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FISCAL POLICY BEFORE AND DURING COVID-19 AND ITS IMPACT ON THE CREATION OF NEW COMPANIES

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Abstract The article analyses relationships between fiscalism indicators and the number of newly registered companies (i.e. a new business density index). The study covered the period from 2015 to 2020 (inclusive). Considering the timeframe, the purpose is to determine the impact of COVID-19 on new firm formation. Two principal research hypotheses are formulated. The first hypothesis assumes a negative impact of fiscal burden on the creation of new firms. The second hypothesis assumes that COVID-19 reduced interest in starting new business entities. The research results demonstrate that there is a negative relationship between fiscalism and new firm formation. Contrary to expectations, the research has shown that COVID-19 did not adversely affect the creation of new companies, as the new business density index remained stable in most of the analyzed countries.

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Introduction

Fiscal policy, does it affect new firm formation? Although this topic is not a new issue in the literature (Venâncio et al., 2020; Compbell et al., 2007; Braunerhjelm et al., 2014), it still raises a lot of interest, implying the need for further research and explaining the relationship between fiscal policy and new business entry. There is widespread awareness that high fiscalism is a demotivating impact on starting a business. Such a position is presented, among others, by Braunerhjelm et al. (2014), Venâncio, et al. (2020) as well as Canare (2018).

Fiscal policy covers a wide range of public sector activities – both in revenue collection, mainly via taxes, and in public spending. In this study fiscal policy is considered from a rather narrow perspective – fiscalism. Fiscalism is defined as policy aimed at achieving the highest possible tax revenues, by imposing further tax burdens on taxpayers[1]. This article focuses on fiscalism and its effect on new firm formation - how the tax burden affects new business formation across European Union countries. Some authors argue that fiscalism is only one factor influencing the decision to start a business (Canare, 2018).

Literature also indicates differences in the positions on the above-mentioned topics. The works so far differ from each other in terms of the applied measures of fiscalism and the measures describing new enterprises. Braunerhjelm et al. (2014), use the number of tax payments, time to pay taxes, as well as tax administrative burden and tax rate as a measure of fiscalism. Lewis et al. (2015) at the same time use the similar purposes of government spending. Also, as a measure of fiscalism, the corporate tax rate is used to explain business creation (Venâncio et al., 2020). This is important as different studies lead to similar results.

Across researchers, the characteristics of newly established companies may vary. Braunerhjelm et al. (2014) consider only limited liability companies, Kreft et al. (2005), on the other hand, analyze only the creation of sole proprietorships. A different approach is also noticed in the method to measure the dynamics of entrepreneurship, which indicates the effect of the tax burden on business creation. Compbell et al. (2007), study entrepreneurship by measuring the difference between registered and deregistered enterprises. In turn, Venâncio, et al. (2020) take into account only new registrations, not including the analysis of deregistered enterprises. At the same time (and therefore net changes), it uses the gross measure of company establishment (i.e. only new registrations).

[1] https://www.money.pl/slownik/slownik,fiskalizm,termin,3574.html (Accessed: 2022.12.05).

It is important to say that the literature shows a deficit of studies related to fiscal policy and new firm formation in times of crisis. From previous research results, it has been shown that crises, natural disasters, recessions, or pandemics can be defined as a time of difficulty or danger. People during this time are rather discouraged from starting new businesses and do not take risks. This has been proven by Klapper and Love (2011), Shane (2011), and Boudreaux et al. (2019). Recent studies based on the ongoing COVID-19 pandemic have shown that most countries observed a decrease in the number of new business formations only at the beginning of COVID-19, while later on the number of new businesses registered went back to normal or even increased (Fritsch et al., 2021). The above-mentioned observations allow us to notice that this issue is not unequivocally solved and therefore provides an avenue for further studies.

The literature also demonstrates that fiscalism is much more studied in the case of individual countries (Venâncio et al., 2020), than in a group of countries (Braunerhjelm et al., 2014). This article will cover a group of European Union (EU) countries, which will provide an added value in the analysis of the relationship between fiscalism and entrepreneurship. The study covers the period from 2015 to 2020 inclusively, which will provide an examination of the impact of fiscalism on entrepreneurship both in a situation of economic stabilization (i.e., before COVID-19) and during COVID-19, i.e. in a situation where market conditions are unstable.

Literature overview

Fiscalism and entrepreneurship

Researchers over the past years have proven that high fiscalism discourages people from starting new businesses. Braunerhjelm and Eklund (2014), found that the administrative burden that the tax system imposes on firms dramatically decreases the number of new firms created. The authors took into account data from 2006 to 2011 and examined 118 countries. They performed a correlation and regression analysis and their research showed that tax administrative burden negatively affects new firm entry. The elasticity between tax administrative burden and market entry at the 0.3 level means that if the administrative burden that the tax system imposes decreases by 10% this will cause a 3% increase in market entry, which shows an inelastic relationship between these two variables. Venâncio et al. (2020) analyzed the effect of corporate taxes on new business formation. The time frame of the data on Portuguese start-ups was from 1997 to 2011. The authors used the difference-in-differences

gression to find that a reduction of tax rates leads to an increase in firm formation. Lewis et al. (2015) measured fiscal policy as government spending and its effects on new firm formation. Research based on econometrics has shown that expansionary government spending encourages entrepreneurship. On the other hand, Compbell et al. (2007) took into account the economic freedom index of North America and its effect on new firm formation. In contrast to the previously mentioned authors, Compbell et al. (2007) took as a measure of entrepreneurship net business formation. The net business formation parameter was calculated as the difference between business start-ups and business closings divided by total businesses and multiplied by 100. Their regression analysis based on U.S. net start-ups showed that economies that are less free and more politicized showed a lower rate of business formation.

In most research papers which are mentioned here the number of new limited liability companies is taken into account to express the number of new firms. In a study done by Kreft et al. (2005), the authors took into account sole proprietorships in the U.S. In their work, based on a regression analysis which took into account data from 1992-2001, they indicated that the degree of economic freedom impacts entrepreneurial activity. That means that low taxes and low regulations encourage expansion of entrepreneurship activities and creation of new firms.

After analyzing the literature on factors affecting business creation, the authors did not only analyze fiscal factors which impact new business creation, but also many more factors which impact business creation. Canare (2018) proposed research on new firm creation in 120 countries. The author took into account 10 factors that evaluate the business environment of a given country i.e. starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts, and resolving insolvency (World Bank, 2004-2012). The author performed an econometric analysis along with a regression analysis and found that starting a business index has the biggest impact on new firm formation. The author also found the financial costs of starting a business are more of a problem or barrier to firm creation than the administrative or time costs. Finally, the higher the tax rates and the more complicated the tax compliance is, the more discouraged are people from starting new businesses (Canare, 2018).

Overall, despite the different measures of fiscal policy used by different authors, similar study results can be seen. None of the authors focused on a specific set of the countries. That's why this article is aimed at presenting results which are aggregated on the basis of a set of European Union (EU) countries. The literature review provides insight into research that can be described as a standard method for such kinds of studies. At the same time, there is a lack of articles dedicated to this topic looking through the prism of fiscal policy orientation (method of conducting) in the situation of crisis phenomena such as COVID-19. From the research mentioned above, it can be concluded that high fiscalism has a negative impact on new firm formation, as was set by our first hypothesis. Since the analyzed data covers the time of COVID-19, the author analyzes the connection between new firm formation and fiscalism during the COVID-19 period.

Economic crises and new firm formation

Several authors declare that recessions, crises or disasters have a negative impact on new firm formation. For example, Klapper and Love (2011), analyzed the impact of the financial crisis on new firm formation. The research was conducted on 109 countries and the financial dataset contained information from the period 2002-2012 (inclusive). Their econometric analysis along with a correlation and regression analysis showed that during the crisis all the analyzed countries experienced a downturn in the number of new firm creations. The stronger the impact of the crisis on a given country the lower the number of new firms in that country. Shane (2011) conducted desk research on the effect of the severe recession on entrepreneurship in the USA. The author showed that the Great Recession (from December 2007 to June 2009) in the USA had a negative impact on new business formation. During the recession, the number of new firms was the lowest since 1992. The U.S. experienced a 17.3% decline in firm formation in comparison to 2007.

Boudreaux et al. (2019) analyzed the effect of natural disasters on entrepreneurial activity. They performed research based on 79 countries using a regression model. The study used data on entrepreneurial start-up activity and data on natural disasters from 2006-2016. Their research concluded that a natural disaster event negatively affected start-up formation in the short term. Also, climatic natural disasters (such as floods and windstorms) in the short-term negatively affected business start-up in countries with low or middle income more significantly, while geologic natural disasters (earthquakes, slides and volcanic eruptions) negatively affected business start-ups in high income countries.

On the other hand, there are articles which demonstrate that COVID-19 did not have a negative effect on new firm formation. Desk research conducted by Fritsch et al. (2021) examined start-up activity in Ger-

many during the COVID-19 period. At the beginning of the year 2020, a sharp decline in the months of February, March and April was observed. After the decrease, a dramatic recovery was shown in the number of start-ups. Between June and October 2020, the number of new start-ups registered was higher than the average business registrations in 2017-2019. The authors also compared various different industries. It turned out that some sectors experienced a decrease of firm formation (e.g., accommodation and food services); while other sectors experienced an increase in new firm formation (innovative manufacturing such as software and games). Some sectors also experienced a decrease at the beginning of the COVID-19 and then had a remarkable recovery throughout the rest of the year (construction, repair shops)[2]. At the same time, Popescu (2021) based on her quantitative research, showed that Romania experienced a downturn in business registrations in March- April 2020. When it came to June 2020, the country experienced a recovery, and the firm`s start-up rate surpassed the values of business formation compared to 2019. This research shows that COVID-19 did not have a negative effect overall on new business formation.

Therefore, the literature studies do not provide an unambiguous answer to the impact of the COVID-19 crisis on the creation of new companies. Considering the disparate results in similar studies, the authors examine the issue in more detail as given by the second hypothesis of our research focus.

Data and methods: correlation and regression analyses

The research problem of how fiscal burdens affect entrepreneurial activities and how COVID-19 impacted new firm formation in the European Union is still underexamined and therefore leaves space for further studies. The first step on the way to the implementation of the research focus is the development of methodological assumptions based on the available data.

Firstly, the following variables were taken into account: company tax burden, business freedom, conditions for starting a business, tax-paying procedures, new firm registration and new business density. Tax burden is one of the factors used in the construction of the economic freedom index by the Heritage Foundation. It measures the tax burden imposed by a government[3]. The business freedom indicator is also another variable from the Economic Freedom Index which shows the overall efficiency of government regulation of business[4]. New firms registered is a variable from the World Bank data set and shows the overall number of new limited liability companies registered in a given country[5]. It differs from the new business density index which was issued by the World Bank. The latter shows the number of new limited liability companies registered per 1000 people in the ages 15-64.

The indicator Starting a new business measures the number of procedures, time, costs and minimum capital requirements paid to start and formally operate a limited liability company in the biggest city of the given country. This indicator is expressed on a scale of 0 to 100, where 0 indicates the lowest performance of the indicator and 100 the best. Fewer procedures, less time, costs and minimum capital requirement paid result in this index being higher.

Tax payment is another indicator used in the study. It contains information about the total taxes, the administrative burden regarding paying taxes and compulsory contributions paid by limited liability companies. This indicator includes information on the following: profit or corporate income tax, social contributions and labor taxes paid by the employer, property taxes, property transfer taxes, dividend tax, capital gains tax, financial transactions tax, waste collection taxes, vehicle and road taxes. The lower the tax burden, the higher the index value.

Finally, the variable which was taken to measure the number of new firm registration was the New business density index from the World Bank. This index shows the ratio of newly registered limited liability companies, registered in a calendar year per 1000 people aged 15-64 (i.e. of working age). Next, the variables were subjected to a correlation analysis using Pearson's linear correlation coefficient (see: Attachment, Table 1). The correlation analysis did not exclude any of the variables from the research. The new business registered variable was eliminated because it did not take into account aspects such as the number of inhabitants and the area of the country, so the values of this indicator for different countries is not comparable. Therefore, for a measure of new entrepreneurial activity the new business density index was selected. Also due to the similarity of the business freedom index with the starting a business index, this index was also deducted from the analysis. The tax burden index was also eliminated from the analysis because of its similarity to the paying taxes index, since both of these indexes refer to the responsibility of paying taxes by citizens of a given country.

The authors aimed at analyzing the new business density index for all of the European Union countries, but due to lack of data in this index for certain countries, some of the countries have been excluded. As

[3] https://www.heritage.org/index/fiscal-freedom (Accessed: 2022.06.22).
[4] https://www.heritage.org/index/business-freedom (Accessed: 2022.08.03).
[5] https://data.worldbank.org/indicator/IC.BUS.NREG (Accessed: 2022.06.22).

a result, the authors conducted research based on 16 EU countries: Austria, Belgium, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Poland, Portugal, Slovak Republic, Slovenia, Spain and Sweden.

The set of variables selected as indicated above for the study met several basic characteristics determining the correctness of the research process. First, the collected data was available for all the countries covered by the analysis during the same period. Second, the figures were comparable with respect to each of the analyzed countries (they were objectified). Third, and last but not least, the data was complete.

The current study carries out standardized correlation analysis, there the collected data is sorted and categorized. Firstly, the new business density index will be analyzed. Statistical data regarding the new business density indexes from all of the analyzed countries will be shown respectively on a graph expressing the dynamics in this index for each country in the years 2015-2020. Such a kind of data set will make it possible to answer the research question about the dynamics of new firm formation in the analyzed period, before and during COVID-19 (Fritsch et al., 2021).

The second step will be to analyze the changes throughout the years in the starting a business index and the paying taxes index for each country in the years 2015-2020. This set of data will allow us to determine changes in the index values. Next, the comparative method will be used (Popescu, 2021). The authors will compare the following data across the countries - the new business density index in each country to the starting a business index in each country for 2019-2021 and the same comparison to the paying tax index. Their role will be to identify how changes between fiscal indicators impact the new business density index in the given countries. The research conducted in this way will provide verification of the formulated research hypotheses and will be a source of information on the relationship between fiscalism and the creation of new companies and the impact of COVID-19 on entrepreneurship.

Based on the review of the literature on the subject, the following variables describing the level of fiscalism were selected for the study as explanatory variables: starting a business and paying taxes. As an explained variable expressing new registrations the indicator of new business density was selected. The source of the selected data is World Bank. The timeframe of data takes into account the years 2015-2020, which allowed the analysis to include the pre-COVID-19 period. That provide an assessment of the impact of COVID -19 on the economic activity under consideration i.e. creation of new firms. The descriptive statistics on the variables, which were analyzed, are presented in the Attachment (see: Table 2).

To study more the specific relationship were used regression analyses (see below about regression results). As a dependent variable the New business creation indicator and explanatory variables are included Paying taxes and New business density level indicators were selected. The model includes the above-named set of countries and the data covers the period 2015-2020.

Research results

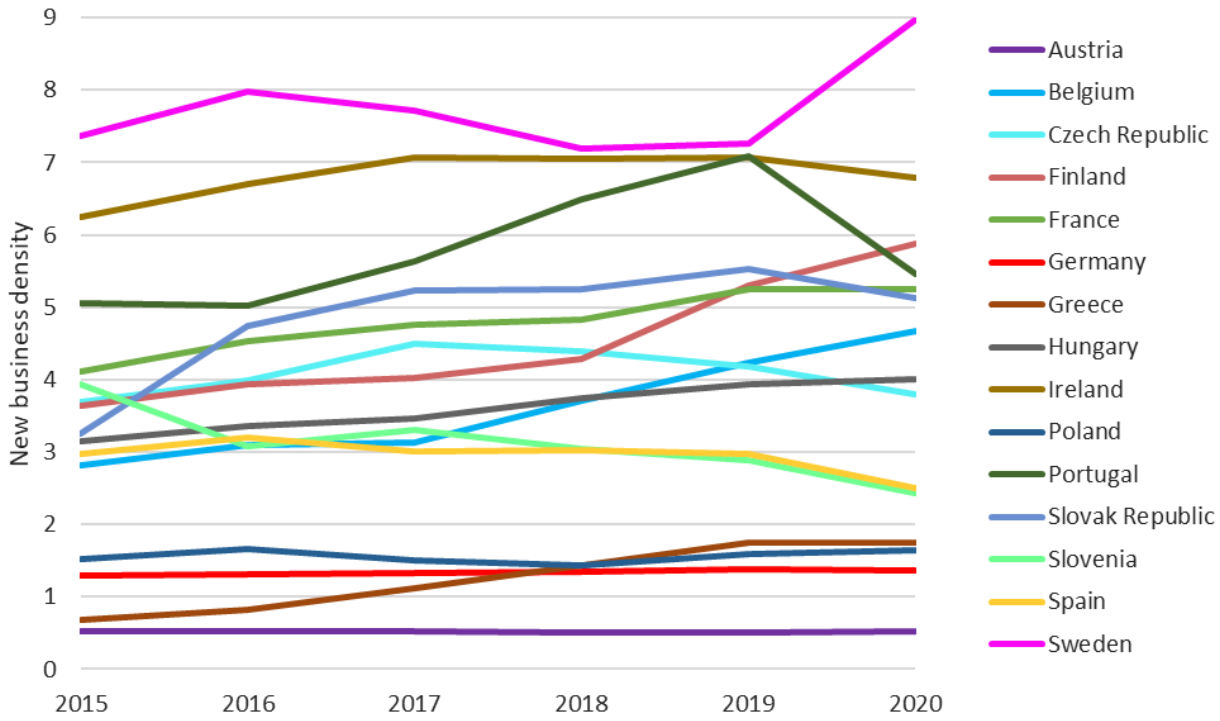
Covid-19 impact on new firm formation

This part of the analysis will focus on changes in the new business density index throughout the years 2015-2020. It will show which countries experienced the largest growth in the new business density index and which countries experienced a decrease in this index and which countries show the new business density index in a rather stable position throughout the years. The analysis will also consist of how this index changed in the time of COVID-19 and which countries experienced a significant change in this index at that time.

Figure 1 shows the changes in the new business density index thoughout the years 2015-2020 without Estonia, which is considered an outlier due to the biased level of that indicator. It allows more reliable country comparison.

An increase in the new business density index in the analyzed period of 2015-2020 (inclusive) was observed in countries such as: Belgium, Hungary, France, Slovakia, Portugal and Greece. The highest increase in the new business density index (apart from the aforementioned Estonia) was recorded in Portugal and Slovakia. On the other hand, the values of the new business density index remained at a relatively similar level over the years in Austria, Germany, Poland, the Czech Republic and Spain. The largest decrease in the new business density index was recorded in Slovenia.

Figure 1: Changes in the new business density index of analyzed countries from 2015 to 2020



Source: Own elaboration.

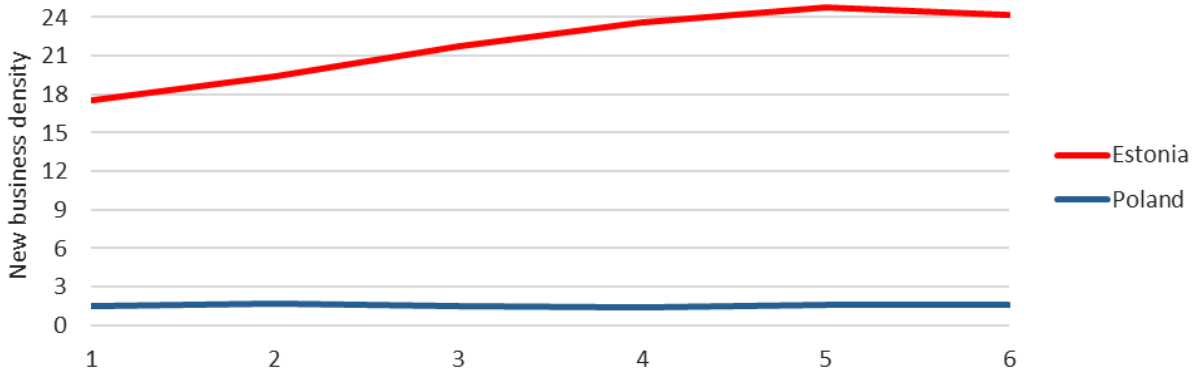
A large increase in the new business density index during COVID-19 was recorded in Sweden. Unlike in other countries, no significant governmental restrictions or a full lockdown were introduced. Only the government's recommendations to citizens were made, which prevented the economy from slowing down as much as in other countries[6]. For the other countries, this indicator remained relatively stable during the COVID-19 period. Obviously, the situation was caused by the anti-crisis measures introduced in those countries. For example, in Germany, the government protected businesses and start-ups using various financial instruments. Those included taxation support, state-supported short-time work compensation schemes, improved measures at guarantee banks, loans and special programs and an emergency aid that offered one-time lump sum payments to the self-employed, which faced substantial revenue decline (Belitski et al., 2022). During this period, there was also a high development of the e-commerce market (paradoxically, COVID-19 increased entrepreneurship in the field of e-commerce)[7]. For example, in 2020 about 11.8 thousand new online stores were opened in Poland[8].

A significant decrease in the number of newly opened companies during COVID-19 and the slowdown in the activity of the companies operating so far was recorded in Portugal, which was due to the fact that Portuguese companies focus their activities on the tourism sector, which significantly reduced its activity during COVID-19. Portugal (due to the structure of GDP) is one of the EU countries most affected by the COVID-19. The decrease in the number of foreign tourists amounted to nearly 74%, which translated not only into a decline in the pace of creating new business entities but also in the phasing out of the activities of companies operating in the country so far[9].

The outlier country among European states is Estonia, where the business creation rate is expressively above the European averages. Figure 2 shows that Estonia had a large number of newly registered limited liability companies per 1,000 people of working age (compared to the number of users in the registers). There is a set of reasons which make such indicators so significantly higher than in other European countries.

[6] https://www.euractiv.pl/section/bezpieczenstwo-i-obrona/news/przeciwnicy-obostrzen-wskazywali-brali-ten-kraj-za-przyklad-teraz-szwecja-wprowadza-jednak-restrykcje/ (Accessed: 2022.05.20).
[7] https://businessinsider.com.pl/finanse/handel/pandemia-przyspieszyla-rozwoj-rynku-e-commerce/vkmt366 (Accessed: 2022.05.20).
[8] https://expertsender.pl/blog/jak-bardzo-urosl-polski-e-commerce-w-2020-roku/ (Accessed: 2022.05.20).
[9] https://r.search.yahoo.com/_ylt=AwrINWCISa9i2G8ApAkzhgx.;_ylu=Y29sbwNpcjIEcG9zAzMEdnRpZAMEc2VjA3Ny/RV=2/RE=1655683592/RO=10/RU=https%3a%2f%2fwww.gov.pl%2fattachment%2f62adfd19-4fd8-4269-ac71-535645693474/RK=2/RS=P.jPIF5HoEbJ_ei3rtDAVmAzUAQ- (Accessed: 2022.05.15).

Figure 2: Changes in the new business density index in Estonia and Poland 2015 to 2020



Source: Own elaboration.

One aspect is related to developed e-governance solutions[10]. 99% of the population have accesss to digitized public services. Estonia also has a business-friendly tax system - a flat personal income tax of 20%, with a continuous downward trend in the last two decades[11]. What is more, the tax-free amount is higher than in Poland. The CIT is in the amount of 20%, but as a result of reinvesting the profits it will be 0%. The return that encourages people to start a business in this country is the relatively quick VAT return. Estonia has a very high position in the the global business environment rankings: 6th place in the global startup ecosystems report 2021[12], 3rd amoung the EU-startups ranking in 2019. In this country the CIT is payable at the time of dividend payment. In the event that the funds are reinvested in the development of the company, the tax is not paid on the intended scope. Finally, it is easy to obtain work and entrepreneurial visas. Estonia has an e-Residency program which is famous around the globe because it allows you to be an e-resident in a country in Europe and manage your Estonian company remotely[13].

In comparison to Estonia, starting a business in Poland is not that easy. The first obstacle is the number of formalities and bureaucracy a citizen must go through to start a business. In the International Tax Competitiveness Index 2021, the Tax foundation placed Poland in 36th place out of 37 OECD countries, meaning that Poland has one of the most business-unfriendly tax systems. One of the problems is also the high degree of complexity of the system. Poland has a high rate in consumption taxes (23%). One of the weakness of the Polish taxation system is that Poland has several distortionary property taxes with separate fees on real estate transfers, estates, bank assets, and financial transactions[14]. Poland has a competitive CIT rate which is 19%, excluding small tax-payers or start-ups for whom the CIT is 9%[15].

Time-series analysis of studied indicators

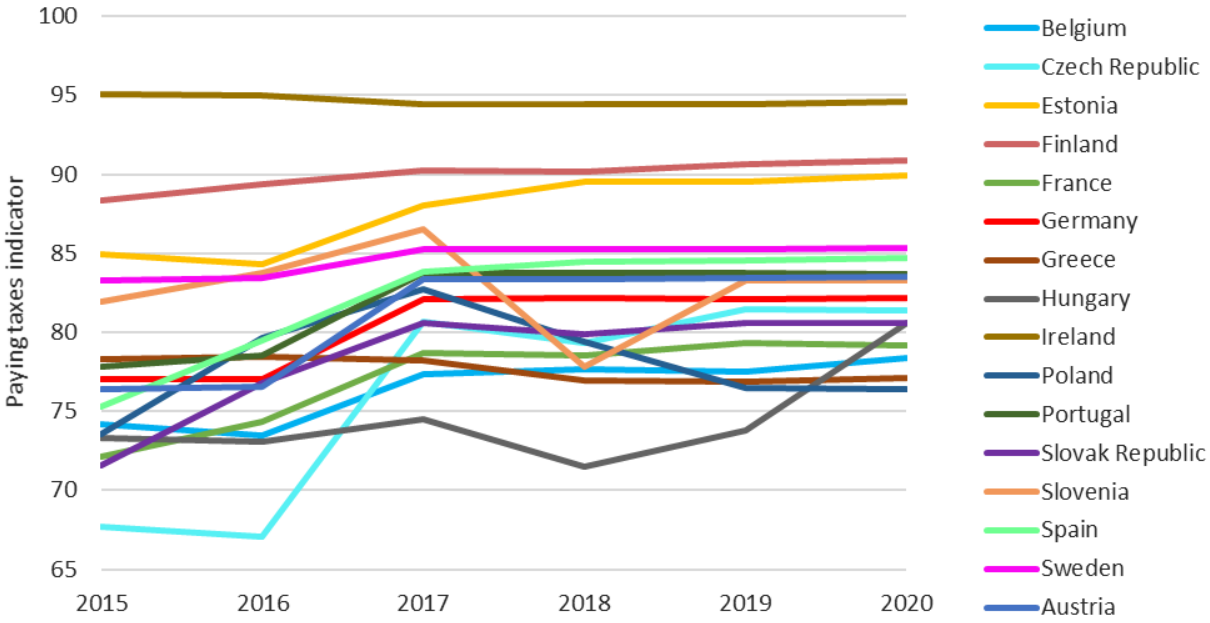
There are certain trends of components to be considered, which define the new firm formation rate during the period. One important component of business activity is related to the tax burden. Next, trends in the indicator of paying taxes over the set of countries is considered. The paying taxes index informs us about the total taxes, administrative burden regarding paying taxes and compulsory contributions paid by limited liability companies. The lower the tax burden in a given country, the higher the value of the paying taxes index.

At the top of the list of business taxation friendliness are Ireland, Estonia and Finland; at the bottom are Belgium, Greece and Poland. The most significant improvements in their ranking position were noted by Hungary and the Czech Republic.

The Czech Republic was among the group of countries with the highest increase in the paying taxes index, and thus the largest recorded improvement in establishing a business activity in the analyzed period. In the years 2016 - 2017, the costs related to the registration of business activity decreased significantly there. The time needed to register a company was also shortened by enabling notaries to register companies directly via internet systems[16].

[10] https://incorporate.ee/insights/articles/3-reasons-why-estonia-one-best-business-environments-world (Accessed: 2022.11.23).
[11] https://e-estonia.com/tax-competitiveness-index-2022-estonia-has-the-worlds-best-tax-system/ (Accessed: 2022.11.23).
[12] https://estonianworld.com/business/estonia-ranked-among-the-worlds-top-startup-ecosystems/ (Accessed: 2022.05.20).
[13] https://www.eu-startups.com/2019/11/the-5-best-countries-in-the-europe-for-founders-and-startups/ (Accessed: 2022.05.20).
[14] https://taxfoundation.org/country/poland/ (Accessed: 2022.11.23).
[15] https://www.biznes.gov.pl/pl/portal/00251 (Accessed: 2022.11.23).
[16] https://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB2018-Full-Report.pdf (Accessed: 2022.05.20).

Figure 3: Changes in the paying taxes indicator



Source: Own elaboration.

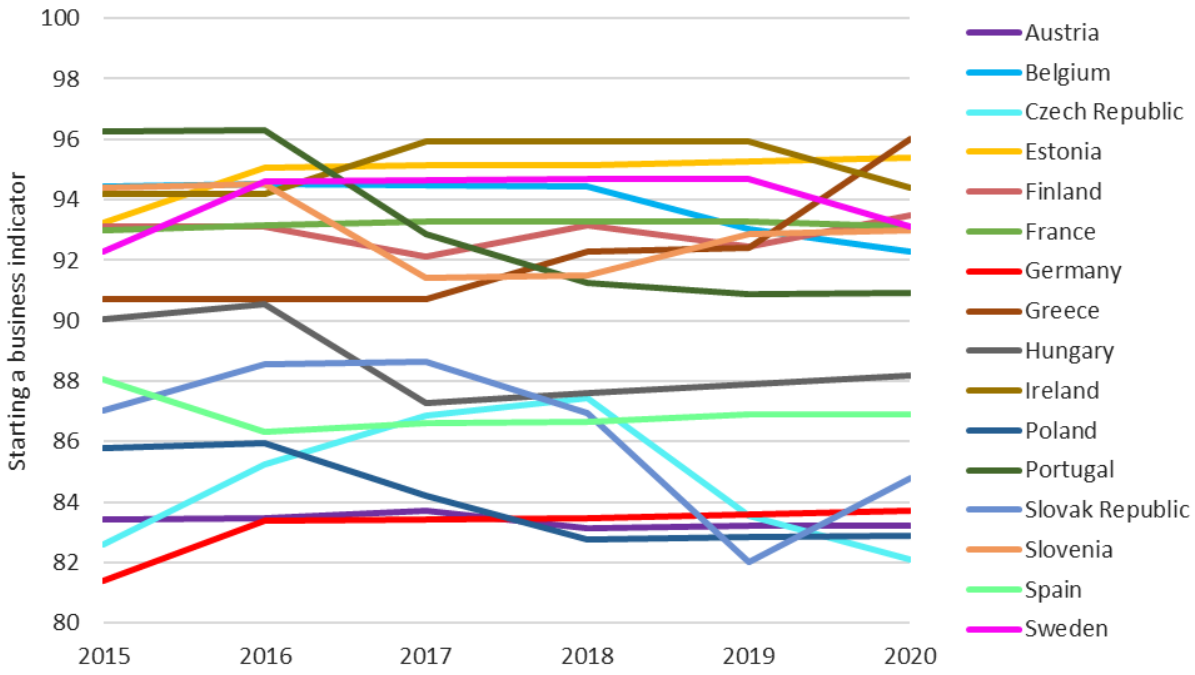
In the case of France (2015-2017), the rates of profit tax, labor taxes and compulsory social security contributions were reduced. This resulted in lower operating costs and acted as a stimulus for greater economic activity. In the case of Slovakia (2015 - 2017), improvements were introduced in the electronic systems for business activity registration, the profit tax rate was reduced. On the other hand, in Spain (2015 - 2017) a reduction in the profit tax rate was recorded[17], and the corporate income tax rate was lowered. Moreover, Spain has simplified business registration by introducing an electronic system that connects several public agencies on one platform, not only reducing the time needed to set up a business, but also simplifying the process from the procedural (administrative) side. Finally, Portugal (in 2016-2017) lowered the costs related to incurring the tax burden by lowering the corporate income tax rate[18]. The conducted analysis showed that the increase in the paying taxes index took place in countries where the new business density index increased (i.e. in France, Slovakia and Portugal) or remained at a relatively constant level (i.e. in the Czech Republic). The increase in the value of the paying taxes index is conducive to the dynamics of economic activity expressed through the new business density index.

Slovenia is the country with the largest decrease in the paying taxes indicator in 2017-2018. The reasons for this were the following changes: an increase in the number of hours to obtain a VAT refund, an increase in the number of hours needed to perform an audit on corporate income tax and an increase in the time needed until the end of the corporate income tax audit. On the other hand, in the case of Poland, in 2017-2020, the payment of taxes was significantly impeded, because the requirement of monthly reporting of VAT returns was introduced, the list of goods and services covered by the reverse charge mechanism was extended, and new SAF-T reporting obligations were introduced. In both these countries, a decline in the value of the new business density index was recorded, which may mean that they had an impact on the dynamics of economic activity. Research has shown that there has been no decline in paying taxes in other countries.

The following are considered trends in the starting a business index (Figure 4). It measures conditions and procedures to establish and register a new company. The easiest procedures to open a new business entity are in Greece, Ireland and Estonia.

[17] https://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB15-Full-Report.pdf (Accessed: 2022.05.20).
[18] https://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB16-Full-Report.pdf (Accessed: 2022.05.20).

Figure 4: Changes in the starting a business index



Source: Own elaboration.

The largest increase in the starting a business indicator in the analyzed period was recorded in Greece. The reason for such a significant increase in new business entities was the shortening of the time of company registration and the abolition of the requirement to obtain a tax clearance. Greece made starting a business easier also thanks to the introduction of a unified social security system. The significant improvement in the starting a business index in Greece is reflected in the new business density index. Its significant increase means that the new taxation system outcome is associated with new registrations. Moreover, in 2020, starting a business ranking in Greece was the highest compared to all countries included in the analysis.

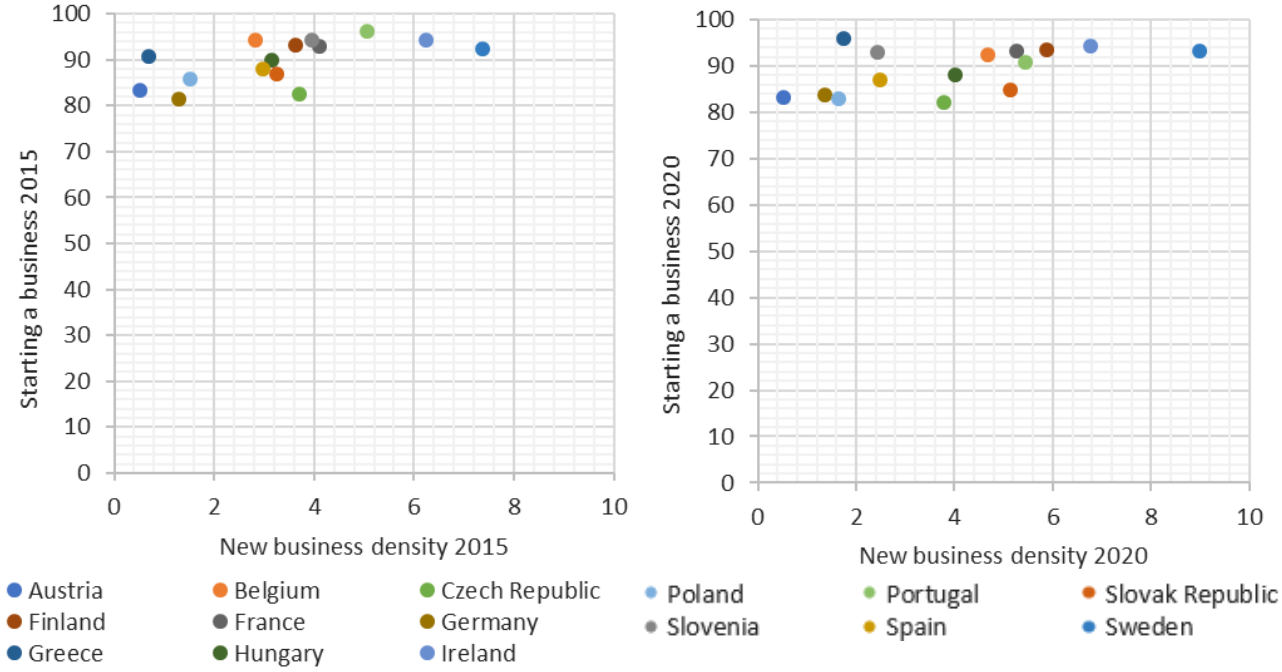
Countries with the highest decrease in the starting a business index are Slovakia (a decrease observed in 2017-2019), Portugal (in 2016-2020), and the Czech Republic (in 2018-2020). These declines were due to greater burdens in terms of time and procedures needed to start a business rather than fiscal factors. It is also worth paying attention to the situation in Portugal here. Before 2016, the new business density index for this country was the highest compared to other countries. However, starting from the next year, a significant drop in the value of the indicator is visible here, reflecting the deteriorating dynamics of new business entities registration. In the case of Slovakia and the Czech Republic, an increase and decrease in the analyzed period can be observed, causing this index in 2020 to be at a comparable level as in 2015. In the case of the Czech Republic this finds its reflection in the new business density index in the years 2015-2020. From the years 2015-2017 we could observe slight decreases in the number of new firms registered and from 2018 to 2020, slight decreases. When it comes to the Slovak Republic, there was an increase in the new business density index in the years 2015-2020 while we may observe a sharp decrease from 2017 to 2019 in the starting a business index for this country.

New business density index as a function of explanatory variables

This part of the research focused on analyzing the changes in the starting a business index along with the changes in the new business density index in the years 2015 and 2020. The starting a business index indicates the number of procedures, time, costs and minimum capital requirements paid to start and operate a limited liability company. The fewer procedures, less time, costs and minimum capital requirements – the higher the index value.

This kind of analysis will allow the authors to determine whether changes in the new business density index reflect changes in the starting a business index. Estonian data is rather different from other chosen countries; therefore it was removed as an outlier from the graphs below.

Figure 5: Starting a business index compared to new business density index in 2015 and 2020

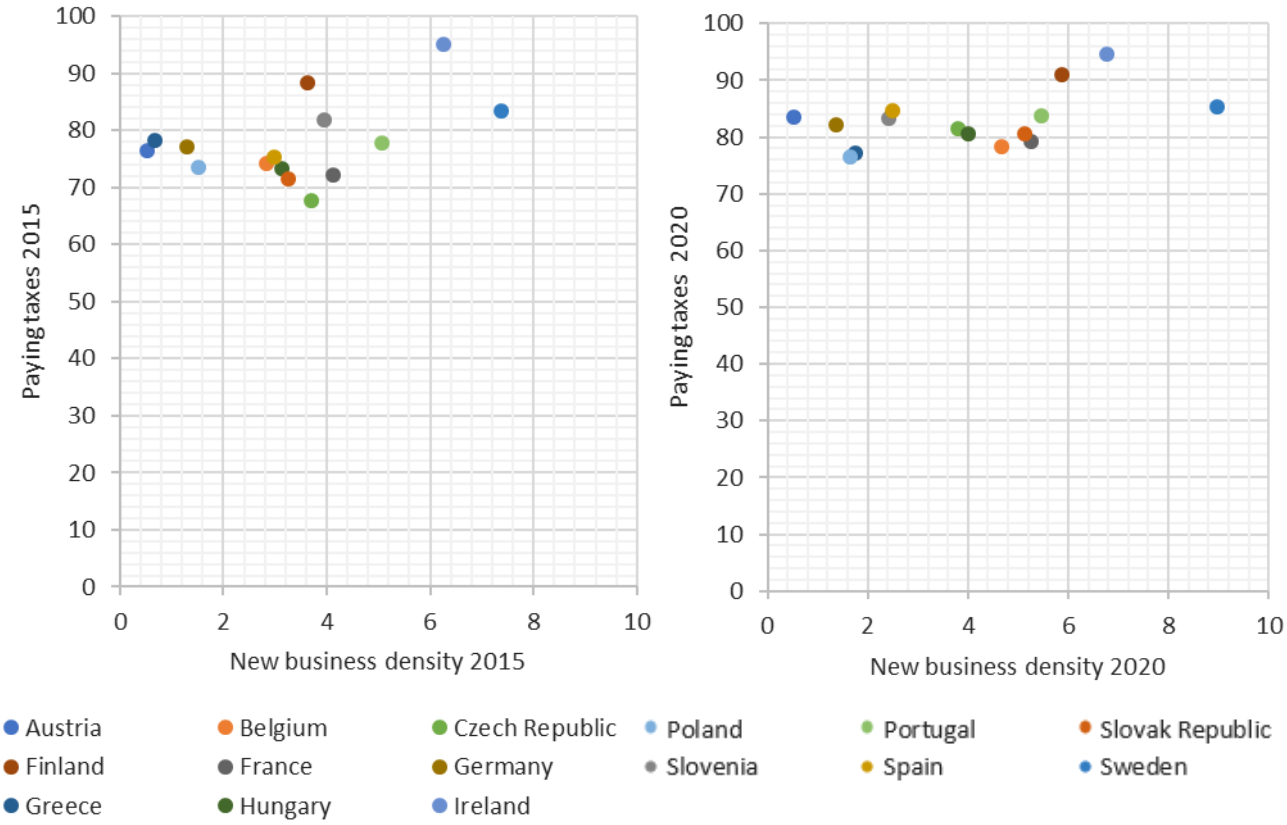


Source: Own elaboration.

Comparing the correlation relationships for individual indicators illustrated in the graphs above, it can be seen that in 2015, for most countries, the new business density indicator oscillated around the values of 3 to 4. In 2020 the value accumulation of the new business density indicator on average increased. In the analyzed period for all countries the starting a business index was between 80-100. This indicated that it is relatively easy to start a business in these countries. This means that a high starting business ratio positively influences the opening of new ones. In 2015 we can observe a large number of countries for which the starting a business index was over 90. These countries were: Estonia, Sweden, Ireland, Portugal, France, Finland, Slovenia, Belgium and Greece. When looking at the year 2020 it can be seen that most of these countries shift to the right meaning that high scores in starting a business reflect that more people started businesses in those countries. This clearly shows a positive correlation between the starting a business index and the new business density index.

Based on the graphs above analyzing the paying taxes and new business density indicators it can be concluded that in 2015, the highest accumulation of countries oscillated around the values of 3 to 4 of the new business density index and around the value of 70 in the paying taxes index. Already in 2019, the values of the paying taxes indicators of all of the analyzed countries were higher than 70. During this time, a movement of most countries to the right can be observed, i.e. the new business density indicator increases. In 2020, there was an accumulation of countries in the values of around 80 of the paying taxes indicator. After analyzing the accumulation of the values of individual indicators of the analyzed countries, the authors observe that in general an increase in the paying taxes indexes and an increase in the new business density appear. Summing up, we can see from 2015-2020 an increase in most of the countries in the paying taxes index. From 2015 to 2020 there was a shift in most countries upwards. The same can be said for the new business density index in 2015-2020 for which most countries shifted to the right, meaning that the new business density index increased. It can be stated that the increase in the paying taxes index positively influences the creation of new activities.

Figure 6: Paying taxes index compared to new business density index in 2015 and 2020



Source: Own elaboration.

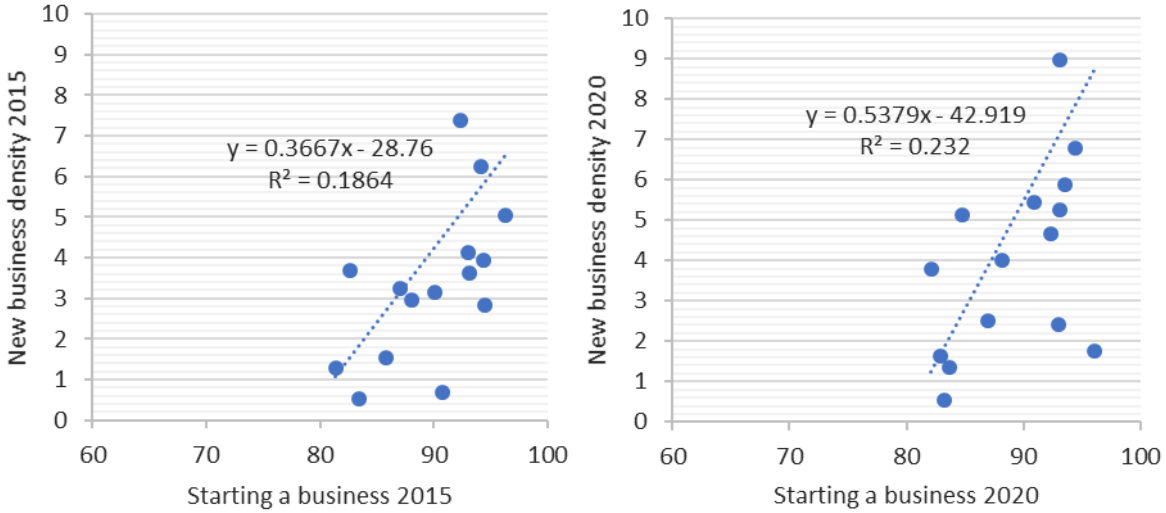
Correlation and trendline analysis

The starting a business index correlates positively with the new business density index. This means that as the "starting a business" index increases, so does the "new business density" index. The fewer procedures, time and costs required to start and run a business, the more newly registered businesses there will be.

Figure 7 demonstrate a linear and positive relationship between starting up businesses and business density. In each graph, the equation and trendline describe the correlation between variables in the given years. This clearly shows that the higher the starting a business index the higher will be the new business density index. This means that these two variables show that better conditions to start a business stimulate more firm registrations. The trendline became deeper over the years – that is, better starting conditions for the business activities generate more intensive entrepreneurial activities[19].

[19] https://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB2018-Full-Report.pdf (Accessed: 2022.05.20).

Figure 7: Trendline between new business density index and starting a business index in 2015 and 2020

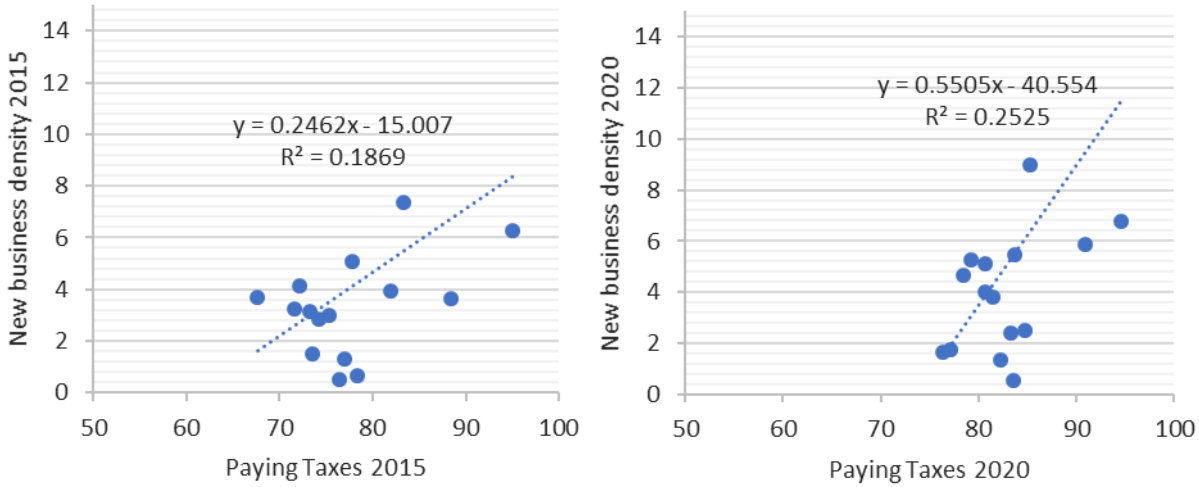


Source: Own elaboration.

In 2015, the correlation between the start-up and the density of new enterprises was 0.43. This indicates an average positive correlation of moderate strength. The higher the correlation, the greater the strength of the linear relationship between the two variables[20]. This indicates that the correlation is not perfect – logically, there are more variables to affect business activities. There are also other factors that influence the decision to start up a business in a country.

Next, we follow the relationship between new business density and tax system. Tax burden is assessed on the basis of paying taxes index.

Figure 8: Trendline between new business density index and paying taxes index in 2015 and 2020



Source: Own elaboration.

[20] https://www.investopedia.com/ask/answers/032515/what-does-it-mean-if-correlation-coefficient-positive-negative-or-zero.asp (Accessed: 06.05.2022).

The relationship of the indicators of paying taxes and new business density shows a positive correlation. This means that as the paying taxes index increases, the new business density index also increases. When the total taxes, administrative burdens and compulsory contributions that a company has to pay or deduct in a given country decrease, the number of newly registered companies per 1,000 people of working age increases. This stimulates the establishment of new companies. The correlation between the two indicators in 2015, 2019 and 2020 was 0.43, 0.46 and 0.5, respectively. This means that it is a positive correlation with the strength of a moderate relationship. Moderate correlation means that there may be deviations from the rest. We can observe such a situation because as in the case of the variable starting a business the relationship in different countries between paying taxes and new business density may be different. In some cases, such as Lithuania, the paying taxes index is significant impact to opening a business, which is higher compared with other countries.

The regression model

The standard multiple regression model quantifies the relationship between the business creation indicator and earlier described business indicators. As a dependent variable starting a New business creation indicator was chosen and explanatory variables included Paying taxes and New business density level indicators. The regression statistics and output is given in Table 3.

The regression model is statistically significant, as well as the independent variables' coefficients. The model outcome demonstrates that there exists a positive and statistically significant relationship between model variables. That is – the wider the existing business activities and the more business-friendly the taxation the higher the intensity of new business creation.

The model variables explain about one-third of new business creation factors. Such an outcome is logical as a business opening is complex and depends on many factors. However, the model outcome supports the conclusion that lower fiscalism is a supportive factor for the creation of more business activities. Also, the existing high intensity of business activities generates a kind of "fly-paper effect". That is – an already existing lively business environment creates a motivation for new entrants and supports undertaking new business plans.

Discussion

To sum up, one can say that the COVID-19 period did not has an overly severe impact on new business formation, compared to the year 2019. This confirms the findings of the authors Fritsch et al. (2021) and Popescu (2021), when analyzing the COVID-19 effect on new firm formation in Germany and in Romania. These authors analyzed the COVID-19 impact on new firm formation in specific industries. The authors found that this was caused by anti-crisis solutions implemented by the government and an increase in e-commerce. Popescu (2021) shows that e-commerce in 2020 increased by 50% in comparison with the year 2019. Although the number of new firms registered in 2020 remained relatively stable in comparison to 2019, Popescu shows that COVID-19 might have had a negative impact on business dynamism and long-term economic growth. Fritsch et al (2021) found that Germany had implemented a lot of support policies for entrepreneurs in order to minimize the number of firms closing. That is the main reason that such a strong and negative impact of the COVID-19 on the dynamics of the formation of new companies has not been recorded. Research shows that one cannot agree with the thesis put forward by Boudreaux et al. (2019) as they researched the effect of natural disasters on new firm formation. In their work, they showed that those events have a negative impact on new firm formation, while as we can see in the analysis that COVID-19 did not have a crucial effect on new firm formation.

The current study focuses not on specific industries, but the country economies as a whole. The analysis concerning the effects of fiscal policy on new firm formation shows a positive correlation between the indicators of paying taxes, starting a business and the indicator of new business density. This means that better conditions for entrepreneurs (lower tax burdens, easier start-up and formal business operations) are positively correlated wirh the number of newly registered limited liability companies in the country. This confirms the thesis by the authors mentioned before that high fiscal burden negatively affects new firm formation (Venâncio, et al., (2020); Braunerhjelm et al., (2014); Compbell et al. (2007); Canare, (2018)). As for Venâncio, et al. (2020), they showed that short-term tax reform affects new firm formation. Their research concluded that reducing taxes lead to an increase in firm formation. Braunerhjelm et al., (2014) found that administrative burden related to taxes negatively effects new firm formation. This has also been demonstrated in this paper when we analyzed the relationship between paying taxes and the new business density indexes. When taxes are lowered and the administrative burden related with paying taxes is lower this encourages people to start businesses. Compbell et al. (2007) show that increasing economic freedom has a positive effect on new business formation, less free states show a smaller rate of business formation. Research done by Canare (2018) showed that the starting a business index from the Doing business report has

the strongest effect on new firm formation, while paying taxes the next. The easier it is to start a business and lower taxes have a positive effect on new firm formation.

Unfortunately from the correlation analysis between the fiscalism indicators and new firm formation, it may be concluded that there is a positive relationship between these indicators but this correlation is not strong, there are certain deviations. When analyzing the "starting a business" index, the deviation of the Slovak Republic from the rest of the countries may be observed. This may be because of the fact that not only the level of fiscalism influences the choice of opening a company in a given country, but also many other factors that are not analyzed in this paper. This confirms the research done by Canare (2018) that other factors influence the decision to start a business. Canare (2018) analyzed lots of factors that influence new firm formation, but his research showed that starting a business and paying taxes are the crucial elements that influence the creation of new firms. Research performed by the authors also has shown that the variables of starting a business and paying taxes have an impact on new firm formation and are positively correlated with the new business density index.

Conclusions

This research concludes that low fiscal burdens positively affect new firm formation. This has been shown in a comparative study, as well in correlation and regression analyses. This confirms the first hypothesis that fiscal burdens negatively affect the creation of new firms.

The second hypothesis was that COVID-19 negatively affected the creation of new companies. During the research, the authors found that COVID-19 did not have a negative effect on new firm formation in the analyzed countries. In some analyzed countries, for example Sweden and Belgium, the number of new firms registered during this time increased in comparison to the year 2019, while for the rest of the countries, this indicator remained relatively stable during COVID-19. This was mainly caused by an increase in the e-commerce sector and support measures implemented by governments.

The study has some limitations. Limitations include the fact that the authors only focused on countries of the European Union. Perhaps these countries show similar behavior, and other countries located in other parts in the world, e.g. North America or Asia would show different results. This could also be the basis for future research to gain wider knowledge of the effect of fiscalism on entrepreneurship in different countries around the world. That is another constraint that appeared during the research. Some countries of the European Union had to be excluded from the research due to the lack of data on new business density available from the World Bank. This prevented an analysis of the fiscalism indicators on entrepreneurship in terms of different divisions (groups) of the countries of the European Union.

The authors only analyzed the effect of fiscalism on new firm formation. From the literature it has been shown that fiscalism is not the only factor that affects new firm formation. Future research may focus also on different factors which affect new firm formation, in order to provide an in-depth analysis of the factors affecting new firm formation. The last constraint was that the authors did not analyze the impact of COVID-19 on specific industries – only aggregate indicators were considered. Industry-specific study is definitely an area of prospective research.

Yet the research has clear added value. The study has shown that COVID-19 did not negatively affect new business registrations in total in most of the analyzed countries. The authors demonstrate that there is a positive correlation between the variables of starting a business and paying taxes with the new business density index. This correlation is not perfect, due to other factors which affect new firm formation but have a significant impact on new firm formation.

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APPENDIX

Table 1: Correlation matrix

	Tax burden	Business freedom	Starting a business	Paying taxes	New firms registered	New business density
Tax Burden	1					
Business freedom	-0.59521910	1				
Starting a business	0.23109570	0.47813343	1			
Paying taxes	0.11297703	0.46047323	0.36682258	1		
New firms registered	-0.32403389	0.00972585	0.02552307	-0.2237453	1	
New business density	0.31418554	0.56925294	0.56925294	0.3901012	-0.0548438	1

Source: Own elaboration.

Table 2: Descriptive statistics of the variables used in the research

Variable	Mean	Standard deviation	Minimum	Maximum
New business density	4.9023	4.890	0.508253	24.78605
Starting a business	89.9400	4.560	81.380000	96.28000
Paying taxes	81.4600	6.081	67.090000	95.07000

Source: Own elaboration.

Table 3: Regression model

Summary Output					
Regression Statistics					
Multiple R	0.527				
R Square	0.278				
Adjusted R Square	0.263				
Standard Error	3.916				
Observations	96.000				
ANOVA					
	df	SS	MS	F	Significance F
Regression	2.000	549.500	274.800	17.9100	p < 0.001
Residual	93.000	1426.000	15.330		
Total	95.000	1976.000			
	Coefficients	Standard Error	t Stat	P-value	
Intercept	75.010	5.774	12.990	p < 0.0010	
Paying taxes	0.161	0.073	2.209	0.0296	
New business density	0.373	0.091	4.117	p < 0.0010	

Source: Own elaboration.