Economic cycle and economic consequences of the global SARS-CoV-2 pandemic in the Czech Republic

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Abstract.

Research background: The global SARS-CoV-2 pandemic is for human society unprecedented. Coronavirus is dramatically changing people's lives, and despite of uncertainty about the future, it is certain that its global consequences will have many dimensions. The it is undeniable that there have been significant economic impacts are unquestionable today impacts. The Czech economy, like the rest of the world, is facing an unexpected exogenous shock. This being manifests itself with varying intensity both at the level of sub-markets and on the side of aggregate supply and demand. It is literally a textbook example, explaining the outbreak of the downturn phase of the business cycle. Nevertheless, the sudden slowdown of economic activity as a result of the coronavirus pandemic, quarantine and the state of emergency, has many specificities across countries.
Purpose of the article: The primary goal of this article is to analyze the economic consequences of the pandemic crisis in the reality of the Czech Republic. On this basis, it identifies the specifics of a pandemic crisis, in the context of a broader framework of economic theories of business cycles.
Methods: The analytical part of the article is processed based on publicly available statistical data and economic forecasts. The derivation and argumentation of the conclusions is based on an empiric-inductive approach, methods of synthesis and comparison.
Findings & Value added: The article maps the business direct and mediated economic contexts of the economic cycle caused by the coronavirus pandemic in the reality of the Czech Republic. It identifies the differences and specifics of the downward phase of the pandemic business cycle and derives their possible long-term impacts. At the theoretical level, the ambition of the article is to bring new knowledge to the contemporary economic theory of business cycles.

Keywords: *globalization; SARS-CoV-2; markets and the economy; Business cycle theory; Czech Republic*

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1 Introduction

Economists were already recording declines in output and fluctuating economic development as early as the beginning of the 19th century. Mostly, these related to the transformation of agrarian economies into industrial economies. Later, the entire 20th century was accompanied by multiple global economic crises, the greatest of which was the Great Depression of 1929 to 1933 – associated with Black Friday and the collapse of the New York Stock Exchange. A number of economies around the globe failed as a result of this crisis, and it is considered to be one of the causes of World War II. The global financial and economic crisis of 2008 to 2009 was much milder from the perspective of economic impact. Its background is linked to low interest rates, which caused an unbelievable boom on the American mortgage market. However, there was subsequently a sharp decrease in the growth rate of real estate prices. Together with increasing interest rates and other costs, the number of late payments began to grow markedly, with debt-ridden real estate increasing. The crisis continued with the fall of prestigious banks on Wall Street. The fall of the Lehman Brothers investment bank meant not only an end to this institution, but it also caused stock markets around the world to crash. Eleven years later, the COVID-19 pandemic has plunged the global economy into a deep and globally synchronized recession. Around the world, humanity is confronted with an utterly unprecedented phenomenon, which no one had expected and no one alive has yet experienced [1, 2, 3]. Even though the course of the pandemic is still a great unknown, cautious estimate for a decline in the global economy for 2020 have already been published. For example, the International Monetary Fund predicted a decrease in the global economy of -4.9 % (for Europe -1.5 %, for the USA -1 %, and for China +2 %) [4].

Analyzing economic crises and business cycles is a key topic within economic theory [5, 6, 7]. Interest in theoretically clarifying prospects for the existence of underconsumption and economic imbalance can be already seen in the work of exponents of classical political economy (J.B. Say, R.T. Malthus, and J.S. Mill). Later, the beginnings of the modern theory of business cycles are mostly linked to the work of the Frenchman Clement Juglar and his work *Business Crises and their Periodic Repetition* (1862). Contemporary economic literature (usually without regards to the initial paradigm) considers business cycles' most striking feature to be fluctuations and deviations of the real gross domestic product's (GDP) yearly volume away from its potential level, i.e., its growth trend [8]. These fluctuations repeat irregularly and are accompanied by fluctuations in employment, investment, consumption, profits, wages, and other economic variables. Economic theory's terminology and its approach to describing the business cycle's individual phases are not concise; nonetheless, the traditional definition includes two phases (expansion and contraction) and two turning points (peak and trough). Academic studies dealing with empirical research and business cycle analysis have specified their nature, amplitude, periods, duration, etc. However, no two business cycles are the same, individual phases do not affect the economy in isolation, and even their tendency for spillover increases along with increasing globalization. Since the last third of the previous century, however, cycle fluctuation has been becoming more moderate (like a bouncing ball), and due to a drop in transactional costs, the inflation rate dips down during periods when there is a rising business cycle motivated by cost pressures [9, 10].

Concerning the needs of economic analysis, it is primarily alternative hypotheses and opinions on the cause of business cycle emergence and clarifying their spreading mechanism that are essential to economic theory. Causes that have been put forward are monetary, real-world, exogenous, and endogenous factors, as well as various combinations of these. Gottfried Haberler, for example, presented an overview of monetary and non-monetary explanations linked to the classification of individual approaches in his work

Prosperity and Depression (1937) [8]. The monetary causes of business cycles are most often linked to central bank monetary policy, regulating the amount of money in the economy, and interest rate fluctuation (J.K. Wicksell, L. von Mises, R.G. Hawtrey, M. Friedmann, etc.). However, many economists believe that monetary factors do not cause the economic cycle alone and therefore tie their influence to various real-world factors (J.M. Clark, F.A. Hayek, A. Spiethoff, R.J. Barro, A. Aftalion, etc.). According to the "old institutionalists," it is necessary to understand the business cycle not as a deviation from the equilibrium but as a necessary, permanent developmental form of the market economy that is significantly influenced by prices (primarily W.C. Mitchell and J.R. Commons) [9,11]. The work of R. E. Lucas (the equilibrium theory of business cycles) is the one most often associated with integrating the cycle issue into the theory of economic equilibrium and explaining it according to the theory of rational expectations. With certain simplification, it can be said that Keynesian approaches (P.A. Samuelson, J.R. Hicks, F. Modigliani, M. Kalecki, etc.) emphasize the role of aggregate demand and its fluctuation when explaining the causes of business cycles, primarily as the result of unstable investment [12,13]; classical theory then turns its attention to shocks on the part of aggregate supply in the context of real variables (called the real business cycle theory, e.g., D. Romer, R.E. Lucas, G.D. Hansen, E.C. Prescott, F.E. Kydland, etc.). There are also other key driving factors that play a significant role in theoretically clarifying business cycles' causes. At this level, endogenous factors (economic, e.g., wages, returns, investment, or J.A. Schumpeter's waves of innovation) and exogenous factors (extra-economic ones, e.g., natural waves, revolution, war, institutional changes, political cycles, etc.) – or their combination – are distinguished. Since the middle of the previous century, economic research has associated interest in economies' cyclical fluctuation with the issue of economic growth and how to model it. Primarily, the most frequently cited models are the endogenous growth models (P. Romer, R.E. Lucas, etc.), stressing the assumption of the endogenous nature of technical and technological change, innovation, human capital, knowledge, and its spillover effects [14,15].

Contemporary research points to a whole range of other factors that either directly or indirectly influence production resources and economic development [16]. In the context of our paper's topic, it is necessary to state that economists have not yet examined the influence of a global pandemic on the scale of SARS-CoV-2. Nevertheless, our paper is primarily focused on analyzing the economic consequences of this pandemic crisis within the reality of the Czech Republic. In the context of the wider framework of economic theory on business cycles, our goal is to identify the direct and indirect economic effects of the pandemic business cycle, its specifics, and probable long-term impact. At the theoretical level, the article's ambition is to offer new findings for contemporary theory on business cycles.

2 Methods

The work on our research problem consists of both systematic research in academic literature (review) as well as thorough analysis and synthesis of the available statistical data. The theoretical analysis is based on selecting key findings from economic theory on business cycles. It is founded on original work by cited authors and supplemented with findings from the research of relevant schools of thought in international and Czech literature. The findings have been compared in the context of theoretical-methodological and historical genesis; here, the methods of comparative analysis, synthesis, and verbal deduction were applied. The paper's analytical section has been processed using statistical data and economic prognoses that are available to the public. We primarily used the websites of the Czech Statistical Office (CSO) and the Czech National Bank (CNB) as the

sources for our data. Currently, complete data (macroeconomic indicators) for the performance of the Czech economy are available for the first quarter of 2020; data for the second quarter are not yet complete. We relied on the (empirical) inductive approach and the methods of comparison and synthesis when extrapolating and providing arguments for our conclusions. Our primary goal is to analyze and discuss the economic impacts of the spread of the SARS-CoV-2 pandemic in the Czech Republic. We have also focused on defining key phenomena occurring within the pandemic crisis, which we tie into economic theory on business cycles and develop into general conclusions.

3 Results and Discussions

As seen in the following graph (Fig. 1), the Czech economy has grown relatively robustly over the long term. The year-on-year growth rates for real GDP in percentages illustrate the cyclical fluctuation of the Czech economy in the graph. The Czech economy's productivity clearly grew most intensively during the period after the Czech Republic's entry into the European Union, i.e., in 2005 and 2006. On the other hand, the steepest drop was recorded in 2009 in conjunction with the impact of the global financial and economic crisis. The Czech economy achieved a high growth rate after the economy's subsequent revival in 2015 and 2017. This was the result of an exceptionally positive boom situation during a business cycle peak, which, however, was already linked to the economy overheating to above its potential (the estimate for the Czech Republic's potential output is currently hovering around 3%). This situation already indicated a future drop in economic performance as a result of low labor productivity, lagging scientific and innovation processes, and a deepening imbalance on the sub-markets, primarily the labor market. However, unemployment continued to decrease, and the number of available jobs even topped the number of job seekers in 2018. The graph clearly shows that before the arrival of the SARS-CoV-2 pandemic, the Czech economy was slowing down and everything was indicating that economic growth would reach a stopping point even without the onset of the coronavirus pandemic. At the end of 2019, the official estimate for the economy's development for 2020 was a mere 2%.

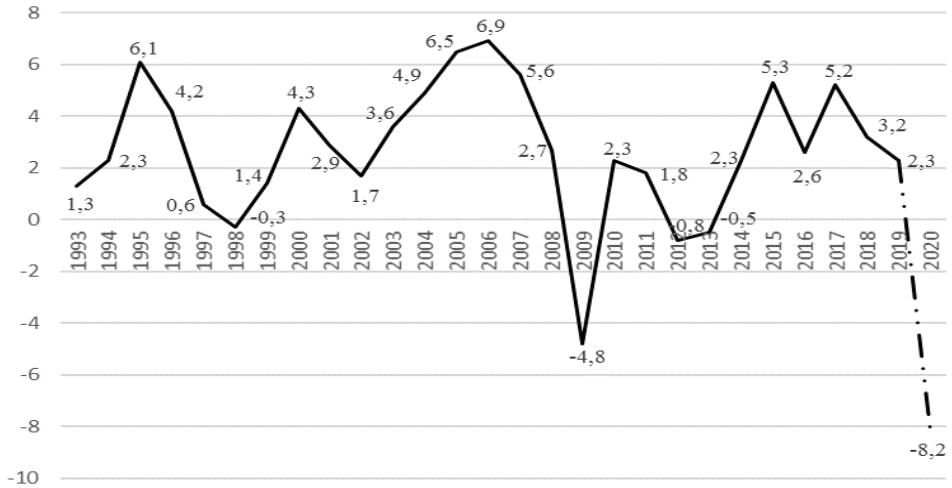

Fig. 1. The Cyclical Development of the Czech Economy.
Source: [17], author's own work.

The first three cases of infection in the Czech Republic were confirmed on March 1, 2020. The World Health Organization classified the SARS-CoV-2 epidemic as a pandemic on March 11, 2020. The next day, the Czech government decided to announce a state of emergency [18,19]. On the basis of this mandate, they limited the free movement of people across the territory of the Czech Republic as well as international ground transportation; they also essentially closed the national borders, among other things. All schools, restaurants, theaters, sports facilities, and most stores and services were shut down. At the company level, decisions were made about temporary closings or significant production limitations. Certain employers began to immediately let employees go, so that part of the workforce found themselves out of work overnight, and many companies turned to a home office regime. Overall, the adopted measures affected nearly two fifths of the Czech economy. This "nationwide quarantine" lasted a total of 66 days and was rescinded on May 18, 2020. During the course of the state of emergency, the Czech government passed a number of laws that were approved posthaste in the Chamber of Deputies and the Senate due to legislative emergency. For example, these extended time off work for dependents, gave aid to independent contractors, postponed electronic evidence of sales, and increased the deficit of the national budget. In April, these mostly concerned programs to support companies and entrepreneurs. By degrees, the following were enacted: a compensatory bonus for independent contractors (nicknamed the "Pětadvacítka," roughly translated as the "Twenty-fiver"), the Antivirus short-time working program (based on the German *Kurzarbeit* program, it compensates employers for employee wages*)*, retroactive application of tax losses (loss carryback), and the Covid Praha I and II loan and guarantee programs. Parliament approved a number of different types of relief (rent, loan, and payment deferral).

3.1 The Czech Republic's actual position in the cycle

The failure of economic activities supported by government measures to fight the spread of the coronavirus even made it into data for the first quarter of 2020. The data in the table (see Table 1) gives a profile of the Czech economy for this period. The immediate consequence of the March events was an expected drop in aggregate demand (the expenditure component of GDP), mainly concerning household consumption, gross fixed capital formation, and an increase in gross value added for non-financial corporations (Fig. 2). The downturn in the Czech economy was dampened in 2020 Q1 by increased government consumption and a decrease in the negative contribution of net exports.

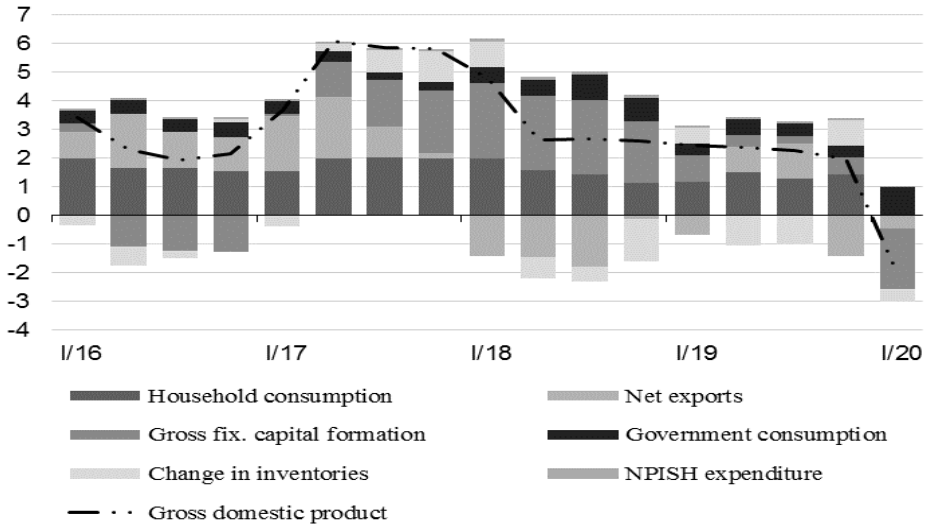

Fig. 2. Gross domestic product (annual percentage changes; contributions in percentage points; seasonally adjusted).
Source: [20], the author's own work.

The direct impact on gross value added primarily appeared in the period of the first quarter as a decrease in services (trade, tourism, shipping, and hospitality) and industry. Concerning the labor market, the impact of the March coronavirus pandemic situation could be seen only slightly in most of the indicators. Employment dropped by 0.5%, mainly in the areas of market services and industry. The general unemployment level remained near its historic minimum (2%). The number of available jobs continued to remain high. Wage dynamics was also positive in the first quarter. Wage growth held around 5% in market and non-market sectors. The growth rate for nominal unit labor costs increased slightly [20]. The table (see Table 1) also presents an estimate of the trajectory for the Czech economy's key macroeconomic indicators for the second quarter of 2020.

Table 1. Key Macroeconomic Indicators.

Macroeconomic Indicator/Quarter of the year 2020	**I/2020**	**II/2020**
GDP (CZK bn, constant p. of 2010, seas. adjusted)	1281.6	1156.7
GDP (%, year on year, real terms, seas. adjusted)	-2	-10.7
Household consumption (%, year on year, real terms, seas. adjusted)	0.1	-8.0
Government consumption (%, year on year, real terms, seas. adjusted)	5.0	5.6
Gross fixed capital formation (%, year on year, real terms, seas. adjusted)	-8.1	-21.4
Exports of goods and services (%, year on year, real terms, seas. adjusted)	-2.2	-28.1
Imports of goods and services (%, year on year, real terms, seas. adjusted)	-1.7	-23.5
Net exports (CZK bn, constant p. of 2010, seas. adjusted)	67.9	22.9
Aggregate labor productivity (%, year on year)	-1.5	-11.1
Inflation rate (%, end of period)	3.1	3.1
Consumer Price Index (%, year on year, average)	3.6	3.4
Average monthly wage (%, year on year, real terms)	1.4	-3.7
ILO general unemployment rate (%, average, age 15-64)	2.0	2.4
Current account / GDP (%, nominal terms)	5.5	-1.1
Direct investment (CZK bn, current prices)	-0.6	-21.0
CZK/EUR (average)	25.6	27.1

2W repo rate (%, end of period, CNB forecast = average)	1.00	0.25

Source: [20], the author's own work.

Currently (as of August 2020), we already have the opportunity to compare the estimated values for certain key indicators with actual publicized data, so that the Czech economy's development over the course of the second quarter of 2020 can be discussed with greater precision. The Czech economy is currently located acutely below its potential output, which recorded a steep decline as the consequence of certain companies – even entire sectors – shutting down and the decrease in work productivity. The previous potential output, which actually showed gains for most of the period, has changed into a year-on-year decline of -2% as a result of the coronavirus pandemic and its related measures [20]. In the second quarter, the Czech economy saw a year-on-year loss of more than one tenth of its output, which is the most striking drop in history (since 1993, the greatest year-on-year fall up to that point was a 5.4% drop in GDP during the second quarter of 2009 when the global financial crisis was peaking). A record decline in quarter-on-quarter comparison also occurred in the second quarter of this year: the Czech economy's previously most striking drop, in the first quarter of 2009, and the current drop in the first quarter of this year both equaled 3.4%. Now, the year-on-year decline is 8.4%. In the second quarter, mainly a drop in net exports, household consumption, and investment dragged the economy down. A year-on-year decrease has already distinctly appeared in capital-intensive sectors (industrial production dropped by -11.9% and construction by -11.5%). The deteriorating economic situation can also be seen more sharply on the labor market [17, 20]. After seasonal cleaning, the share of unemployed individuals increased in June to 3.9%, which represents an increase of 1 percentage point since the eruption of the pandemic in March. Increase was recorded for the general level of unemployment, which reached 2.6% in July. It is thus clear that even though the economy began to gradually return to normal operation over the course of May, the adopted government programs distinctly supported employment and demand for the entire second quarter (mainly the short-time working program, the moratorium on loan payments, and time off for dependents).

3.2 Economic expectations

The outbreak of the COVID-19 global pandemic was a negative exogenous shock for the Czech economy that has crippled the economy both from the side of supply as well as demand. The announcement of the state of emergency and the government's restrictive measures to prevent the virus from peaking supported the internal mechanism of the shock's spread. The immediate impact of the newly-emerged situation fully appeared in the data on economic performance during the second quarter. Concerning supply, there was a significant drop in potential output and the country's overall labor productivity, disruption of the supplier-customer relationships including cross-border contacts, a breakdown of foreign trade, a loss of foreign labor, and the termination or limitation of certain companies' activities. As to demand, there was mostly uncertainty on the part of individual economic entities, which was linked to a preference for liquidity, the postponement of consumption in favor of savings, and a drop in investment. Eliminating economic sentiment through government assistance programs was obtained by approving a record deficit in the national budget (CZK 500 bn. in comparison with the original approved deficit of CZK 40 bn.) and an increase in public sector debt. Measures supporting liquidity and the short-time working scheme, which limits greater layoffs, have been maintaining the economy. However, it is necessary to see these measures as short-term fiscal tools that are not a solution on their own, even though they are effective. Regarding the fact that the Czech Republic faces fall

elections for regional local government and part of the Senate, we would like to note that the current economic cycle is entwined alongside the political cycle. Moreover, the bureaucratic redistribution of public resources to aid the Czech economy is subject to the most varied special interests and is visibly increasing in pre-electoral populism.

Over the long term, we can expect other negative results from the liquidation of part of the economy, with nonproductive economic activity that should have been abandoned a long time ago being revealed and companies that had been just barely surviving going bankrupt. Regarding the ongoing and currently deteriorating pandemic situation, it is also possible to predict a negative impact on prosperous and promising companies, primarily small and mid-sized companies (these are 58% of the economy in the Czech Republic). The government has always taken care of large companies; they are "too big to fail" [1]. Company bankruptcy and increasing unemployment will most likely be significantly sectoral in nature, so that the crisis will have paradoxically strengthened certain sectors (primarily IT firms, companies manufacturing protective equipment, pharmaceutical firms, retail companies with online shops, etc.) The CNB's current estimate concerning the sudden drop in the Czech economy for 2020 is marked in the graph (Fig. 1) by a dotted line. However, analytic estimates of the year-on-year decline in the Czech economy are varied and fluctuate in the range of 7.5% to 8.4%. The Czech economy should see a gradual revival during the second half of this year (with the exception of sectors linked to tourism, which will be affected for a longer period). Accordingly, this particular scenario does not take a lengthy economic recession into consideration. Regarding the nature of the Czech economy (as a small, significantly open economy that primarily relies heavily on the automotive industry), international demand is mostly considered the key risk to further development. The CNB's prognosis calculates that as economies gradually open, foreign demand would revive with domestic economic activity following in turn, and potential output's growth rate could be restored in 2021. The negative gaps in output could also be closed in 2022, when the year-on-year growth rate of real output should reach a value of 3%. However, restarting the economy will also depend on renewing the trust of domestic companies and households. Where inflation is concerned, an increase in the price of groceries is mostly expected (mainly in conjunction with more expensive shipping and insufficient seasonal agricultural workers) as well as, conversely, a decrease in the price of services (with regards to the expected long-term slow down of international tourism.). At the same time, a drop in fuel prices linked to a decline in the price of oil would support a trend towards lowering inflation. As to the future, the disruption in government finances and the huge debt for future generations would appear to be a fundamental problem. There will be an exceptionally high volume of fiscal stabilization measures this year (the preliminary estimate is 2% of nominal GDP).

4 Conclusion

The result of strengthening international economic ties and increasing globalization is that the cyclical development of individual economies become synchronized. In the previous century, the Czech (at that point the Czechoslovak) economy was deeply affected by the Great Depression; it was also unable to avoid the global financial crisis of 2008 to 2009. Currently, the Czech economy is in the recessive phase of the ongoing pandemic business cycle. However, the political cycle running alongside it co-determines how this will play out. Even though economic activity is expected to revive in the second half of this year, the spread of the SARS-CoV-2 pandemic is not yet under control; uncertainty is prevailing in the social and economic environments. It cannot be said with certainty how effective the exceptional government measures will be, nor how long or how great the consequences of this crisis of the Czech economy will be. The problem caused by the

pandemic crisis will be long-term, and it is certain that the future will divide the world into before and after the coronavirus crisis. After each crisis, however, there is a boom, and thus there is also hope of an incentive to use the ongoing pandemic positively. Changes in the nature of how the Czech economy and its individual entities operate can already be observed – as can even a positive environmental impact. We are of the opinion that the coronavirus crisis will hasten the digital world's integration with the real world, robotization, and further expansion of smart technology. Even though it is too early for theoretical evaluation, this is the start of big changes.

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