Effects of COVID-19 Stringency Measures on Business Indicators in the European Union

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Abstract: The global pandemic had a big effect on business and the economy overall. Affected by the fear of the spreading virus, many countries implemented stringency measures. These measures additionally affected the level of business activities. The main objective of this study was to research and analyze the business effects of COVID-19 measures at the level of the European Union. Business indicators included business investment rate, the gross profit share of non-financial corporations, assets of non-financial corporations as a percentage of GDP, economic sentiment indicator, production in construction, production in industry, and the volume of retail trade (monthly data, percentage change on previous period). The main indicator used to show the level of stringency measures was the COVID-19 Stringency Index. Results showed a high correlation between stringency measures and business investment rate, assets of non-financial corporations, production in industry, production in construction and volume of retail trade. Some of these results could be under the influence of the European Union’s long-term budget, coupled with NextGenerationEU.

1. INTRODUCTION

The business sector has been heavily affected by the COVID-19 pandemic. Since the start of the pandemic, a high number of infected, many restriction measures including lockdowns, lowered the level of business activity. Productivity in all sectors decreased, prices increased and perception of the entire economy changed. No sector has not been affected by this issue. Additionally, waves of COVID-19 infection increased the fear, which had a big effect on the investment level.

As the world becomes more interconnected, the economic impacts of the pandemic have become more severe. In addition to increased health expenditures and a reduced labor force, the pandemic has hit the supply and demand chain massively and caused trouble for manufacturers who have to fire some of their employees or delay their economic activities to prevent more loss (Kolahchi et al., 2021). As a result, the pandemic triggered a health and fiscal response unprecedented in terms of speed and magnitude. On a global scale, fiscal support reached nearly $16 trillion (around 15 percent of global GDP) in 2020 (Levy & Filipini, 2021).

According to Fabbrini (2022), EU member states in an earlier phase of the pandemic mostly focused on containing the spread of contagions, and attention rapidly shifted to the devastating socio-economic consequences of the pandemic.

EU approved the long-term budget, coupled with NextGenerationEU (NGEU), the temporary instrument designed to boost the recovery. It is the largest stimulus package ever financed in Europe which consists of €2.018 trillion in current prices.

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The pandemic had a big influence on the economy. On the other side, the question is what are the effects of anti-COVID-19 measures on the business sector. The main objective of this study was to research and analyze the business effects of COVID-19 measures at the level of the European Union.

COVID-19 measures included closing schools, and offices, limited public transport, social distancing, etc. All of these measures had an effect in reducing of demand for many goods and services. To analyze these measures, the COVID-19 Stringency Index has been used. This index includes workplace closures; cancellation of public events; restrictions on public gatherings; closures of public transport; stay-at-home requirements; public information campaigns; restrictions on internal movements; and international travel controls.

2. METHODOLOGY

The research included the data from Eurostat and The Oxford COVID-19 Government Response Tracker. Having in mind the objective of the study, there were two types of information derived from these datasets:

- **Business indicators**
  - Business investment rate (quarterly data, percentage),
  - Gross profit share of non-financial corporations (quarterly data, percentage),
  - Non-financial corporations - Assets as percentage of GDP (quarterly data),
  - Economic sentiment indicator (monthly data, seasonally adjusted data, not calendar adjusted data),
  - Production in construction (monthly data, percentage change on previous period),
  - Production in industry (monthly data, percentage change on previous period),
  - Volume of retail trade (monthly data, percentage change on previous period).

- **COVID-19 measures indicator**
  - COVID-19 Stringency Index (daily data).

The research was conducted in 3 phases:

1) Data collection,

2) Data preparation for analysis,
   a) COVID-19 stringency index - calculation of a quarterly average and extraction of data for EU countries
   b) Economic sentiment indicator- calculation of a quarterly average
   c) Production in construction- calculation of a quarterly average
   d) Production in industry - calculation of a quarterly average
   e) Volume of retail trade - calculation of a quarterly average

3) Data analysis - calculation of mean, mod, median, variance, standard deviation, Pearson’s correlation coefficient.

Tools used for the analysis were Tableau and MS Excel.

3. RESULTS

The results of the study will be presented in the following way. First, an analysis of business investment rate, and gross profit share of non-financial corporations and non-financial corporations- assets as a percentage of GDP indicator at the level of EU and member states will be presented. After that, the correlation between all business indicators and COVID-19 indicators at the EU level will be presented.
The business investment rate at the EU level is presented with figures 1 and 2. During Q3 of 2020, the business investment rate was the lowest level since Q3 of 2017. The business investment rate average for the period of 2020-2021 is higher than the average for the period 2017-2019. At the level of member states, 8 member states reported lower business investment rates during 2020-2021 compared to 2017-2019. 12 member states reported that minimum of the business investment rate for the period of 2017-2021, occurred during the pandemic period 2020-2021.

![Figure 1. Business investment rate at the EU level](image1)

Source: Eurostat

![Figure 2. Business investment rate for EU member states](image2)

Source: Eurostat

The Figure 3 presents the gross profit share of non-financial corporations. According to collected data, the minimum level was reported in Q2 of 2020. The average Gross profit share of non-financial corporations for the period of 2020-2021 is higher than the average of the period 2017-2019. This result is mostly affected by a strong recovery after the very low Q2 of 2020.

Although nine countries reported a minimum share in the gross profit of non-financial corporations, we can see that for the rest of the countries, the average gross profit is higher during the pandemic period 2020-2021 than in the period 2017-2019. It is interesting to see that the assets of non-financial corporations as a percentage of GDP increased during the pandemic period. The average for the period 2020-2021 is higher than the average for the period 2017-2019. There was a fall during the Q1 of the year 2020, but strong growth followed in the period after.
Figure 3. The gross profit share of non-financial corporations in the EU

Source: Eurostat

Figure 4. Average gross profit share of non-financial corporations in the EU member states

Source: Eurostat

Figure 5. Assets of non-financial corporations as a percentage of GDP in the EU

Source: Eurostat
If data per country are analyzed, a similar situation can be observed. 21 countries reported a higher average and 19 countries reported maximum of a maximum percentage of GDP of non-financial corporations during the pandemic compared to the pre-pandemic period.

**Figure 6.** Assets of non-financial corporations as a percentage of GDP in the EU member states  
Source: Eurostat

In the following part of the analysis, the COVID-19 stringency index has been compared to business indicators at the EU level. In the following graph, dynamics of business investment rate, gross profit share of non-financial corporations, assets of non-financial corporations as a percentage of GDP, economic sentiment indicator and COVID-19 stringency index can be seen. Calculations showed that there is a strong negative correlation between pandemic measures and business investment rate (-0.619). On the other side, there is a strong positive correlation between pandemic measures and assets of non-financial corporations as a percentage of GDP (0.747). A very weak negative correlation was found for the other 2 indicators (-0.06 - gross profit share of non-financial corporations; -0.08 - economic sentiment indicator).

**Figure 7.** COVID-19 stringency index compared to business indicators at the EU level  
Source: Eurostat and https://ourworldindata.org/coronavirus
The situation is different when comparing the COVID-19 stringency index to production and the volume of retail. According to monthly data from February 2020 to September 2021, stringency measures heavily affected these sectors. Analysis showed that there is a strong negative correlation between the COVID-19 stringency index and production in construction (-0.71), production in industry (-0.79) and volume of retail trade (-0.72). In other words, more measures lead to lower production and lower retail trade volume.

![Figure 8. COVID-19 stringency index compared to production and a volume of retail at the EU level](https://ourworldindata.org/coronavirus)

**Source:** Eurostat and [https://ourworldindata.org/coronavirus](https://ourworldindata.org/coronavirus)

### 4. CONCLUSION

This study aimed to research and analyze the business effects of COVID-19 measures at the level of the European Union and member states.

Results showed that COVID-19 stringency measures did not have a big influence on the gross profit share of non-financial corporations and economic sentiment indicators. This can also be a result of EU financial assistance during this period. Probably, results would be different if there was not any assistance to the business sector.

It is surprising to see the growth of assets of non-financial corporations during the pandemic period. Growth of these assets was strong and the maximum of these was assets reported during this period.

On the other side, production and retail trade volume has been heavily affected by COVID-19 stringency measures.

Limitations of the research were a lack of ready-to-use data for small and medium enterprises for the analyzed period and a big diversity of measures between member states. Future research can be focused on the effects of stringency measures on small and medium enterprises. Additionally, future research can be focused on the analysis of the effects of stringency measures on business indicators of individual member states.
References


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