them. If we can describe which segments of the business environment have an impact on personnel costs, we will be able to design the necessary policies and implications in the area. Five out of ten elements of the business environment, namely GE, RP, PT, EC, and RI, have a statistically significant impact on a companies' personnel costs. These are all enterprises, regardless of the origin of the persons that control them, except for the DP indicator, which did not appear to be significant in the case of foreign-controlled companies. It can thus be partially concluded that almost half of the elements examined by us have a significant impact on the PC of all companies. On the other hand, in the case of the number of PE we have obtained results that reveal the significant impact of GE and PT on the number of people employed in all companies, regardless of their origin and a need for special attention. The GC sub-index has a special position among the elements of the business environment, which according to our measurements has a positive and statistically significant impact on the number of PE only by enterprises that are controlled by foreign persons, but not by domestic persons. On the other hand, EC and RI both have a positive and significant impact on the number of persons employed.

Figure 2 Profiles of the most significant business environment segments for employment (see online version for colours)

Source: Authors' own work

Figure 2 shows the 4 most influential segments of the business environment (EC, GE, RI, PT) on employment indicators (PC and PE). On the axes representing the segments of the business environment, there is a scale showing the number of significant results measured in the regression analysis for the given segment of the business environment.

It can be seen from the figure that while in the case of domestically controlled companies all 4 segments of the business environment proved to be significant, in the case of foreign controlled companies the influence was already lower in two segments (EC and RI) out of a total of 4. Thus, it can be stated that the most influential in various areas of employment indicators (PE and PC) are the business environment segments GE and PT, while in EC and RI the degree of influence is stronger in domestic companies and weaker, but still present in foreign-controlled enterprises.

4.3   Economic reasoning of the most influential areas of business environment on a companies' production and employment

4.3.1   Paying taxes

PT affects production and employment in both cases negatively. It should be noted that the PT index considers the time spent calculating the tax liability and the time spent paying the tax and filing the tax return, as well as the ratio of taxes paid in total profit before tax. Improving the evaluation of PT can be achieved by improving the evaluation in these two areas. It follows that the negative sign for the PT index, which we obtained for all, significant even insignificant, regression results, means that if the PT rating, composed of the above mentioned two parts, is improved, it will decrease: NoE_D; TO_GP_D; TO_GP_F; PV_D; PV_F; VA_FC_D; VA_FC_F; PC_D; PC_F; PE_D and PE_F. There are two ways to explain a negative sign that contradicts our original expectations. Reducing the complexity of the tax calculating process may save many companies' time, which can lead companies to reduce the total number of personnel working on tax returns. However, we do not estimate that this effect would be significant enough to be reflected in the results. However, the second way to improve PT's assessment is to reduce the tax-to-profit ratio paid. And here the question arises as to why the reduction of taxes paid, analogous to the improvement of the PT rating, should affect the reduction of the NO_E (domestically controlled) or the reduction of production value, TO_GP and gross premiums written, VA_FC at factor cost, PC or persons employed?

The explanation may be based on the existence of so-called carousel frauds. In this type of company network structure, it is necessary to establish a higher number of chain companies, among which also exist so-called 'white horses' or missing traders/entrepreneurs. If the government measures improve conditions for companies by reducing the tax burden, it can be assumed that it could be no more so tempting for these entities to commit fraud to artificially reduce their tax liability. It would be more efficient for them to pay the tax than face risk raised from illegal artificial schemes to reduce their tax liability. Carousel fraud is used in the conditions of VAT, but it is not difficult to transform it into conditions in which companies can reduce corporate income tax. From this point of view, a PT result containing a negative sign could indicate the continued presence of these frauds, as improving the PT's assessment by reducing the corporate tax burden does not encourage companies to artificially create a network of transactions requiring the establishment of more missing traders. By reducing the number of such companies, their artificial TO_GP and fictitious reported production may also be reduced.

In all regressions, the PT indicators were significant and negative, except for the NO_E controlled by a foreign person.

In terms of policy implications, this means that at least a partial solution that could clean up the economies of inactive companies is to reintroduce a tax license. In this way, both inactive companies and several companies that would be established by 'lost traders' to artificially reduce the tax bases of other companies could be eliminated. In the case of the Slovak Republic, the introduction of the tax license had the effect of making obsolete many companies with zero sales. Conversely, after the abolition of the minimum tax paid, companies that achieved zero or negative profits increased rapidly. (Ministry of Finance of the Slovak republic, 2021) In the conditions of the Slovak Republic, the tax license represented a mandatory minimum tax, paid also by companies whose tax base was negative or zero.

A partial conclusion from the research is the confirmation of the results of previous research, which found taxes as an essential element influencing FDI flows. Our research expands the previous findings on the impact of PT on Enterprises number in the case of domestically controlled companies and TO_GP or gross premiums that have been written, Production value, VA_FC at factor cost, Personnel costs, PE in the case of domestic and foreign controlled companies.

4.3.2   Getting electricity

Based on the results of our research, GE influences the monitored indicators in the field of production in 6 out of a total of 8 regressions performed at the level of domestic and foreign-controlled companies. We have recorded greater influence in the case of domestic companies. In PV and VA_FC at factor cost, GE proved to be distinctive regardless of the origin of the company. The GE coefficient acquires a positive sign in all cases of regressions. This indicates that a reliable supply of electricity has a positive effect on all the indicators, in areas of production and employment.

The reliability of the electricity supply is one of the vital determinants of the business environment, the importance of which we may not properly realise in a developed country. However, research from African countries shows that a reliable energy supply, without unexpected outages, has a significant impact on companies. (Okafor, 2015), (Ratner et al., 2022) A positive significant result of GE coefficient is in perfect agreement with our original assumption of a positive sign. As the determinant of GE affects both domestic and foreign-controlled companies, policy implications in this area have a double effect on increasing the production of both groups of companies. An improvement of this area of the business environment could be to place emphasis on timely informing customers about planned outages of energy.

4.3.3   Resolving insolvency

RI affects production in up to 7 out of a total of 8 regressions, while in the case of the Enterprises number indicator, the impact of RI was not significant in the case of foreign companies. In the monitored areas describing employment, the RI coefficient was significant in 3 regressions out of 4. The RI coefficient did not occur significantly only in the case of the number of PE in foreign-controlled companies. Overall, both production and employment may be positively impacted by RI. Improving the RI rating increases regardless of the origin of the enterprise production value, the NO_E (only domestic

companies), TO_GP or gross premiums written, VA_FC at factor cost, PE (only domestic companies) and Personnel costs.

The results of our research show an increase in PC in the case of improving the efficiency of RI, regardless of the origin of the company. This explanation may be based on the presumption that if companies have an effective legal background in the field of resolving insolvency, they are able to invest more resources in providing wages. In terms of policy implications, this means that if countries want to increase the number of employees, this goal can be achieved by an improvement in resolving the insolvency processes.

4.3.4   Enforcing contracts

EC proved to be an element of the business environment influencing the area of production in only 3 out of a total of 8 regressions. It was significant only in the case of domestic companies, namely in their indicators: TO_GP or gross premiums written, Production value; VA_FC at factor cost. In all cases, the EC had a positive impact, which means that its improvement in the evaluation in the monitored countries results in an increase in the above-mentioned production area indicators. In the area of employment, the indicator was significant in 3 out of 4 regressions. It can therefore be concluded that it has a significant positive effect on PC in both domestic and foreign controlled companies, and in the case of PE it only affects domestic companies.

The explanation for the existence of this influence may be based on excessive costs associated with the need for a legal representative, or just the simple costs of the time that needs to be spent on enforcement of contracts. Some of these costs are not negligible and therefore their presence can also have a negative effect on production and employment indicators. According to our findings our primary assumption that an efficient judicial system has a positive effect on production and employment has been proved. Our results are also in line with The World Bank research, which found out that in Mexico, larger and more efficient firms were observed in areas where there was a better judicial system. And their research from India confirmed that firms in regions with better law enforcement were willing to invest more. (World Bank, 2005)

From the point of view of policy implications, it is necessary to mention research, which states that even if a country has an established institutional background for resolving litigation, it may not have a positive impact on companies operating in the region. The impact on company properties is observed only when judicial institutions are effective. This is also confirmed by older research on transitioning economies of Eastern Europe and the former Soviet Union between 1992 and 1998. (Pistor et al., 2000)

From the results of our research, it is possible to draw a partial conclusion that the enforceability of the law and the efficiency of judicial institutions have a strong impact on many indicators of production and employment both in the case of domestic companies and in the case of foreign-controlled companies. This creates an opportunity to positively influence the areas of production and employment of companies, regardless of the controlling originators. However, based also on the above-mentioned research in this area, policy implications need to focus on measures that streamline litigation, which means that they reduce time and reduce costs for companies.

5 Conclusions

Among the significant elements of the business environment, GE and PT are the most influential for employment. RI and EC indicators were less frequent in the occurrence of significant coefficients in regressions in employment. Employment is impacted by DP and GC only a little. The indicators that had no impact on employment are SB, DvCP, PMI, TaB. In the area of production, the most influential segments of the business environment were PT and RI, they were influential in 7 out of a total of 8 regressions. The GE was influential in 6 out of 8 regressions and EC, with noteworthy influence in 3 out of 8 regressions. On contrary indicators: SB, DvCP, RP, GC, PMI, TaB showed no effect on production. We observed the largest overlap of the business environment segments' influence on production and employment in the case of PT, GE, RI, EC. One of our findings is that the business environment affects employment areas more than production. Subsequently, we found that if the business environment changes it has a higher impact on PC than the number of employees.

According to our surveys, there is no other similar empirical research like ours, which examines the impact of segments of the business environment on production and employment in enterprises, yet unknown. Based on this we cannot at this moment compare our results with the results of another empirical research. However, we tried to compare them with different research projects that have a similar nature to ours. On the other hand, new views of business indicators other than FDI, and the measurement of the impact of segments of the business environment, expand actual research done in this field.

For better image creation, and better evaluation of outputs, we compared the results of the impact of the business environment on foreign companies using companies controlled by domestic persons. This group of companies was used as a benchmark to compare the results. We believe that one of the benefits of this approach will be its assistance in formulating the policies of EU member states to improve both domestic and foreign controlled companies at the same time.

It is also important to understand the limitations of our research, which may later lead to its own improvement. As one of the two main limitations we consider the nature of DBI subindex evaluation, that is based on subjective evaluation of the business environment by managers of domestic companies. This characteristic of DBI has raised questions concerning its suitability for research, examining the relationship between DBI and foreign companies or FDI. Some previous research has struggled with this problem. We have therefore used this negative feature of the DBI index as an advantage. We have updated past knowledge, while comparing the impact of DBI subindexes on both foreign and domestic companies at the same time. This led us to finding that DBI is suitable for use in both domestic and foreign institutions. However, it is important to keep in mind that the impact of the index on foreign enterprises is lower than in the case of domestic enterprises. Another limitation of our research lies in its possibility of application only in the conditions of the EU Member States, while this characteristic of our research creates a space for its future expansion to a wider group of countries.

Policy implications in the future shall focus on these determinants of the business environment, which affect specific areas of production and employment.

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Appendix

Table 4   Cross-section regression analysis results

| | | Production | | | | | | | | Employment | | | |
| | | Enterprises – number | | Turnover or gross premiums written | | Production value | | Value added at factor cost – million euro | | Personnel costs – million euro | | Persons employed – number | |
		D	F	D	F	D	F	D	F	D	F	D	F
SB	Coefficient	79,080.93	266.42029	58,636.176	13,718.072	46,200.918	7,006.2004	18,012.171	2,402.039	12,031.618	2,064.4073	285,072.95	24,942.343
	P-value	0.088	0.579	0.193	0.459	0.127	0.583	0.153	0.612	0.114	0.417	0.268	0.573
DvCP	Coefficient	-21,121.346	-238.75636	-829.4254	953.69271	-1,016.1787	895.57477	-541.51684	381.99855	-1,068.9784	16.108817	-26,462.758	-202.12848
	P-value	0.430	0.408	0.975	0.931	0.954	0.906	0.941	0.892	0.808	0.991	0.861	0.994
GE	Coefficient	46,603.35*	189.35999	60,531.691**	17,217.088	42,099.27**	12,715.968*	17,195.14**	4,561.6394*	11,060.653**	3,301.6391*	322,708.63*	46,636.515*
	P-value	0.034	0.395	0.007	0.055	0.006	0.042	0.007	0.048	0.004	0.010	0.012	0.032
RP	Coefficient	-13,265.133	-193.46938	-36,952.522	-13,007.984	-23,710.712	-9,269.1293	-10,314.279	-3,138.6395	-7,310.7977*	-2,341.3212	-205,801.85	-40,133.47
	P-value	0.506	0.371	0.073	0.126	0.083	0.116	0.072	0.150	0.037	0.050	0.082	0.054
GC	Coefficient	5,451.7807	175.39422	18,432.858	7,581.934	11,864.283	5,910.1543	5,326.6936	2,128.3953	3,398.6482	1,375.452	124,858	31,846.529*
	P-value	0.695	0.251	0.191	0.199	0.206	0.150	0.176	0.162	0.152	0.095	0.128	0.032
PMI	Coefficient	-6,099.0217	-146.05848	-21,768.2	-2,403.1775	-11,102.42	-4,464.0216	-2,964.61	-965.25114	-3,137.6527	-1,127.5342	-93,207.505	-4,058.9713
	P-value	0.793	0.560	0.349	0.802	0.471	0.504	0.643	0.696	0.417	0.397	0.483	0.860
PT	Coefficient	-140,557.03***	-589.09839	-134,926.28***	-31,368.529*	-96,646.751***	-23,231.032*	-35,974.3**	-7,750.4001*	-22,228.558***	-5,520.8812*	-720,611.71**	-77,729.328*
	P-value	0.001	0.123	0.001	0.038	0.000	0.028	0.001	0.045	0.001	0.010	0.002	0.033
TaB	Coefficient	-28,742.102	-146.70419	-71,373.793	-18,481.249	-44,811.992	-18,126.411	-17,814.1	-7,762.1354	-11,024.22	-3,515.351	-311,738.23	2,554.9662
	P-value	0.604	0.805	0.202	0.423	0.229	0.261	0.251	0.198	0.237	0.272	0.329	0.963
EC	Coefficient	47,238.974	576.00872	71,418.172*	20,729.553	48,543.343*	14,917.659	20,187.164*	5,519.1215	13,734.389**	3,887.211*	369,521.45*	47,213.853
	P-value	0.106	0.070	0.018	0.088	0.017	0.077	0.017	0.078	0.008	0.024	0.032	0.104
RI	Coefficient	30,074.988*	238.81624	42,919.708**	14,292.783*	28,187.369**	1,0851.631*	10,837.212*	3,676.325*	6,898.1101**	2,196.7394*	211,346.83*	27,446.313
	P-value	0.044	0.128	0.006	0.023	0.007	0.014	0.011	0.023	0.008	0.013	0.016	0.062
_cons	Coefficient	1,658,266.5	9,923.3334	4,028,327	286,965.41	1,937,131.4	1,040,118	47,3594.75	397,477.33	279,643.01	136,993.96	18,955,485	-2,710,654.1
	P-value	0.797	0.886	0.530	0.914	0.650	0.575	0.790	0.564	0.793	0.709	0.607	0.673
Number of observations		28	28	28	28	28	28	28	28	28	28	28	28
R-squared		0.6211	0.3912	0.7234	0.5983	0.7322	0.6329	0.7140	0.6207	0.7345	0.6916	0.6824	0.6088
Adj R-squared		0.3982	0.0330	0.5608	0.3620	0.5747	0.4170	0.5458	0.3975	0.5783	0.5101	0.4955	0.3786
df model		10	10	10	10	10	10	10	10	10	10	10	10
df Residual		17	17	17	17	17	17	17	17	17	17	17	17
df total		27	27	27	27	27	27	27	27	27	27	27	27

Table 5   Skewness coefficients

	SB	DvCP	GE	RP	GC	PMI	PT	TaB	EC	RI
Skewness coefficient of original values of DBI subindexes	-4.56481	-3.51531	-4.52513	-3.16071	-4.50942	-2.41619	-4.42261	-0.93477	-3.96462	-2.72704
Skewness coefficient of logarithmic values of DBI subindexes	-4.45496	-3.42689	-4.4164	-3.08249	-4.40139	-2.33573	-4.31574	-0.88201	-3.86465	2.67595
Skewness formula	$\dfrac{n}{(n-1)(n-2)}\sum\left(\dfrac{x_j-\bar{x}}{s}\right)^3$									

Table 6 Correlation table

	SB	DvCP	GE	RP	GC	PMI	PT	TaB	EC	RI
SB	1.0000	-	-	-	-	-	-	-	-	-
DvCP	0.4116	1.0000	-	-	-	-	-	-	-	-
GE	0.1259	0.2923	1.0000	-	-	-	-	-	-	-
RP	0.2189	0.1012	0.2492	1.0000	-	-	-	-	-	-
GC	0.0471	-0.0428	-0.0657	0.5201	1.0000	-	-	-	-	-
PMI	0.2599	0.1084	0.1634	-0.0758	0.1878	1.0000	-	-	-	-
PT	0.5058	0.3850	0.4598	0.3303	0.1988	0.1652	1.0000	-	-	-
TaB	-0.0765	-0.1124	-0.1433	0.3402	-0.0756	-0.3432	-0.2546	1.0000	-	-
EC	-0.0034	0.4529	-0.0396	0.2574	0.1946	-0.1821	0.2151	0.2877	1.0000	-
RI	0.2484	0.1180	0.4727	0.2099	0.1693	0.3256	0.2593	0.0234	-0.2291	1.0000

Table 7   Multicollinearity test (variance inflation factor)

Variable	VIF	1/VIF
SB	2.54	0.393209
DvCP	2.37	0.421533
GE	2.32	0.431372
RP	2.24	0.446209
GC	2.24	0.447169
PMI	2.12	0.471169
PT	2.11	0.474973
TaB	1.97	0.508663
EC	1.85	0.539135
RI	1.43	0.700952
Mean VIF	2.12	