

# Consumer and business confidence connectedness in the euro area: a tale of two crises

Consumer and  
business  
confidence

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Received 18 January 2024

Revised 19 February 2024

Accepted 1 March 2024

## Abstract

**Purpose** – The purpose of this study is to examine the propagation of consumer and business confidence in the euro area with a particular focus on the global financial crisis (GFC), the European sovereign debt crisis (ESDC) and the COVID-19-induced Great Lockdown.

**Design/methodology/approach** – The authors apply Diebold and Yilmaz's connectedness framework and the improved method based on the time-varying parameter vector autoregressive model.

**Findings** – The authors find that although the evolution of business confidence marked the GFC and the ESDC the role of consumer confidence (mainly in those countries with stricter containment and closure measures) increased in the COVID-19-induced crisis.

**Originality/value** – The findings are related to the different origins of the examined crisis periods, and the analysis of their interrelationship is a very relevant topic for future research.

**Keywords** Business confidence, Consumer confidence, Great financial crisis, COVID-19, Connectedness, Time-varying parameters

**Paper type** Research paper

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**JEL classification** – C53, E66, E71

The authors would like to thank the associated editor (Santiago Carbó) and two anonymous referees for their constructive comments on a previous version of the paper. They are also very grateful to Marc Estevez for his research assistance.

**Funding:** This paper is based on work supported by Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR), Generalitat de Catalunya [grant 2020PAND00074], the Spanish Ministry of Science and Innovation [grants PID2019-105986GB-C21 and TED2021-129891B-I00] and the Spanish State Investigation Agency [grant AEI/10.13039/501100011033].



Applied Economic Analysis  
Vol. 33 No. 98, 2025  
pp. 77-91  
Emerald Publishing Limited  
2632-7627  
DOI 10.1108/AEA-01-2024-0028

## 1. Introduction

Ten years after the global financial crisis (GFC) and the European sovereign debt crisis (ESDC), the COVID-19 pandemic and the Great Lockdown in 2020 triggered a global recession whose depth was only matched by the two World Wars and the Great Depression. Concretely, euro area (EA) economies registered a contraction of 6.4%, but this figure was known with considerable delay. However, as early as April 2020, consumer and business confidence indicators (CIs) crashed in the EA.

Besides their quick availability, since [Keynes \(1936\)](#), numerous authors have emphasized how feelings play a crucial part in understanding economic cycles. A broad literature has examined the relevance of the expectations channel in significant crises, such as the GFC ([Cizmesija and Skrinjaric, 2021](#)) or the ESDC ([Gardini \*et al.\*, 2023](#)). However, the COVID-19 pandemic has reignited the debate on how economic sentiments, uncertainty and activity related. The majority of the literature ([Binder, 2020](#); [Miescu and Rossi, 2021](#)) has focused its analysis on the US economy. However, despite being the economies most affected in terms of gross domestic product (GDP) per capita, there still needs to be more work that examines their consequences on EA countries. To the best of our knowledge, [Pellegrino \*et al.\* \(2021\)](#), [Teresiene \*et al.\* \(2021\)](#), [Ambrocio \(2022\)](#) and [Olkiewicz \(2022\)](#) are the few exceptions.

We aim to contribute to this scarce empirical literature by examining the interconnection and propagation of consumer and business confidence in the EA during the period November 1987 to February 2022, paying particular attention, not only to the effects of the COVID-19-induced crisis but also to those of the GFC and the ESDC. Using the connectedness framework proposed by [Diebold and Yilmaz \(2014\)](#) and [Antonakakis \*et al.\* \(2020\)](#), our objective is twofold. Firstly, we aim to determine whether changes in confidence in the evolution of economic activity are due to variations in consumer or business perceptions across EA countries. Secondly, we will evaluate the time-varying net directional connectedness to identify the transmitters and receivers of confidence shocks, paying particular attention to the behaviour of economic confidence during the GFC, the ESDC and the Great Lockdown generated by the COVID-19 pandemic. As our sample period includes the two most relevant economic crises suffered by EA countries during the 21st century up to 2022 – it ends in February 2022 to avoid considering the Russian invasion of Ukraine and subsequent international sanctions that also weighed heavily on the confidence of businesses and consumers – allows us to analyse whether the economic confidence behaviour in times of crisis differs depending on its origin. According to the literature [see [Benguria and Taylor \(2020\)](#) or [Baldwin and Weder di Mauro \(2002\)](#)], while the GFC had its origin in a negative shock to demand, the COVID-19-induced crisis originated from a negative supply shock – although it later shifted to a demand shock.

Our results suggest that both consumer and business CIs are highly interconnected. Moreover, our findings indicate that while the evolution of business confidence had a prominent role during the GFC and the following ESDC, the role of consumer confidence increased in the COVID-19-induced crisis, where the decline in economic confidence was led by both businesses and consumers (mainly in those countries with stricter containment and closure measures). This interesting result might be related to the different origins of the two examined crisis periods, and the analysis of their interrelationship is a very relevant topic for future research.

The paper proceeds as follows. Section 2 outlines the econometric framework. Section 3 presents the data used in the analysis. Section 4 reports the empirical results. Finally, Section 5 offers some concluding remarks.

## 2. Econometric methodology [1]

### 2.1 Diebold and Yilmaz's connectedness

To examine the connectedness between consumer and business CIs within a network, we adopt the framework developed by Diebold and Yilmaz (2014, 2015 and 2016) [2]. Their model incorporates static and dynamic analyses, using the vector autoregressive model (VAR) introduced by Sims (1980).

The Diebold and Yilmaz's connectedness approach obtains the forecast error variance decomposition from the following VAR model:

$$Y_t = \beta Y_{t-1} + \varepsilon_t, \quad \varepsilon_t \sim N(0, \Sigma), \quad (1)$$

where,  $Y_t$  represents an  $N \times 1$  series vector at time  $t$ ,  $\beta$  is an  $N \times N_p$  dimensional coefficient matrix and  $\varepsilon_t$  is an  $N \times 1$  dimensional error-disturbance vector with an  $N \times N$  variance-covariance matrix,  $\Sigma$ .

Diebold and Yilmaz (2014) presented interconnectedness measures derived from variance decompositions. These decompositions split the forecast error variance of variable  $i$  into components linked to different variables in the system. This approach fully considers contemporaneous effects and gauges the direction and strength of connections between the studied variables.

From the  $H$ -step forecasting variance decomposition, Diebold and Yilmaz (2014) developed a connectedness table to examine how the variables in the system are associated, using the generalised variance decomposition (GVD) proposed by Koop *et al.* (1996) and Pesaran and Shin (1998), which is invariant to the ordering of the variables in the system.

### 2.2 Dynamic connectedness based on time-varying parameter vector autoregressive

We investigate the time-varying nature of connectedness in our study making use of the methodological approach proposed by Antonakakis *et al.* (2020) who use the innovative time-varying parameter (TVP)-VAR connectedness approach.

The TVP-VAR approach represents a substantial improvement over the methodology proposed by Diebold and Yilmaz (2014). Firstly, it eliminates the need to arbitrarily set a rolling window size. Secondly, it utilises the entire sample to estimate dynamic connectedness. Thirdly, it is not sensitive to outliers. Furthermore, the proposed TVP-VAR-based measure of connectedness demonstrates real-time responsiveness, adjusting promptly to events, allowing for timely insights into the evolving interconnectedness of the variables under investigation (Antonakakis *et al.* (2018); Gabauer and Gupta, 2018; and Andrada-Félix *et al.*, 2020).

The TVP-VAR methodology enables the variation of VAR parameters and variances through a stochastic volatility Kalman Filter estimation with forgetting factors introduced by Koop and Korobilis (2014).

The TVP-VAR model can be written as follows:

$$Y_t = \beta_t Y_{t-1} + \varepsilon_t, \quad \varepsilon_t | F_{t-1} \sim N(0, \Sigma_t), \quad (2)$$

$$\beta_t = \beta_{t-1} + v_t, \quad v_t | F_{t-1} \sim N(0, R_t), \quad (3)$$

where  $\beta_t$  is an  $N \times N_p$  dimensional time-varying coefficient matrix and  $\varepsilon_t$  is an  $N \times 1$  dimensional error-disturbance vector with an  $N \times N$  time-varying variance-covariance matrix,  $\Sigma_t$  and  $F_{t-1}$  is the given information through time  $t-1$ . The parameters  $\beta_t$  follow a random walk and depend on their own lagged values  $\beta_{t-1}$  and on an  $N \times N_p$  dimensional matrix with an  $N_p \times N_p$  variance-covariance matrix,  $R_t$ . The time-varying coefficients  $\beta_t$  and  $\Sigma_t$  can be used in Diebold and Yilmaz's connectedness measure where the dynamic  $H$ -step GVD matrix is now time-varying. This permits us to define the dynamic total directional connectedness, net total directional connectedness and total connectedness.

### 3. Data

We use the organisation for economic co-operation and development (OECD) CIs [3]. Concretely, the OECD consumer confidence index (CON) indicates future developments of households' consumption and savings based on answers regarding their expected financial situation, unemployment and capability of savings. Otherwise, the business confidence index provides information on future developments based on opinion surveys on production, orders and stocks of finished goods in the industry sector. Our data set spans from November 1987 to February 2022 (412 monthly observations) and includes eleven EA economies: six central countries (Austria, Belgium, Finland, France, Germany and The Netherlands) and five peripheral economies (Ireland, Italy, Greece, Portugal and Spain).

### 4. Empirical results

#### 4.1 Static (full-sample and unconditional) analysis

Table 1 reports the full-sample connectedness table for both consumer and business CIs under consideration, where the off-diagonal elements measure the connectedness between the series as explained in Section 2 [4].

Remarkably, Table 1 shows that total directional connectedness, both FROM and TO, is always higher than the own connectedness, reflecting an important interdependence between these CIs. The total connectedness among the CIs is 74.38%, suggesting that EA CIs are highly connected.

Regarding net connectedness (TO minus FROM), interestingly, GEBUS and IEBUS are identified as the most important net transmitters and receivers of business confidence shocks, respectively. This result highlights the position of Germany as the most important economy in the EA (Schoeller, 2019) and the positive influence that business investment in Ireland receives from its geographical location and relationship with the European Union beyond its pro-business legal and regulatory environment (Regan and Brazys, 2018).

#### 4.2 Dynamic net connectedness

Figure 1 displays the dynamic net directional connectedness from central to peripheral countries that has been computed relying on the TVP-VAR connectedness approach.

As seen in Panel A, central countries' consumer indicators have switched from net receivers to generators of confidence shocks and vice versa, throughout the sample. Remarkably, central countries are net transmitters (drivers) of consumer confidence during the GFC and the COVID-19 pandemic. In contrast, peripheral countries are net triggers around the European Monetary System crisis, the launch of the euro and the ESDC. Turning to the business CIs (Panel B), our results indicate that central countries are persistent net transmitters throughout the sample.

Finally, Panel C indicates that central countries are net transmitters of consumer and business confidence during the whole sample, except from August 2014 to December 2015,

	ATCON	BECON	GECON	FICON	FRCON	NLCON	GRCON	IECON	ITCON	PTCON	SPCON	ATBUS
ATCON	41.73	0.69	5.97	3.27	2.41	4.43	1.91	1.28	2.39	6.07	3.51	8.98
BECON	8.02	29.76	3.60	0.45	5.19	8.32	1.77	3.25	3.49	1.19	6.95	6.32
GECON	8.90	3.34	30.28	3.60	1.08	4.28	2.27	0.82	2.61	4.79	4.18	4.07
FICON	5.47	1.42	1.09	41.53	1.12	2.78	1.65	1.02	2.72	1.08	1.28	1.57
FRCON	10.24	3.35	3.65	1.72	24.98	6.93	2.17	2.66	2.12	4.83	6.98	9.27
NLCON	3.71	3.37	3.25	2.29	2.06	28.06	3.16	3.79	4.89	7.74	3.88	4.92
GRCON	1.59	0.76	0.63	1.02	4.45	6.55	30.79	3.50	5.24	11.58	5.57	2.54
IECON	0.83	1.13	0.83	3.82	2.50	7.85	0.66	31.02	1.70	6.97	9.64	2.72
ITCON	3.57	4.24	0.94	2.48	3.70	7.87	4.21	7.09	36.96	5.92	4.35	0.59
PTCON	3.70	0.94	1.62	2.04	2.83	8.54	1.88	3.78	6.68	25.19	9.11	4.18
SPCON	2.22	3.35	2.13	3.50	2.91	5.13	2.68	9.91	2.38	7.09	29.33	1.72
ATBUS	5.89	0.60	0.96	3.90	0.91	4.40	2.66	1.58	0.49	1.19	4.04	18.56
BEBUS	2.67	1.70	2.15	4.21	0.35	5.23	5.03	1.44	1.65	0.93	2.29	9.20
GEBUS	1.71	0.51	1.45	8.69	0.42	3.31	1.57	0.66	0.94	1.38	1.67	9.57
FIBUS	0.06	3.58	0.63	6.58	0.79	4.74	2.15	2.84	0.36	0.34	3.77	7.37
FRBUS	4.30	1.57	3.59	4.91	1.95	4.18	4.54	1.28	1.06	0.94	5.44	9.77
NLBUS	0.75	0.89	1.66	3.92	0.77	5.14	4.21	3.51	2.43	2.28	3.74	6.70
GRBUS	0.25	0.66	0.48	1.83	2.53	3.39	6.51	2.99	4.16	2.21	3.52	6.51
IEBUS	2.35	1.14	2.94	2.83	0.75	4.88	3.76	6.65	0.33	1.96	3.71	5.11
ITBUS	3.78	1.27	1.96	5.30	1.91	4.45	3.94	2.28	3.08	0.62	4.00	6.28
PTBUS	1.46	0.62	2.97	6.78	0.67	5.07	4.20	2.72	2.21	2.46	5.07	5.42
SPBUS	1.24	1.14	2.60	9.91	1.00	1.36	2.77	2.87	0.89	1.21	9.02	4.58
Directional TO others	72.72	36.28	45.10	83.05	40.30	108.84	63.70	65.91	51.81	72.80	101.71	117.38
Net contribution (To-From) others	14.45	-33.96	-24.61	24.58	-34.72	36.90	-5.51	-3.07	-11.23	-2.01	31.04	35.94

**Notes:** AT, BE, FI, FR, GE, GR, IE, IT, NL, PT and SP stand for Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, The Netherlands, Portugal and Spain. CON and BUS denote consumer and business CJs. The sample is from November 1987 to February 2022

**Source:** Table created by authors

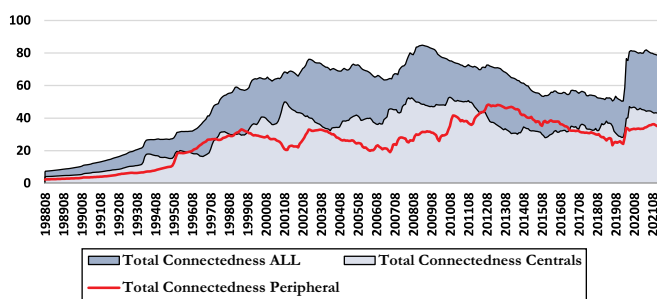
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**Table 1.**  
Full-sample static  
connectedness

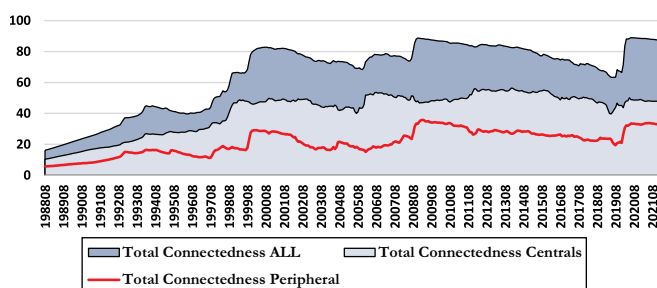
Consumer and  
business  
confidence

Table 1.

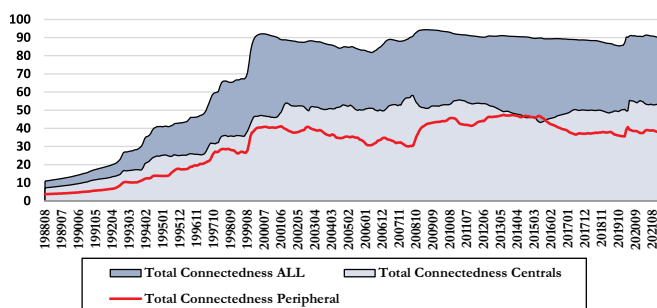
	Directional											FROM Others
	BEBUS	GEBUS	FIBUS	FRBUS	NLBUS	GRBUS	IEBUS	ITBUS	PTBUS	SPBUS		
ATCON	0.57	6.63	0.27	1.92	0.55	0.25	0.30	4.55	1.95	0.38		58.27
BECON	1.55	4.29	0.57	4.15	0.79	0.25	0.42	7.24	1.11	1.32		70.24
GECON	0.62	10.86	0.08	5.79	1.29	0.83	0.27	3.34	2.75	3.96		69.72
FICON	0.84	3.68	16.25	2.16	0.97	0.75	0.37	8.20	1.15	2.91		58.47
FRCON	0.28	3.47	2.72	5.54	1.33	0.16	0.10	4.95	0.82	1.75		75.02
NLCON	2.74	5.24	1.35	2.81	3.64	0.10	0.22	5.49	6.49	0.80		71.94
GRCON	1.58	2.14	0.02	2.63	1.66	9.01	0.23	4.21	2.63	1.68		69.21
IECON	1.88	4.27	1.14	1.30	5.42	0.56	2.54	4.52	3.84	4.87		68.98
ITCON	0.50	1.59	1.00	2.01	0.49	0.35	2.02	9.22	0.77	0.15		63.04
PTCON	0.72	3.57	0.06	1.65	2.90	1.34	0.62	8.37	8.03	2.27		74.81
SPCON	0.38	3.37	0.20	3.51	2.00	0.25	0.41	5.43	2.94	9.15		70.67
ATBUS	6.09	17.84	1.58	7.45	3.68	0.15	1.00	10.21	3.10	3.73		81.44
BEBUS	12.70	16.51	2.33	7.76	4.70	0.32	0.50	10.34	3.21	4.77		87.30
GEBUS	6.80	30.54	1.44	5.87	2.83	0.67	0.48	13.17	1.32	5.00		69.46
FIBUS	5.88	10.42	24.97	5.39	7.56	0.62	1.50	4.51	0.78	5.13		75.03
FRBUS	4.40	11.62	2.65	16.52	2.63	0.24	1.20	8.32	2.92	5.97		83.48
NLBUS	5.39	13.61	2.29	7.88	11.91	1.31	2.23	7.92	6.17	5.30		88.09
GRBUS	1.78	6.47	0.64	6.92	6.04	22.06	1.31	9.10	4.60	6.03		77.94
IEBUS	3.42	9.75	1.19	6.97	6.44	1.51	19.00	7.13	3.78	4.41		81.00
ITBUS	4.39	12.70	3.28	7.38	3.31	0.14	0.54	20.79	3.74	4.86		79.21
PTBUS	3.59	8.55	1.39	7.98	5.38	0.52	0.98	7.67	16.70	7.57		83.30
SPBUS	3.53	12.02	2.96	8.36	2.52	0.19	0.69	8.36	2.63	20.17		79.83
Directional TO others	56.90	168.61	43.40	105.43	66.15	19.50	17.93	152.24	64.70	82.00		
Net contribution (To-From) others	-30.40	99.15	-31.62	21.95	-21.95	-58.44	-63.07	73.02	-18.60	2.17		Total connectedness = 74.38



(a)



(b)



(c)

**Notes:** Panel A was obtained by applying the TVP-VAR methodology over a VAR system that includes only the consumer CIs of both central and peripheral countries. The same methodology was used in Panel B including only business CIs. Panel C was obtained with our baseline VAR model for all CIs. The sample is from August 1988 to February 2022. (a) Consumer confidence indicators; (b) business confidence indicators; (c) both consumer and business confidence indicators

**Source:** Figure created by authors

**Figure 1.**  
Dynamic total  
connectedness for all  
countries and by  
groups of countries

when peripheral economies became net triggers. This result is in line with those presented above, suggesting that in the aftermath of the ESDC, consumer confidence in peripheral countries exerted a dominant role in the evolution of confidence [5].

Table 2 summarises the behaviour of the net connectedness for each country, analysing its relationship with all the countries in the sample and also distinguishing between core and peripheral economies throughout the GFC and its aftermath in Europe, the ESDC (August 2007–July 2012) and the COVID-19 pandemic crisis (March 2020–February 2022).

Results in Table 2 indicate that the net connectedness of consumer and business CIs is time-varying. Panels A and B illustrate some interesting differences between the two crises. Firstly, during the GFC and subsequent ESDC, all consumer CIs, except those of Greece and Ireland, had an important impact on the consumer confidence of peripheral countries. However, their role increased during the COVID-19-induced crisis, influencing consumer confidence in central countries and peripheral economies' business confidence. The business CIs present a different pattern because they are essential in both crises, although they transmitted more to the rest of the CIs during the GFC and ensuing ESDC than during the COVID-19 crisis.

Therefore, our analysis reveals some interesting results. Not only, there is an important interdependence between consumer and business CIs, but while the evolution of business CIs had a higher role during the GFC and subsequent ESDC, the role of consumer CIs increased in the COVID-19-induced crisis in line with Dietrich *et al.* (2022), catching up with business confidence. The fact that the two crises' origin (a supply or a demand shock) is different might explain our results and deserves a more profound analysis in future research. Nevertheless, we develop intuitive reasoning below.

There is much literature that supports the idea that a demand shock was the cause of the GFC, while a negative supply shock that later changed to a demand shock, combining the end parts of both shocks, was the cause of the COVID-19-induced crisis [see, e.g. Benguria and Taylor (2020), Ruch and Taskin (2022), Baldwin and Weder di Mauro (2002) and Brinca *et al.* (2020)] [6].

Following the literature, we assume that a negative demand shock was the cause of the GFC, deriving the subsequent series of facts from that situation. When households cut back on spending, businesses' confidence decreased and investment choices were put off. Afterward, consumers' confidence decreased as output decreased and unemployment increased (Angeletos and Lian, 2022). On the other hand, a negative supply shock was the primary source of the crisis brought on by COVID-19 and the Great Lockdown. The prohibition by employers and public health organizations that service workers could perform their duties is a clear example of this kind of shock. As a consequence, because many service workers lost their jobs, unemployment first harmed consumer confidence – households had to reevaluate their spending choices and stop buying certain commodities like vehicles or appliances. This decline in spending jointly with people staying at home during the lockdown instead of visiting restaurants or movie theatres resulted in a demand shock. As a result, a supply shock that abruptly stopped economic activity may have initially impacted consumer confidence before immediately igniting a demand shock that also harmed business confidence.

#### 4.3 Net pairwise directional connectedness

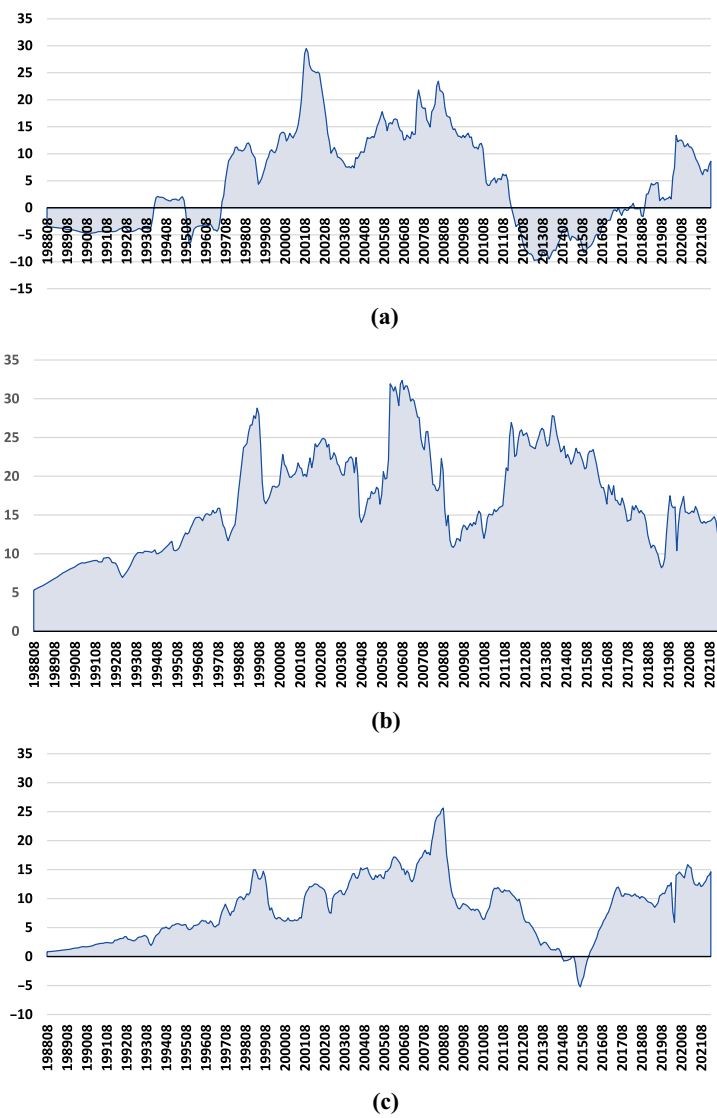
Figure 2 presents the network diagram for net pairwise directional connectedness during the GFC and subsequent ESDC (August 2007–July 2012) and during the COVID-19-induced Great Lockdown (March 2020–February 2022), based on the results of each of the 231 possible pair combinations. The arrows indicate the direction of connectedness “to” the head

	To all EMU countries	To Central countries CON	To peripheral countries CON	To central countries BUS	To peripheral countries BUS
<b>Panel A: GFC and ESDC (August 2007–July 2012)</b>					
ATCON	2.11	-1.04	8.72	-3.14	-2.43
BECON	6.54	2.49	6.29	-3.51	1.28
GECON	10.46	2.89	5.75	-0.81	2.63
FICON	-19.20	-4.40	1.25	-13.64	-2.42
FRCON	-3.59	-1.41	2.98	-4.95	-0.21
NLCON	-5.74	-0.03	2.23	-4.14	-3.81
GRCON	-11.75	-8.43	-5.20	3.65	-1.76
IECON	-5.03	-3.40	-3.63	1.55	0.46
ITCON	-21.41	-8.44	3.16	-9.50	-6.63
PTCON	-9.50	-5.82	4.31	-4.54	-3.45
SPCON	-1.93	-1.14	1.35	-1.39	-0.76
ATBUS	7.80	6.67	3.94	-4.00	1.19
BEBUS	7.90	4.96	2.48	-2.35	2.81
GEBUS	19.87	7.41	4.16	2.40	5.89
FIBUS	-13.42	-3.36	-4.21	-3.91	-1.95
FRBUS	14.65	8.10	3.36	-0.08	3.28
NLBUS	20.92	6.39	0.51	7.95	6.07
GRBUS	2.42	-2.28	4.55	0.20	-0.05
IEBUS	-24.00	-5.56	-0.83	-12.50	-5.11
ITBUS	8.44	5.83	4.82	-3.81	1.60
PTBUS	-2.81	0.77	1.65	-3.02	-2.22
SPBUS	15.78	6.20	1.96	1.84	5.77
<b>Panel B: COVID-19-induced Great Lockdown (March 2020–February 2022)</b>					
ATCON	-21.73	-8.35	-2.16	-6.38	-4.83
BECON	-39.03	-10.34	-7.75	-14.71	-6.23
GECON	-5.46	-3.66	-2.05	-4.38	4.62
FICON	14.37	8.53	2.76	-1.72	4.80
FRCON	14.07	7.09	3.86	0.19	2.93
NLCON	13.76	9.50	3.19	-0.09	1.16
GRCON	-31.22	-14.13	-9.10	-6.42	-1.56
IECON	0.64	1.96	2.94	-3.04	-1.22
ITCON	-29.55	-9.88	-8.47	-6.01	-5.18
PTCON	26.51	14.22	7.07	5.29	-0.07
SPCON	16.85	9.98	7.57	-1.57	0.87
ATBUS	30.09	10.72	4.98	5.49	8.90
BEBUS	-0.02	-1.73	-0.54	-4.45	6.70
GEBUS	-0.05	-2.63	1.41	-4.77	5.94
FIBUS	-20.09	-4.17	-7.25	-8.57	-0.11
FRBUS	28.55	8.79	6.18	3.96	9.61
NLBUS	43.87	16.12	6.97	8.34	12.43
GRBUS	-32.36	-2.23	-6.61	-14.36	-9.17
IEBUS	-15.48	-2.77	1.22	-10.52	-3.41
ITBUS	9.00	1.23	8.75	-5.11	4.13
PTBUS	16.65	6.50	4.60	-1.93	7.49
SPBUS	-16.58	-5.18	-0.80	-11.56	0.96

**Notes:** AT, BE, FI, FR, GE, GR, IE, IT, NL, PT, and SP stand for Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, The Netherlands, Portugal, and Spain. CON and BUS denote consumer and business CIs. Positive (negative) values denote the transmission (reception) of confidence shocks and are highlighted in green (red)

**Source:** Table created by authors

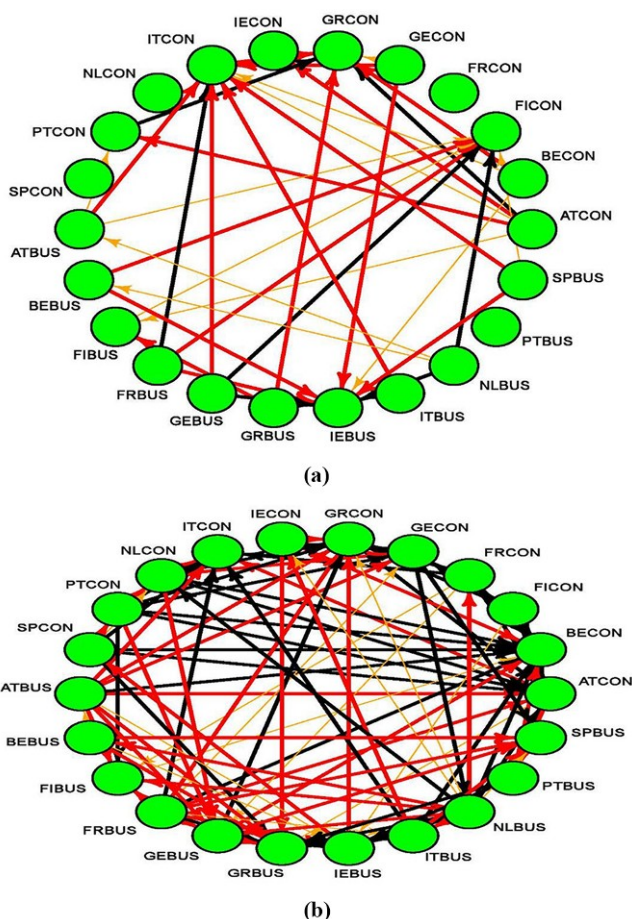
**Table 2.**  
Sub-periods net  
connectedness



**Notes:** Panel A was obtained by applying the TVP-VAR methodology over a VAR system that includes only the consumer CIs of both central and peripheral countries. The same methodology was used in Panel B including only business CIs. Panel C was obtained with our baseline VAR model for all CIs. The sample is from August 1988 to February 2022. (a) Consumer confidence indicators; (b) business confidence indicators; (c) both consumer and business confidence indicators

**Source:** Figure created by authors

**Figure 2.**  
Dynamic net  
connectedness from  
central countries to  
peripheral countries



**Notes:** We show the most important net pairwise directional connections among the 231 pairs of the eleven EA consumer and business CIs. Arrows represent a positive net directional connectedness from the tail towards the head of the arrows. Black, red and orange links correspond to the 10th, 20th and 30th percentiles of all net pairwise directional connections from November 1987 to February 2022. More arrows mean higher connectedness of the country with other countries. AT, BE, FI, FR, GE, GR, IE, IT, NL, PT and SP stand for Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, The Netherlands, Portugal and Spain. CON and BUS denote consumer and business confidence indicators. (a) GFC and ESDC (August 2007-July 2012); (b) COVID-19-induced Great Lockdown (March 2020-February 2022)

**Source:** Figure created by authors

**Figure 3.**  
Dynamic net pairwise  
directional  
connectedness during  
crisis episodes

“from” the tail of the arrow, and the colours of the links denote the strength of the directional relationships: black, red and orange correspond to the 10th, 20th and 30th percentiles of all net pairwise directional connections from November 1987 to February 2022.

Figure 3 shows that the number of arrows and their intensity increased significantly from the GFC and ESDC (35, 20% of the top percentile) to the COVID-19-induced crisis (92, 37% in the top percentile), suggesting that, during the latter crisis, there was a more intricate and vigorous network of relationships between CIs reflecting the rapid spread of agents’ pessimism about the evolution of the economy due to the necessary closure measures to contain the pandemic and associated shocks to economic activity.

A detailed examination of Panel A reveals that, during the GFC and ESDC, 63% of connectedness relationships depart from business CIs (71% if we look at the top percentile) and that central countries are the primary triggers of confidence shocks. Different results can be drawn from Panel B, where an increase in the role of consumer CIs in the pairwise directional connectedness relationships is observed. Those departing from consumer CIs increase to 42% but represent two-thirds of all relationships if we only look at the most intensive relationships. The stronger consumer confidence triggers during the COVID-19-induced crisis are Portugal, France, Spain and Finland. These countries, except for Finland, registered a high stringency index (SI) [7] – more severe containment and closure measures – during the pandemic, according to [Hale et al. \(2022\)](#). Otherwise, the country whose consumer CI is more influenced by the rest of the economies is Belgium (a country with a low SI), followed by Austria and Greece. In the case of Greece, although it registered a high SI, the idiosyncrasy of its economy (the lowest GDP of the sample) explains that it is also the main receiver of business confidence from the rest of the countries.

## 5. Concluding remarks

This paper examines the interconnection between consumer and business CIs in eleven EA economies with monthly data from the OECD covering November 1987–February 2022. Our results suggest that both consumer and business CIs are highly interconnected. In the case of business CIs, on average, central countries’ indicators, mainly that of Germany, are the primary net confidence transmitters. In contrast, peripheral countries’ indicators, mainly Ireland’s CI, are the primary net receivers of confidence shocks. Instead, there is no clear trigger or receiver of confidence shocks among central and peripheral countries’ consumer indicators.

Our findings also indicate that business confidence had a higher role during the GFC and the following ESDC. However, the prominence of consumer confidence increased during the COVID-19-induced crisis, catching up with that of business confidence (mainly in those countries with stricter containment and closure measures: Portugal, France and Spain). Although the relationship between the different origins of the two examined crisis periods and the predominant role of business or consumer CIs in each of them is beyond the scope of this paper, our results suggest that business confidence reacts first when the crisis is originated by a demand shock (e.g. GFC and ESDC). In contrast, during the COVID-19-induced crisis a combination of demand and supply shocks – economic sentiment decline might have been caused by the drop in both economy’s agents’ (business and consumers) confidence.

The analysis presented in this paper highlights the importance of the spillovers in economic CIs among EA countries and provides insight into the changing nature of cross-country confidence transmissions, offering empirical evidence of its intensification in recent years and emphasising how crucial it is to control expectations and confidence during crises.

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## Notes

- 1 [Andrada-Félix et al. \(2020\)](#) extensively overviewed the connectedness methodology.
- 2 The connectedness methodology has benefits over the alternative strategy of focusing on contemporaneous correlations. Connectedness – which might indicate the direction and strength of the confidence transmission from country A to country B, country B to country A or both – is asymmetrical, whereas correlation is symmetrical. Additionally, in a manner quite comparable to the CoVaR of this unit, the degree of connectedness quantifies the contribution of individual units to systemic network events, being closely related to contemporary network theory.
- 3 Our findings are robust when using the Economic Sentiment Indicator and the Confidence Indicators built by the European Commission. The authors can provide these additional results upon request.
- 4 All results are based on vector autoregressions of order two and GVDs of 10-month ahead forecast errors. To check for the sensitivity of the results to the choice of the order of VAR, we also calculated the connectedness index for orders 2–4 and forecast horizons varying from 4 months to 10 months. The main results of our paper are not affected by these choices. The authors can provide more detailed results upon request.
- 5 These results are consistent with the European Commission's study on European business cycle indicators, which shows that consumers continued to undermine global confidence well after 2010 –especially in peripheral countries, contributing only positively to the overall sentiment indicator in 2015 (see [European Commission, 2020](#)).
- 6 [Benguria and Taylor \(2020\)](#) empirically estimated a simple model of a country experiencing both deleveraging shocks and a “financial crisis” that tightens borrowing restrictions for households and/or firms. Their findings strongly imply that financial crises typically involve a negative demand shock rather than a supply shock. The same conclusion was reached by [Ruch \(2022\)](#), who compared the GFC and the COVID-19-induced crisis, quantifying global demand, supply and uncertainty shocks. His findings suggest that whereas demand shocks characterised the GFC, the COVID-19 crisis was caused by significant disruptions in both supply and demand. [Baldwin and Weder di Mauro \(2020\)](#) and [Brinca et al. \(2020\)](#) both believe that the COVID-19 pandemic and the accompanying mitigation policies incorporated elements of the so-called “supply” and “demand” shocks.
- 7 The Oxford COVID-19 Government Response Tracker produced the SI, which contains containment and closing procedures for the pandemic. The higher the SI, the stricter measures the country had to take to reduce the number of contagious COVID-19 cases.

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