

Does Economic Growth and Inflation Impact Consumer Confidence during a Pandemic? An Empirical Analysis in EU Countries

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ABSTRACT The study investigates the capacity of European Union member states to face the effects of the economic crisis caused by the COVID-19 pandemic. Namely, by means of a panel data analysis, the study reports on the impact of economic growth (proxied by gross domestic product) and inflation rates (proxied by harmonized indices of consumer prices) on the overall confidence indicator corresponding to 27 EU countries for the period fourth quarter 2019–third quarter 2020. Results showed that inflation had a negative influence on the confidence indicator during the pandemic crisis, while economic growth had no impact. The negative effect triggered by inflation uncovered the impact of monetary policies and fiscal policies on the staggering level of public debt. The study emphasizes that inflation plays a significant role in the market economy, reason for which governments should monitor this factor when trying to stimulate the economy and set appropriate policies for eliminating negative consequences of potential future recession periods.

KEYWORDS:

Confidence index; Economic growth; Inflation rates; Pandemic

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1. Introduction

Within the framework of the market economy, the topic of consumer confidence has always given rise to a multitude of studies due to its role in capturing perceptions regarding the health of a national economy (Dornitz and Manski, 2004; Eden, Bear and Walker, 2008; Espinoza Petersen and Hamilton, 2014; Fisher and Statman, 2003; Kucuk, 2005; Huth, Eppright and Taube, 1994; Ludvigson, 2004; Rojo-Suárez and Alonso-Conde, 2020; van Dalen, de Vreese and Albæk, 2017; Zeide, 2019). Consumer confidence is generally measured by a consumer confidence indicator. From a methodological standpoint, this indicator is determined with data from surveys conducted on corporate and individual consumers with respect to the state of present-day economy and future expectations of the market economy.

Given the fact that the variable captures inner perceptions, the level of consumer confidence is subject to a variety of influencing factors, both subjective and objective measures. For that matter, the American politician Virginia Knauer, who served as a chief consumer advisor to three US presidents, synthesized in few words the nature of this variable: “Consumer confidence in an industry can be a fragile thing. It only takes a few builders who promise but do not deliver, who cheat rather than perform, who delay until the warranty expires rather than repair, to damage the reputation of an entire industry”. In the same vein, Julie Bishop – former Australian Minister for Foreign Affairs – used to state that “the Australian economy is resilient, but business and consumer confidence is fragile”.

The present research study reports on whether economic growth and inflation drive consumer confidence across 27 countries in the European Union by uncovering the effects of the COVID-19 pandemic for the period fourth quarter 2019–third quarter 2020.

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So far the literature has given an account of multiple studies in which consumer confidence is regarded as a predictor in relationship with different economic phenomena, including economic growth. The novelty of this empirical study stems from the fact that it investigates the degree to which consumer confidence is influenced by economic variables such as inflation and economic growth.

The remainder of the paper is organized as follows. Section 2 surveys the latest relevant literature on the topic of consumer confidence and its main driving factors. Section 3 outlines the methodology and the research hypothesis. Section 4 discusses the empirical findings, while section 5 draws on concluding remarks, limitations and future research directions.

2. Literature review

The literature reports on a variety of studies investigating the matter of consumer confidence. The following paragraphs will tackle some of the most recent studies on how consumers perceive the economic environment and its future evolution.

Soesilo, Gunadi and Arimbi (2020) studied how consumer confidence and consumer perceived risk with respect to the acquisition of a technologically complex product (i.e., smartphone) were influenced by corporate credibility and endorser credibility. Results estimated on data collected from 225 participants via a 2x2 between-subject experimental study revealed the following: when the product was manufactured by a credible company and advertised by a less credible celebrity endorser, reported consumer confidence was higher and perceived risk was lower.

Lahiri, Monokroussos and Zhao (2016) estimated a dynamic factor model on a 160-variable dataset and concluded that consumer confidence significantly predicted individual consumption outlays. With the help of a machine-learning approach based on genetic programming, Claveria, Monte and Torra (2020) modelled industry and consumer confidence indicators using qualitative survey data from 13 European countries and the Euro area, in addition. Authors concluded that the suggested industry and consumer indicators were accessible in terms of use and accurate in forecasting the GDP growth rate on a quarterly basis.

Acuña, Echeverría and Pinto-Gutiérrez (2020) analyzed the relationship between consumer confidence and consumption in Chile. Empirical results showed that the two variables had a positive connection, namely consumption expenditures increased following a period of high consumer confidence.

In a comprehensive review regarding food safety within global food supply chains, Yu et al. (2020) argued that the level of consumer confidence was significantly affected by the shortcomings existing in food traceability systems on the account of recurring safety incidents and food recalls. Authors singled out the strategies of smart food traceability as being relevant solutions in the process of improving food safety. Therefore, approaches such as cloud computing, Internet-of-things, data-assisted whole-genome sequencing, portable detection gadgets or food packaging that integrate sensors were discussed in detail.

Oravsky, Tóth and Bánociova (2020) investigated the degree to which the 2008 global financial crisis impacted on variables such as consumer confidence, interest rates, GDP, deficit, country indebtedness and tax collection level. In addition, authors were interested in assessing the potential risks faced by selected countries against the economic downturn triggered by the COVID-19 pandemic crisis. The sample included 14 European countries belonging to the Organisation for Economic Co-operation and Development (OECD) and the period of analysis was 2001-2017. Interestingly enough, empirical results showed that consumer confidence decreased sharply across countries that were less affected by the 2008 financial crisis (i.e., Finland, Sweden, Switzerland). Moreover, in terms of tax collection, the lowest amounts of tax revenues were levied via the corporate income tax. Among the potential risks, authors identified the rise in country indebtedness and the mitigation of tax revenues.

By focusing on the Chinese economy during the last three decades, Soric (2020) used consumer confidence data with the purpose of developing a long-term growth model for this economy. According to empirical results, the two resulting models estimated higher rates of economic growth as compared to official figures.

Based on data retrieved from the US market by means of business confidence surveys, Khan and Upadhayaya (2020) investigated the degree to which business confidence impacted on investment

growth during the period first quarter 1955–fourth quarter 2016. Results indicated that business confidence had a significant predicting power for the evolution of investment as compared to other conventional factors.

3. Methodology and research hypothesis

For the purpose of this study, the following variables were considered:

1) *Consumer confidence indicator (CONFI)*, computed as an overall metric for economic sectors such as industry, services, retail trade, constructions and compiled by the Directorate-General for Economic and Financial Affairs (DG ECFIN) within the European Commission. The indicator captures economic perceptions and expectations of both economic sectors representatives and consumers. Data used to compute the indicator are gathered via surveys and are seasonally adjusted.

2) *Gross domestic product (GDP)* of a country, which can be regarded as a proxy for economic growth;

3) *Harmonized Index of Consumer Prices (HICP)*, which captures the evolution of overall prices paid by households for the acquisition of consumer goods and services. This index facilitates the comparison of inflation levels across countries;

4) *Harmonized Index of Consumer Prices – category “Processed Food Including Alcohol and Tobacco” (HICP_FOOD)*, which captures the evolution of prices paid by households for the acquisition of perishable goods (e.g., bread and cereals; dairy products and eggs; honey; jam; sugar and confectionary; oils and fats; coffee and tea; soft drinks; alcoholic drinks; tobacco);

5) *Harmonized Index of Consumer Prices – category “Restaurants, Cafes and Similar” (HICP_HORECA)*, which captures the evolution of prices for a variety of food products and beverages provided in various ways: a) by catering (e.g., bars, cafes, restaurants, tea rooms, etc.); b) at cultural, entertainment, recreational and sporting sites (e.g., art gallery, cinema, museum, sport complex, swimming pool, etc.); c) on public transport; d) automatic vending machines, kiosks, street vendors.

Econometric models testing the relationship between the confidence indicator and GDP, HICP, HICP_FOOD and HICP_HORECA were estimated based on the Panel Least Squares method with the statistical software EViews version 9. Data corresponding to the period fourth quarter 2019–third quarter 2020 were retrieved from the Eurostat database. The sample pool included 27 countries within the European Union, including the United Kingdom, which was still counted as a member during the considered time frame. The empirical research study focused on these particular countries because, since the outbreak of the COVID-19 pandemic, EU member states and their national economies have been severely affected as compared to other countries in the world (Sapir, 2020). Moreover, if one takes into account the interconnectedness of EU economies, the recurring lockdown periods and harsh surveillance strategies (in some countries) applied for almost one year so far, in addition to rising deficit levels, it is evident that the sanitary crisis has taken a toll on this part of the world.

Therefore, the following research hypothesis was tested:

H1. There is a linear relationship between CONFI and GDP, HICP, HICP_FOOD, HICP_HORECA.

4. Results

4.1. Key statistical indicators of central tendency and variation

In order to investigate the relation between the variables of interest, consumer confidence data with regard to economic sectors such as industry, services, retail trade and construction were retrieved from the Directorate-General for Economic and Financial Affairs (DG ECFIN) of the European Commission.

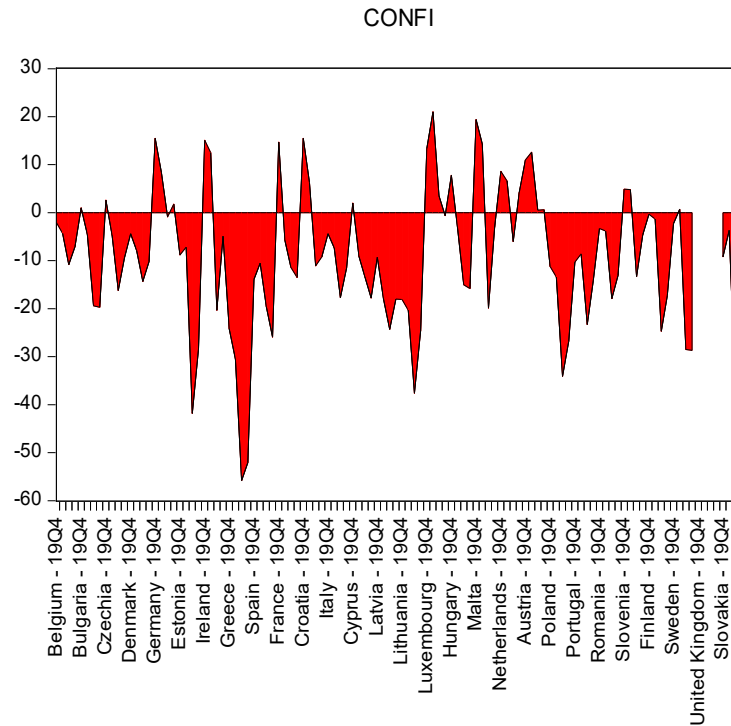


Figure 1. Evolution of the consumer confidence indicator across EU countries
(Source: author's own calculations)

Figure 1 plots the scatter diagram of the consumer confidence indicator in the EU countries. As can be noticed, the majority of EU countries registered a negative evolution of this indicator during the 2020 pandemic period. One interpretation of this trend could be the following: once the COVID-19 pandemic was officially recognized as a worldwide problem, businesses across all EU countries started to get caught in a web of plunging sales on the account of the recurring lockdown periods.

The following paragraphs present the descriptive statistics regarding the central tendency of the dataset for the variables of interest. Hence, Table 1 indicates the mean, median and standard deviation of these variables.

Table 1. Descriptive statistics

	CONFI	GDP	HICP	HICP FOOD	HICP HORECA
Mean	-9.3583	-0.8185	107.3479	108.9172	112.2540
Median	-9.1500	-0.0500	107.0350	109.2950	111.8050
Maximum	21.0000	18.7000	119.2900	121.9100	129.5200
Minimum	-55.8000	-19.8000	94.4700	92.0000	92.6800
Std. dev.	14.7967	7.8387	5.1263	5.6406	6.4476
Skewness	-0.4790	0.0372	-0.3569	-0.4845	0.3271
Kurtosis	3.5447	3.0482	3.4396	3.7963	3.7302
Jarque-Bera test	5.4652*	0.0354*	3.2798*	7.3406**	4.4856*
Observations	108	108	112	112	112

Note: *, ** denote significance at the 10% and 5% levels.

(Source: author's own calculations)

According to the standard deviation, which shows the fluctuation of the time series, the confidence indicator had the largest volatility, followed by GDP, while HICP registered the smallest

volatility. Skeweness values denoted that two variables (i.e., GDP and HICP_HORECA) were right-skewed and the other three were left-skewed.

Since the kurtosis corresponding to all variables was above 3, distributions were leptokurtic. Moreover, according to the Jarque-Bera test, all variables of interest were significantly non-normally distributed at the 10% and 5% levels.

4.2. Correlation analysis

Before estimating econometric models via panel data analysis, the links between predictors GDP, HICP, HICP_FOOD and HICP_HORECA were investigated with correlation analysis in order to rule out potential multicollinearity problems that could bias results. Pearson coefficients are displayed in Table 2.

Table 2. Correlation matrix for the variables of interest

	CONFI	GDP	HICP	HICP_FOOD	HICP_HORECA
CONFI	1				
GDP	0.143	1			
HICP	-0.117	0.006	1		
HICP_FOOD	-0.115	-0.100	0.790	1	
HICP_HORECA	-0.210	-0.029	0.607	0.545	1

(Source: author's own calculations)

As can be seen from Table 2, the majority of correlations between predictors reached a small to moderate level. The highest correlation was established between HICP and HICP_FOOD ($r = 0.79$). Since the literature acknowledges that multicollinearity arises only when two independent variables register a correlation of over 0.80, for the present study it can be stated that multicollinearity will not pose a problem for empirical results.

4.3. Econometric models

The general form of the econometric model was:

$$W_{it} = a_0 + a_1V_{1it} + a_2V_{2it} + a_3V_{3it} + a_4V_{4it} + \delta_i + \theta_t + \varepsilon_{it}$$

where,

- W denotes the dependent variable CONFI;
- a_0 denotes the intercept;
- a_i denotes the coefficient of the independent variables;
- V denotes the independent variables (i.e., GDP, HICP, HICP_FOOD, HICP_HORECA);
- i denotes the country;
- t denotes the time frame analyzed;
- δ_i denotes the fixed effects controlling for country-specific factors, irrespective of the period;
- θ_t denotes the fixed effects controlling for common shocks (i.e., pandemic crisis);
- ε_{it} denotes the error term.

Considering that common shocks influence dependent variables, econometric models were estimated with and without cross-section effects, as indicated in Table 3.

Table 3. Econometric models estimating the relationships between our variables of interest

	Model:	
	$CONF I = \alpha_0 + \alpha_1 GDP + \alpha_2 HICP + \alpha_3 HICP_FOOD + \alpha_4 HICP_H$	
Constant	550.6255*** (11.1265)	22.1949 (0.2801)
<i>GDP</i>	0.0522 (0.3051)	-0.0524 (-0.2482)
<i>HICP</i>	-1.9622*** (-3.8829)	-0.0042 (-0.0120)
<i>HICP_FOOD</i>	-2.2261*** (-3.9366)	-0.0308 (-0.0592)
<i>HICP_HORECA</i>	-0.9482*** (-9.6270)	-0.2509* (-1.9184)
Prob.>F	0.0000	0.0000
Coefficient covariance method	White	White
Cross-section effects	Fixed	No
Time fixed effects	No	No
R ²	0.7814	0.9026
Adjusted R ²	0.6957	0.8587
F-statistic	9.1202	20.5660
Observations	104	104

Note: Robust *t*-statistics are indicated in parentheses. ***, * indicate statistical significance at the 1% and 10% levels. The probability of not existing fixed effects is denoted by Prob.>F. Multicollinearity was investigated with the variance inflation test for both models. Since the values corresponding to the variance inflation test were below 3, multicollinearity was ruled out. The White test rejected the hypothesis of heteroscedasticity.

(Source: author's own calculations)

According to the first econometric model without time fixed effects, the independent variables GDP, HICP, HICP_FOOD and HICP_HORECA explained 69.57% of the variance in CONF I ($F = 9.12$, $p < 0.001$). The three harmonized indices of consumer preferences had a significant influence on the confidence indicator. Namely, a one-unit increase in the level of HICP would trigger a 1.962-unit decrease in CONF I. In the same vein, should HICP_FOOD augment by one unit, CONF I would decrease by 2.226 units, which is quite substantial. Moreover, when HICP_HORECA increased by one unit, confidence indicators would mitigate by 0.948 units.

The second econometric model with time fixed effects indicated that it explained 85.87% of the variance in the confidence indicator ($F = 20.57$, $p < 0.001$). The predictor HICP_HORECA had a significant influence on the evolution of the confidence indicator. That is, when HICP_HORECA augmented by one unit, the confidence indicator would decrease by 0.251 units.

5. Conclusions and policy implications

By means of a panel data analysis conducted on 27 EU member states, the research study analyzed the degree to which economic growth (proxied by GDP) and inflation (proxied by harmonized consumer prices indices) influenced the overall confidence indicator.

Estimated results indicated that GDP had no significant impact on the confidence indicator. Moreover, as can be seen from Figure 2, both variables followed a sinusoidal trend. The confidence indicator registered the biggest decreases in countries such as Greece (Q2), Estonia (Q1) and Slovakia (Q3). In turn, GDP registered negative fluctuations in countries such as Bulgaria (Q2), Hungary (Q2), Spain (Q1) and the UK (Q1).

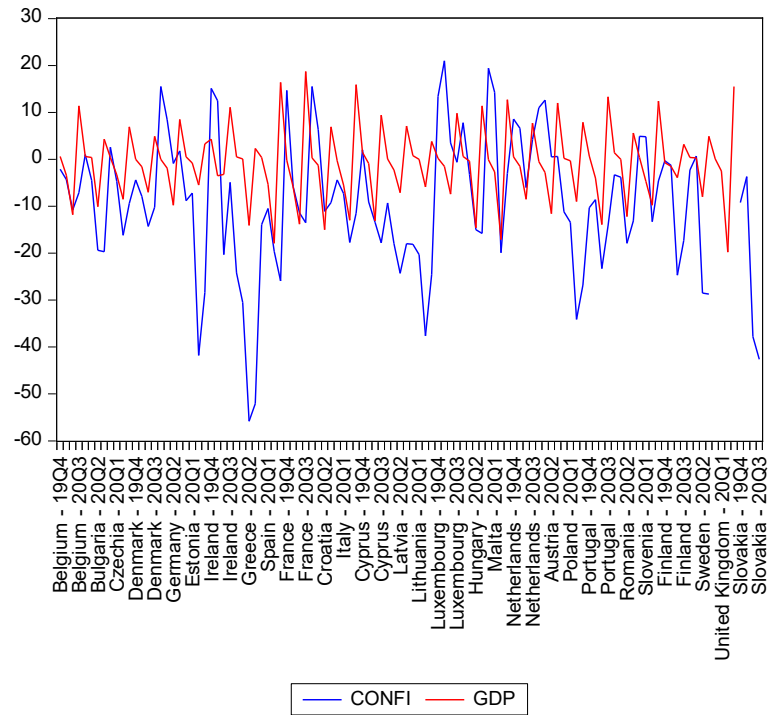


Figure 2. Evolution of GDP and CONFI across EU countries during the pandemic
(Source: author's own calculations)

According to the results estimated via the econometric models with and without cross-section fixed effects, harmonized indices of consumer prices triggered a change in the confidence indicator, as can be noticed graphically from Figure 3. In other words, during the period in which inflation reached higher levels, the confidence indicator mitigated and the other way around.

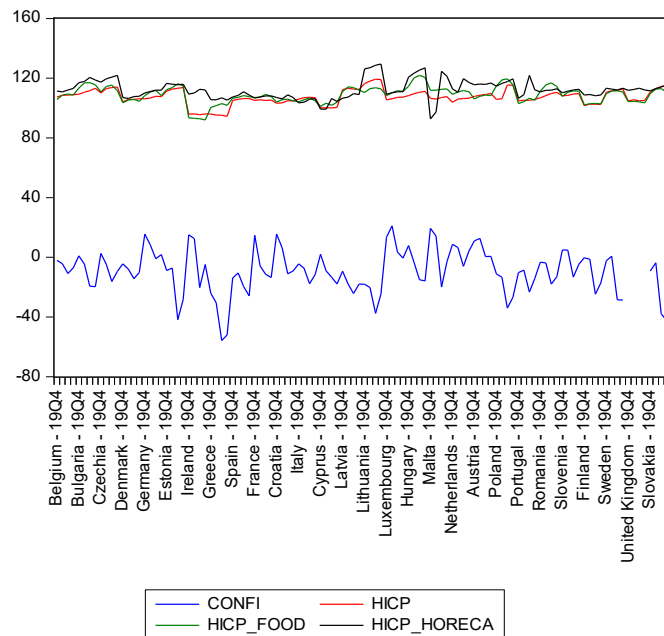


Figure 3. Evolution of the confidence indicator and harmonized indices of consumer prices in EU countries during the pandemic
(Source: author's own calculations)

The policy implications stemming from these empirical results are numerous. On the one hand, EU governments should enact fiscal policies that assist them while navigating this unprecedented health and economic crisis. On the other hand, national central banks across the EU, which do not belong to the euro area, should adopt measures of monetary policy in order to prevent the depreciation of their national currencies and to protect their consumers from potential upsurges in the price of essential food or touristic services.

Moreover, since the hospitality industry has been severely affected by the current pandemic, governments are called to use strategies of supporting this particular industry and others linked to hospitality activities, namely by: financing salaries during lockdown periods; granting financial support from national governmental authorities and the European Commission; stimulating consumers to buy touristic services via holiday vouchers, etc.

In terms of study limitations, one could mention the number of countries included in the sample. Future studies might consider increasing the sample and investigate the hypothesis on other European countries, especially aspiring EU members. This way, comparisons between current members and aspiring countries could be conducted for engaging insights. The time frame for the analysis could also be extended by considering other economic crises and endemics that have affected mankind during the 21st century. Moreover, ensuing research studies could revisit this empirical investigation and consider other variables that shape the levels of consumer confidence.

All in all, empirical research on how consumers assess economic conditions within a country is beneficial for both consumers and public authorities. On the one hand, surveyed consumers have the possibility of voicing their perceptions regarding economic matters such as the evolution of the financial situation, spending behavior, demand for a certain industry, selling prices, etc. On the other hand, public authorities can use these valuable data in order to gauge the overall state of the market economy and can tailor specific policies that address issues raised by consumers. This way, by monitoring national markets and expeditiously amending shortcomings, public authorities can focus on efficiently collecting tax revenues and provide high quality public goods, from which both corporate and individual consumers can benefit in the long run (Batrancea and Nichita, 2015).

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