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Uncertainty and the Pandemic Shocks

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Abstract

The COVID-19 pandemic shocks are a significant source of uncertainty in several aspects. In particular, these shocks influence the landscape, in which policymakers operate, and create further uncertainty about policy decisions and about their effectiveness. The aim of this paper is to offer some relative measures of the uncertainty caused by the pandemic, and to discuss the impact of this uncertainty on the possible evolution of European economies during the second wave of COVID-19. Emphasis will be placed on the effectiveness of the policies implemented.

CONTENTS

LIST OF ABBREVIATIONS

APP	Asset Purchase Programme
CMU	Capital Markets Union
EC	European Commission
ECB	European Central Bank
EIB	European Investment Bank
EEPU	European Economic Policy Uncertainty
EMU	European Economic and Monetary Union
ESM	European Stability Mechanism
EU	European Union
GEPU	Global Economic Policy Uncertainty
LTRO	Longer-Term Refinancing Operations
MFF	Multiannual Financial Framework
NG−EU	Next Generation – EU
NRRP	National Recovery and Resilience Plan
PELTRO	Pandemic Emergency Longer-Term Refinancing Operations
PEPP	Pandemic Emergency Purchase Programme
RRF	Recovery and Resilience Facility
SGP	Stability and Growth Pact
SSCI	Systemic Stress Composite Indicator
SURE	Support to mitigate Unemployment Risks in an Emergency
TLTRO	Targeted Longer-Term Refinancing Operations
VAR	Vector autoregression
WUI	World Uncertainty Index

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EXECUTIVE SUMMARY

- Newspaper-based measures clearly show **a sharp increase in uncertainty in 2020** due to the outbreak of COVID-19 at both global and European level.

- Other measures of uncertainty based on **volatility in financial markets also show a significant increase in uncertainty** after the first pandemic shock but to a lower extent with respect to other recent financial and "real" crises.

- This evidence could be due to the **policy reactions** implemented by the EU and EMU institutions, which **were more rapid in spring and summer of 2020** than during the previous crises.

- Despite this evidence, European policymakers should take into consideration that, even if the current monetary policy implies very low interest rates, some Member States will have to deal with **a big amount of government debt after the emergency, thus further increasing the level of uncertainty**.

- The possible complex interactions between policies and uncertainty signal that the **economic consequences of COVID-19 could be more persistent** than the previous shocks.

- Using both newspapers and financial-variables-based uncertainty indexes, we show that **higher uncertainty implies declines in GDP, consumption, worked hours, and investment**. The impact on investment is higher than the one on consumption. As uncertainty increases, inflation and policy rates slightly decline.

- These analytical and empirical results show that the ECB's **expansionary monetary policy, as well as the national and EU expansionary fiscal policies, should continue** in 2021 and the following years in order to respond to the second wave of COVID-19.

- Hence, the combination of short-term national fiscal policies and a plan for the utilisation of resources provided by the **European funds is a necessary condition for controlling the persistent level of uncertainty** in the EU and the related macroeconomic consequences.

- It is also crucial to incentivise institutional investors to reduce the part of their portfolio allocated in liquid assets and increase that in riskier assets. This is **necessary in order to finance innovations and organisational changes in the EU productive system** and to be able to improve the economic potential and social development after the pandemic shocks.

1. INTRODUCTION

Uncertainty is an intrinsic component of the economic environment, and therefore of economic modelling. Current decisions made by various economic agents (consumers, firms, financial intermediaries, government, and so on) depend on future outcomes. Since the future is unknown, agents may need to formulate (subjective) forecasts on these outcomes across all possible or understandable contingencies in order to make their choices today. In an ideal world, agents fully utilise their limited set of information on the functioning of the economic system; in doing so, they can understand exactly what the future contingencies are and can assign the "true" probability distribution to their occurrence (cf. Lucas and Sargent, 1978). However, even in this ideal world, there is still uncertainty about which will be the actual outcome; and this uncertainty can vary over time if contingencies and the probability distribution change appropriately. Moreover, in a world with incomplete or asymmetric information, there is also uncertainty about important future contingencies, as well as about the possible outcomes that are conditional on even known future contingencies (see, for instance, Hirshleifer and Riley, 1992). It follows that, in general, there is also uncertainty about the true probability distribution.

The COVID-19 shocks bring about several degrees of uncertainty. There is first an uncertainty related to the epidemiological evolution of the pandemic episodes, for example on the infectiousness of the virus, on the development of the vaccines, and on the magnitude of the second waves and hospitalisation needs. Correlated to this uncertainty, there is an uncertainty about the economic outlook related to the economic outcome of the possible restrictions/lockdown on the agents' behaviour and economic activity. This type of uncertainty affects the possible macro- and micro-economic evolution of the productive systems; and, in turn, the expectations of these impacts determine the sectors that are going to be mostly affected and the way in which the economic agents are going to react in terms of consumption, savings, production and investment plans. Finally, there is an uncertainty related to the policy measures and their impact on the economy. All these different sources and degrees of uncertainty influence the landscape in which policymakers operate and create further uncertainty about their policy decisions, as well as about the effectiveness of these decisions.

The aim of this paper is to apply the latter statement to the economies of the European Union (EU) and the European Economic and Monetary Union (EMU) during the second wave of COVID-19. First, the specific reference to these economies requires a descriptive examination of the impact of the first pandemic shock (winter and spring 2020) on uncertainty in EU, based on a comparison with the impact resulting from other recent significant shocks (see section 2). Then, this descriptive evidence is specified by means of a vector autoregression (VAR) estimation of the impact that the higher uncertainty, induced by the first wave of COVID-19, has had on European economic output and on its components (see section 3). Sections 2 and 3 thus offer a framework to assess the efficiency of the different policy initiatives undertaken by the European institutions and the Member States until last summer, and the appropriate evolution of these policies in the light of the current second wave of COVID-19 (see section 4). A short *Conclusion* summarises our results and underlines the open problems.

2. UNCERTAINTY: SOME DESCRIPTIVE EVIDENCE

The theme of uncertainty has always been central in economic theory (see Arrow, 1971; Laffont 1989) and has become even more topical during the recent decades, at the empirical level, due to the developments of uncertainty indicators. The latter can be considered imperfect proxies of the uncertainty dimensions underlined in the introductory section.

We report several indicators to study the uncertainty brought about by the COVID-19 shock, and we compare the degree of this uncertainty to the impact of other shocks that occurred in the last two decades.

Figure 1 reports two well-known uncertainty indexes: The Global Economic Policy Uncertainty index (GEPU) and the World Uncertainty Index (WUI). GEPU was developed by Baker et al. (2016), averaging Economic Policy Uncertainty indexes for 21 countries by their respective national GDP data.[1] National economic policy uncertainty indexes are based on newspaper articles related to policy uncertainty; specifically, by counting the number of newspaper articles that include the words "uncertain" or "uncertainty", policy-significant terms, and "economic" or "economy". The WUI was developed by Ahir et al. (2018) and covers 143 countries. Differently from GEPU indexes, the WUI uses the same source for all countries, i.e., quarterly country reports from the Economist Intelligence Unit. The WUI is computed by counting the number of times words related to "uncertainty" appear in each country report.

Figure 1:   Global uncertainty dynamics from 1999 to 2020 (quarterly data)
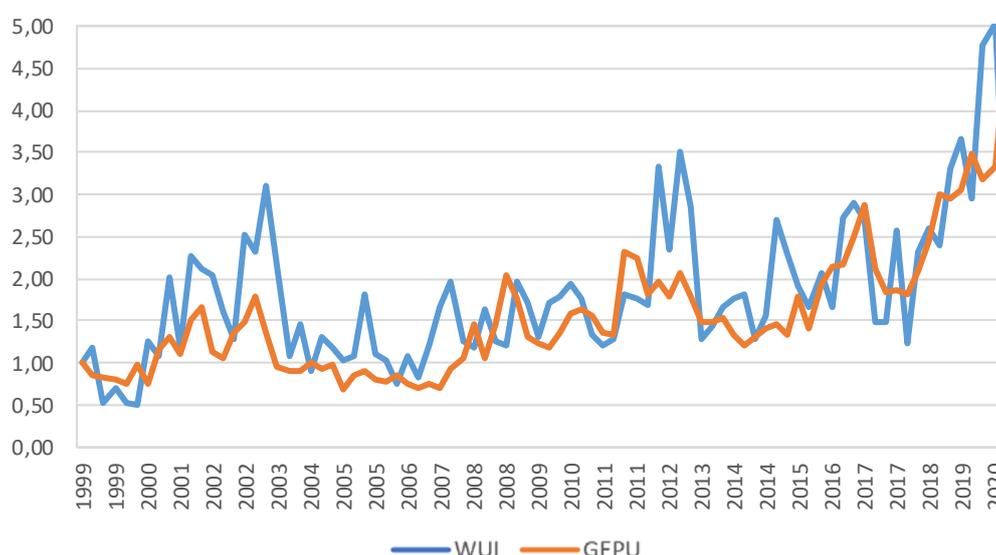
Source: Authors' elaboration (see https://www.policyuncertainty.com and https://worlduncertaintyindex.com/ for the original time series).

Figure 1 displays the dynamics of WUI and GEPU index normalised with respect to their initial value in 1999. The Figure shows how the two measures are correlated and roughly highlights the impact of several main shocking events on uncertainty. Increases in global uncertainty were observed after the September 11 terroristic attack on the Twin Towers (2001), during the 2003 US invasion of Iraq and the

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[1]   The sample of countries includes: Australia, Brazil, Canada, Chile, China, Colombia, France, Germany, Greece, India, Ireland, Italy, Japan, Mexico, the Netherlands, Russia, South Korea, Spain, Sweden, the United Kingdom, and the United States.

consequent second Gulf War, in the years 2007-2008 characterised by the international financial crisis, and during the EMU's long recession (2011-2013) due to the "doom-loop" between the sovereign debt-crisis and the crisis of the European banking sector. Increases in uncertainty and volatility were also related to the deceleration of the Chinese growth rate and the EMU risks of deflation (2014), to the exit results of the British referendum (23 June 2016) and the subsequent uncertain negotiations between the United Kingdom and the EU, and to the tensions in international trade and the new risks of stagnation in the EMU economy (2018-2019).[2]

Figure 1 clearly shows a sharp increase in uncertainty also in 2020 due to the outbreak of COVID-19. However, it is worth emphasising that the WUI and GEPU index display an opposite behaviour at the end of 2019 and in the 2020 second quarter: global uncertainty was found to reach a peak at the end of 2019 according to the WUI, and at mid-2020 according to the GEPU. These different dynamics may be ascribed to the fact that, being based on a more specialised source (the Economist Intelligence Unit), the WUI was able to fully anticipate the transmission of the Chinese pandemic shock to the rest of the world; on the contrary, being based on generalist and widely distributed national newspapers, the GEPU just recorded the shock when it happened worldwide.

Figure 2 shows the dynamics of the European Economic Policy Uncertainty index (EEPU). As GEPU, EEPU is based on a newspaper article measure of uncertainty.[3] It must be noted that, differently from the two global uncertainty indexes analysed in Figure 1, EEPU reached its maximum peak not in 2020 but in 2016-2017, that is, concurrently with the Brexit decision and the activation of Article 50 of the EU Treaty. However, the impact of COVID-19 on EU uncertainty is still quite significant: it overcame the impact produced by the peak of the 2007-2009 financial crises as well as the impact associated with the EMU sovereign debt and the banking sector tensions in 2011-2012.

Figure 2:   Uncertainty dynamics in Europe from 1999 to 2020 (EEPU, quarterly data)
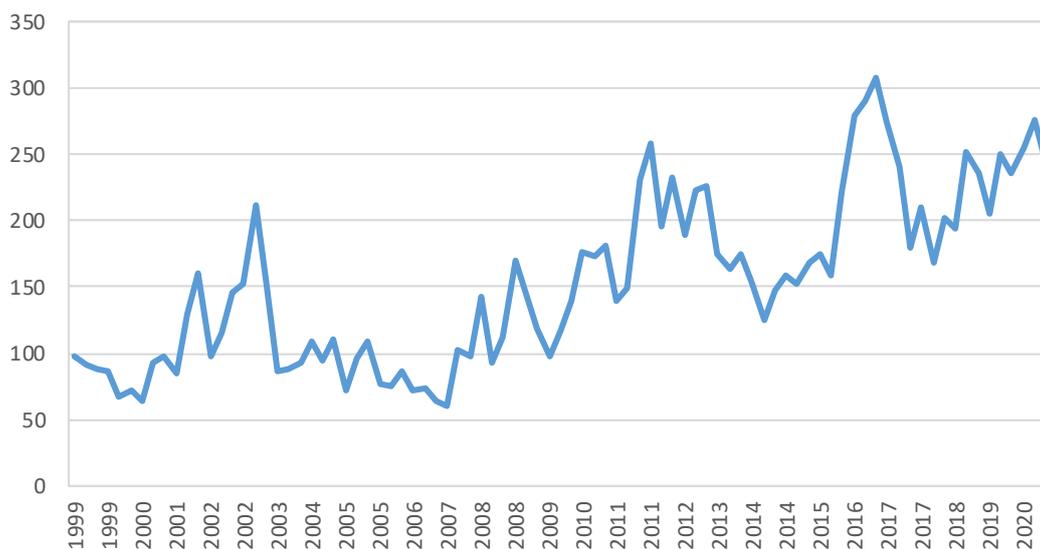
Source: Authors' elaboration (see https://www.policyuncertainty.com for the original time series.)

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[2]   A detailed analysis of the uncertainty dynamics is provided, among others, by Baker et al. (2016).

[3]   The index is based on two newspapers per country (Le Monde and Le Figaro for France, Handelsblatt and Frankfurter Allgemeine Zeitung for Germany, Corriere Della Sera and La Stampa for Italy, El Mundo and El Pais for Spain, and The Times of London and Financial Times for the United Kingdom). The index is built as the average of the relative number of monthly uncertainty-related articles from each of these ten newspapers. See https://www.policyuncertainty.com/europe_monthly.html.

Other interesting indicators that illustrate the evolution of uncertainty in response to significant shocks and that strictly interact with monetary policies are based on volatility measures relating to financial markets data. These indicators are useful for policymakers because they better capture the conditions of financial stress, and thus they can offer early signals about the growing risk of systemic crises. The European Central Bank (ECB) utilises a composite indicator of systemic stress in the financial sector with reference to the euro area (Systemic Stress Composite Indicator: SSCI). [4]

The SSCI is plotted in Figure 3 for the 1999-2020 sample. Compared to the EEPU index (cf. Figure 2), the SSCI leads to a slightly different ranking across the increases in uncertainty caused by the crisis episodes. It reached its maximum peak during the 2007-2009 international financial crisis. Then, the peak immediately below the maximum occurred during the 2011-2013 European sovereign debt and banking sector crises. Interestingly, the pandemic crisis is ranked just as the third peak; and the value of the increased uncertainty is largely below the first two. At least at first sight, this evidence can be interpreted as the consequence of the specific components of the ECB index. These components relate to five segments of the financial markets, namely the money market, the bond market, the equity market, financial intermediaries and the foreign exchange rate market.

Figure 3:   ECB's SSCI from 1999 to 2020

Source: ECB - Statistical Data Warehouse (https://sdw.ecb.europa.eu/home.do).

Figure 4 allows us to refine our interpretation regarding the relatively moderate impact of the pandemic shock on financial uncertainty. It plots the bond-market and the money-market components of the SSCI. The bond-market component mainly captures the actual volatility of the 3-month Euribor rate and the index of the monetary financial institutions' emergency lending to the Eurosystem central

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[4]   See Hollo et al. (2012).

banks. Among other factors, the money-market component instead captures the actual volatility of the German 10-year benchmark and the various spreads in bond markets.

Apparently, Figure 4 shows a pattern which is very close to that of Figure 3: the aftermath of the 2007-2008 international financial crisis and, then, of the 2011-2013 European crises stand out with respect to the other shocks, the pandemic one included. However, the money-market component provides further significant evidence: indicators of volatility in the money market are relatively subdued after 2013, i.e., concurrently with the implementation of an expansionary unconventional monetary policy based on zero-interest rate policies and liquidity injections at different maturities.

Evidence from these components of SSCI shows that appropriate monetary policies can reduce uncertainty in some segments of the financial markets. This reduced uncertainty does not fully eliminate the peaks in volatility resulting from significant shocks; however, it accelerates the adjustment time. Figure 4 confirms this: the first wave of the pandemic shock resulted in a spike of the indicators, which were promptly absorbed. So far, the duration of the spike has been shorter than in the other two important critical episodes.

Figure 4:   Bond-market and money-market components of the SSCI from 1999 to 2020.

Source: ECB - Statistical Data Warehouse (https://sdw.ecb.europa.eu/home.do).
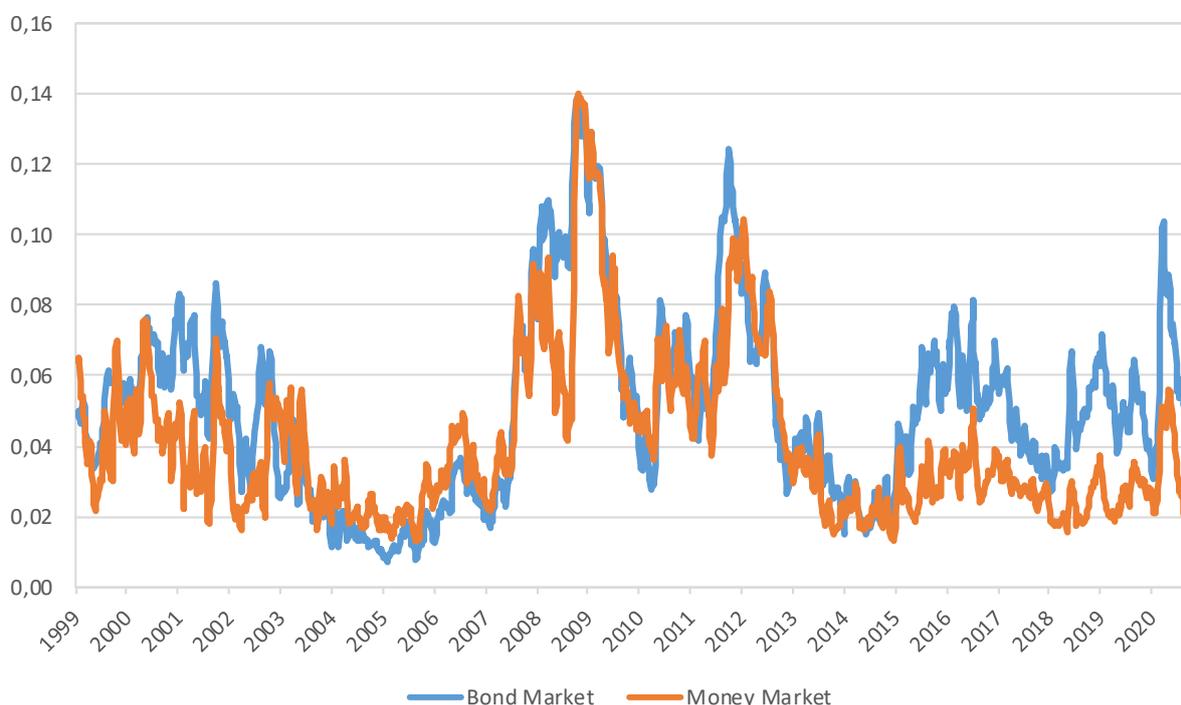
The last observation is supported by the evidence offered in Figure 5, which still relates to the ECB's indicator under examination. Figures 5a and 5b show two additional SSCI components: the equity-market and financial intermediaries. The equity-market component captures, among other factors, the actual volatility of the stock market index for the non-financial sector; the financial intermediaries' component captures, instead, the volatility of the equity return of the banking sector together with the yield spreads between financial and non-financial corporations. Finally, Figure 5c refers to the actual volatility of the euro exchange rate with respect to other major currencies, and thus it mainly captures the international dimension of the stress measure.

Figure 5:   Other components of the SSCI from 1999 to 2020

Source: ECB - Statistical Data Warehouse (https://sdw.ecb.europa.eu/home.do).
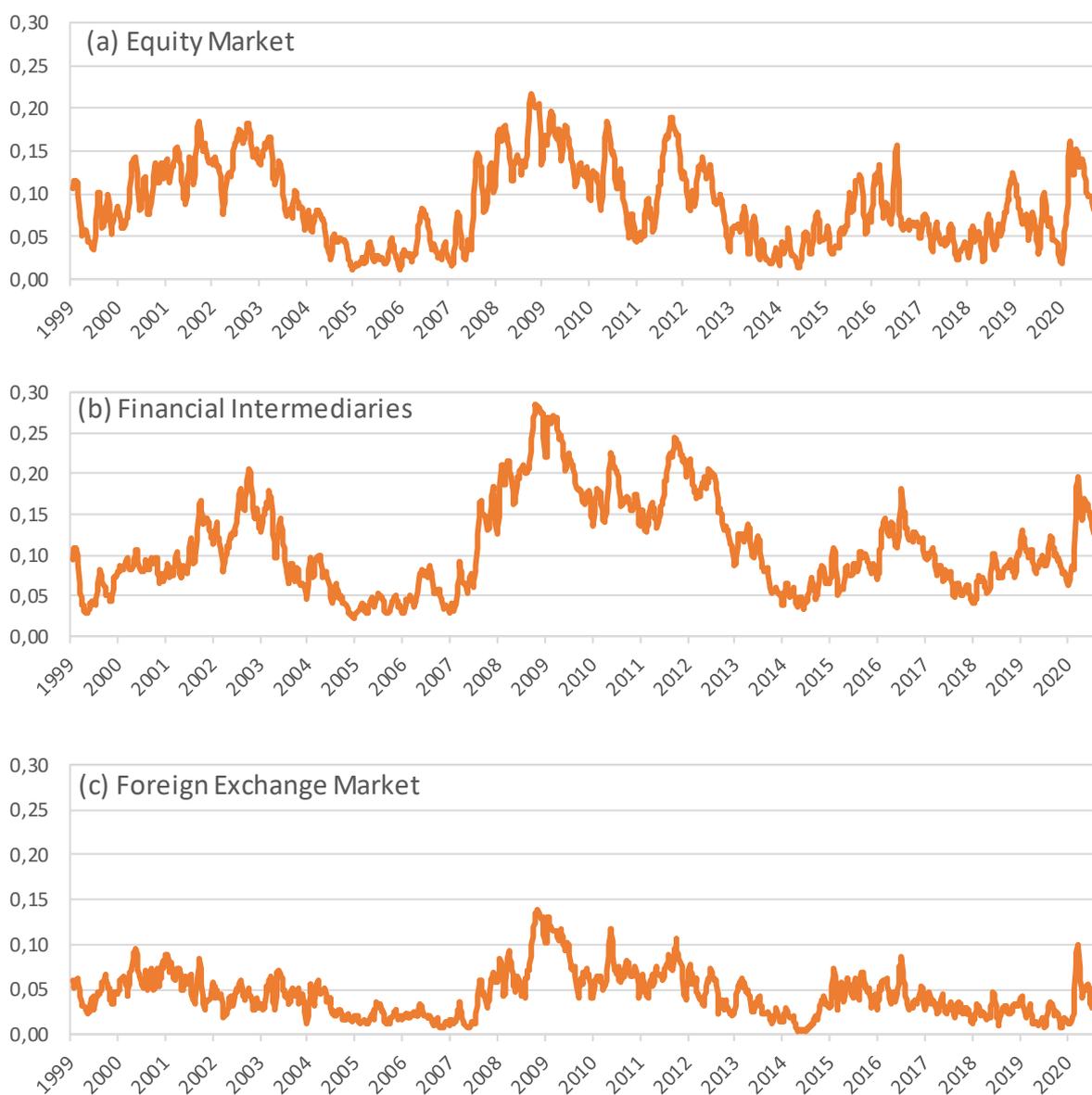
We can now place the previous analysis into a unitary interpretation. Let us recall that the descriptive evidence offered by Figure 1 with respect to the impact of the first wave of the pandemic shock on uncertainty is worldwide, whereas the different data of Figure 2 derive from the specific reference to the EU and those of Figures 3-7 are based on the ECB's composite financial indicator and refer to the pandemic's effect on financial volatility in the EMU. Our unitary interpretation of this variegated evidence is based on three elements.

(a) It would be a misinterpretation of our previous analysis to underestimate the peak of uncertainty caused by COVID-19: the WUI and GEPU index as well as the EEPU index show that this negative impact has been the strongest or one of the strongest in the last two decades.

(b) The partial discrepancy between the GEPU (largely, the strongest impact) and the EEPU (just one of the strongest) could be explained by the prompt and innovative reactions implemented by European policymakers and by those responsible for national fiscal policies.

(c) At least with respect to the monetary policy, this tentative explanation is supported by the empirical evidence deriving from the ECB indicator and relating to the European financial markets.

Figure 6 allows us to extend point (c) to fiscal policy by examining an additional indicator of uncertainty that relates to possible sovereign stress in the EMU during the pandemic. This indicator is based on a wide set of stress symptoms that include measures of yield volatility and bid-ask spreads, apart from the yield spreads (cf. de Andoain et al., 2017). Figure 6 refers the indicator to single countries, and in particular it shows its peaking for Greece, Ireland, Italy, Spain and Portugal during the sovereign debt crisis. Note that Greece was under pressure for a longer period than other countries.

It follows that different EMU Member States had very different fiscal capacities before the first pandemic shock. Despite the current accommodative monetary policy and the low (even negative) interest rates, many of these EMU Member States will have to manage an enormous public debt in the post-pandemic phase due to their legacy and their public expenditures during the emergency. Hence, it is interesting to analyse the changes in the indicator in recent times. There were more substantial increases in Italy than in other countries. The first peak in 2018 reflects political uncertainty following the Italian elections. The second peak is instead related to the COVID-19 shock in spring 2020. The latter shows that Italy is now the weak link in Europe in terms of sovereign debt solvency; however, consistently with the other indexes, in recent months the relative indicator has returned to normal values. This evidence has two important implications for our analysis: it shows the effectiveness of ECB intervention in sovereign debt markets (cf. Section 4), but it also stresses that the interaction between European policies and uncertainty should take the public debt problem into account.

Given points (a) - (c) and the indicator of Figure 6, our provisional conclusion is that the prompt and innovative policy reactions implemented in the EU and the EMU weakened the peak of short-term uncertainty by shortening the adjustment time; however, in doing so, these reactions can worsen the long-term uncertainty in terms of public debt sustainability. If this provisional conclusion was correct, it would be crucial to analyse the different European policy initiatives undertaken in the last months in more detail in order to understand the relationships between these policies and the evolution of the uncertainty also in the light of the pandemic's second wave. We will pursue this objective in section 4. However, first it is worth strengthening our provisional conclusion by elaborating a VAR estimation of the impact that the higher uncertainty induced by the first wave of COVID-19 has had on European economic output and on its components (see Section 3).

Figure 6:   Indicator of sovereign stress from 1999 to 2020

Source: ECB - Statistical Data Warehouse (https://sdw.ecb.europa.eu/home.do).
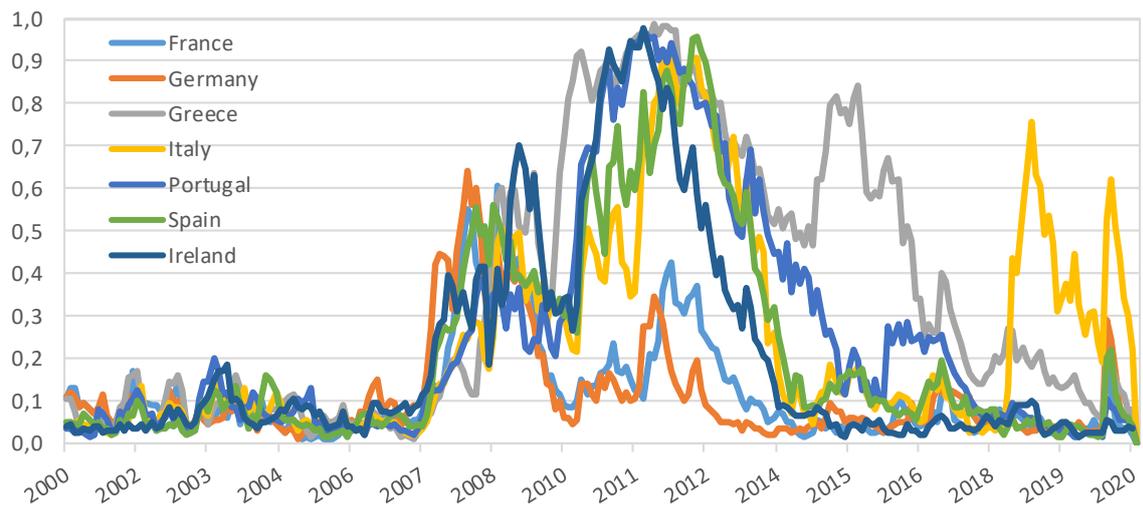
3. THE MACROECONOMIC IMPACT OF UNCERTAINTY INCREASES IN THE EU

This section estimates the impact of higher uncertainty about the future on output and its components. Following Basu and Bundick (2017), we estimate a VAR by using a measure of uncertainty and other seven variables: gross domestic product (GDP), consumption, investment, hours worked, the GDP deflator, the M2 money stock, and the short-term interest rate. The M2 money stock is obtained from ECB statistics. Apart from the uncertainty measures, all the other variables are those used in Smets and Wouters (2003) updated to 2018.[5] The uncertainty shock is identified by assuming that uncertainty can have an immediate impact on output and its components[6].

We consider two measures of uncertainty: the EEPU (Figure 2 above) and the SSCI (Figure 3 above). Results related to the two uncertainty indexes are described in Figures 7 and 8, respectively, which plot the estimated responses to a one-standard deviation uncertainty shock. The shock increases the level of EEPU index and SSCI to about 15%. Both Figure 7 and 8 show that higher uncertainty causes significant declines in GDP, consumption, hours worked, and investment. All these variables decline together with a peak response occurring after about a year and half. The increase in uncertainty has a relatively greater impact on investments than on consumption. The former decrease by almost 2% at the peak, while the maximum reduction in consumption is less than 0.5%. This means that the decline in investments from the peak is roughly four times as large as the decline in consumption. Higher uncertainty is also associated with moderate deflation and lower policy rates, even if the two correlations are weakly significant only at the peak of the output fall. The impulse responses of GDP, consumption, hours worked, and investment are statistically indistinguishable from zero two years after the initial shock was observed.

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[5] We use the automating update of the Smets and Wouters (2003) database available at the CEPREMAP Macroeconomic Observatory (see https://macro.cepremap.fr/).

[6] Formally, we use a Cholesky decomposition with the EEPU index ordered first.

Figure 7: Global uncertainty from 1999 (quarterly data) based on EEPU
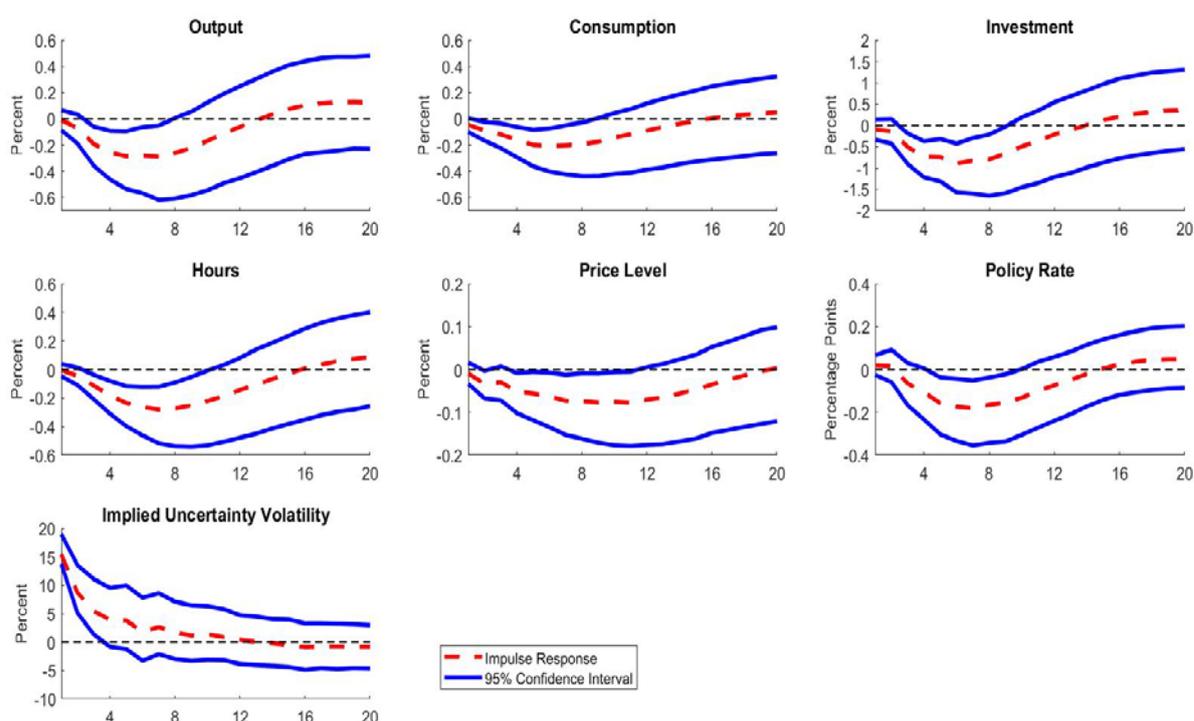
Source: Authors' elaboration.

In sum, our VAR provides evidence that higher uncertainty causes declines in output, consumption, investment, and hours worked. In the case of the current COVID-19 crisis, the increase in uncertainty may generate additional adverse conditions impeding a rapid or a stable recovery from the recession. However, let us emphasise that we should be prudent in these statements. In fact, the economic rationale of the effects of uncertainty on the "real" economy is still open to debate.[7] It remains that several studies have attempted to identify the main channels through which uncertainty affects macroeconomic variables, explaining the evidence reported in Figure 2.[8]

Partial equilibrium analyses show that increases in uncertainty tend to make economic agents more cautious and, consequently, agents tend to postpone their consumption or investment and production decisions. In fact, uncertainty operates as a real options effect. In an economy populated by risk-averse consumers who face a stochastic income stream, higher uncertainty induces precautionary savings. Similarly, uncertainty increases the value of delay in firms' investments in the presence of convex adjustment costs or irreversible investments because reversing decisions is costly. The same can be true for hiring new workers when hiring or firing costs may occur. In general, when people are risk averse, an increase in uncertainty leads to higher risks for investors. The rise in risk premia leads to an increase in borrowing costs and negatively affects the investment level.

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[7]   The idea that uncertainty may cause recession goes back to Keynes (1936). However, there is not full consensus about the causality between uncertainty and growth (cf. for example: Pindyck 1991.) Some economists argue that recessions cause uncertainty, and not vice versa (see for example: Van Nieuwerburgh and Veldkamp, 2006; Fajgelbaum *et al.*, 2017.) We believe that it is important to analyse the complexity of this relationship.

[8]   A detailed survey on the literature related to the economic impact of uncertainty is provided by Bloom (2014).

Figure 8:   Global uncertainty from 1999 (quarterly data) based on SSCI
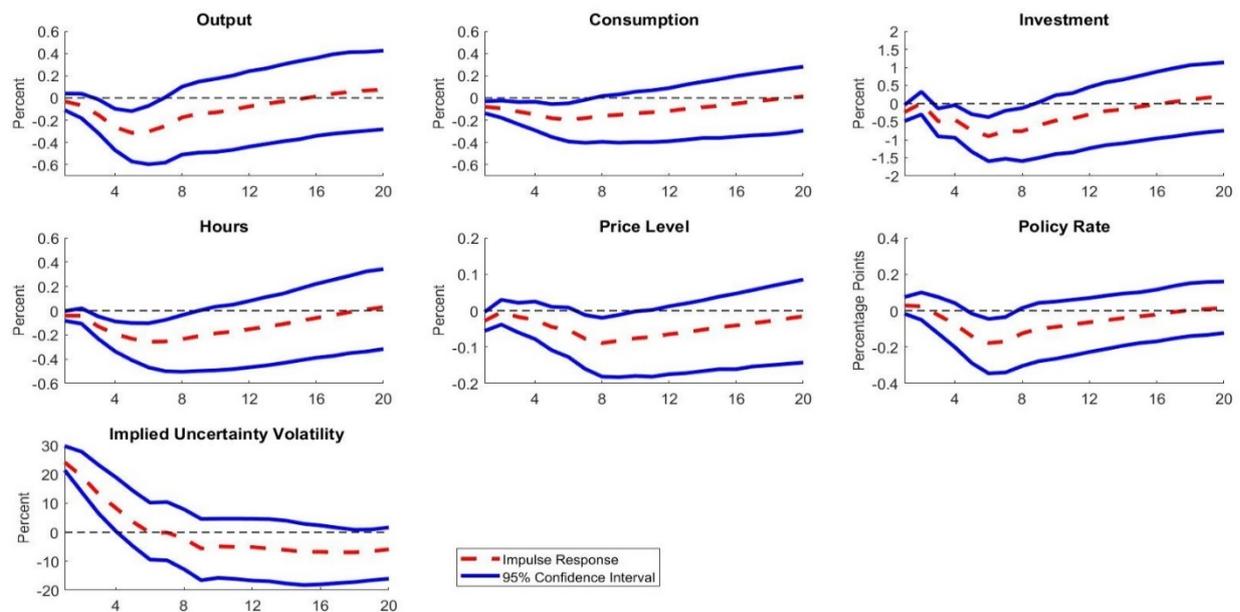
Source: Authors' elaboration.

It is worth noting that the translation of partial equilibrium results into a general equilibrium model is not trivial. In a flexible-price-general-equilibrium model, an increase in uncertainty leads agents to work more; and this induces a fall in real wages and an increase in the output instead of a reduction (as, in this case, the output is supply driven.) As Basu and Bundick (2017) note, the negative co-movement between uncertainty and output requires price stickiness to be observed. In such a case, in fact, mark-up increases lead to labour demand reductions that make it possible to observe an output reduction after an increase in uncertainty about the future and in labour supply. These two cases are illustrated in Figure 9.

The figure shows that an increase in precautionary savings involves a shift in the supply of labour to avoid a sharp drop in consumption. In the flexible pricing model, the increase in labour supply leads to a reduction in real wages and, then, to an increase in the level of production. The economy moves from the initial equilibrium in point E to the new one in point A, which is clearly inconsistent with the empirical evidence provided here. However, assuming there are sticky prices, firms are constrained in the price adjustments, the mark-up drops and the labour demand drops as well. The equilibrium moves from point E to point B, where employment and output changes are consistent with our empirical evidence.

Figure 9:   Precautionary savings and sticky prices
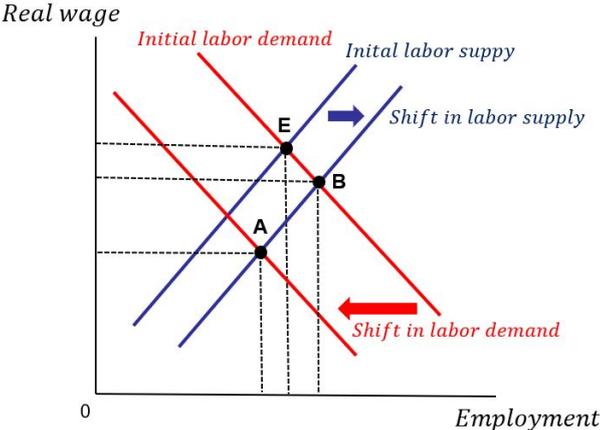
Source: Adapted from Basu and Bundick (2017).

4. POLICY IMPLICATIONS

The aforementioned theoretical analysis and empirical evidence show that the first pandemic shock did not imply peaks in uncertainty as strong as those produced by the previous and recent crises. This fact can be explained by the effectiveness of the policies implemented, as well as by the persistency characterising this new uncertainty, which is not absorbed through a contingent peak and the subsequent short-term adjustments but indicates structural long-term changes.

The plausibility of our interpretation is strengthened by the divergent expectations with respect to the "shape" of the recovery. Leaving aside the Chinese economy, which is growing even in 2020, and focusing on the EU, the current economic debate is in fact swinging between two extremes: a "V" European recovery and a "U" medium-term European stagnation. The huge differences in the learned forecasts are a signal of the uncertainty persisting; and the EU economy risks falling into a kind of "square root" evolution: a quick but very short-term recovery (the 2020 third quarter recovery), which is largely unable to fully compensate for the previous depression, followed by a persistent long-term stagnation or weak growth.

If it was true that the post-pandemic European economy will be characterised by a structural long-term uncertainty whose perception and impact are temporarily weakened by effective policy initiatives, there would be various practical implications. Here, we will just focus on two of them, relating – respectively – to (i) the feasible evolution of centralised and national policies; (ii) the possible public interventions in the financial markets.

Regarding the first issue, the European Commission (EC) and the other EU centralised executive powers would have to reproduce the current policies that are characterised by a deep expansionary stance. The convergence between monetary policy and fiscal policies represents an innovation, at least in the EMU. In March 2016, the ECB decided to strengthen its asset purchase programme (APP) by increasing to EUR 80 billion its monthly purchases of public and private assets in the secondary financial markets, as well as its TLTRO III tool by re-financing a subset of European banks at negative interest rates; however, in the face of this strong liquidity expansion, the stance of the national fiscal policies remained – in the EU average – neutral or at most weakly expansionary.[9] On the contrary, today and – at least – in the next year, both these policies are strongly supporting and will strongly support the "real" economy.

Since spring 2020, the larger EU Member States have managed the economic repercussions of the first pandemic emergency by dramatically increasing their public expenditures and, therefore, their government debt/GDP ratio. Figure 10 provides some information about the fiscal measures implemented by six different EU Member States in the period between mid-March and early June 2020, corresponding – roughly speaking – to the peak of the first pandemic shock.[10] National fiscal measures were very significant in terms of GDP in all the countries examined, but mainly in Germany and Italy. These measures were allowed by the *de facto* suspension of the Stability and Growth Pact (SGP) and by the temporary tolerance of enlarged forms of state aid, as regulated by the different versions of the EU *Temporary Framework*.

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[9] See EC (2016a and 2016b).

[10] The fiscal measures in the Member States consist of stimulus measures (mainly short-term work allowances and transfers) with a direct impact on the budget and liquidity measures without direct budgetary impact (mostly in form of public guarantees and tax delays.)

Figure 10:   Public expenditures and liquidity measures in EU countries
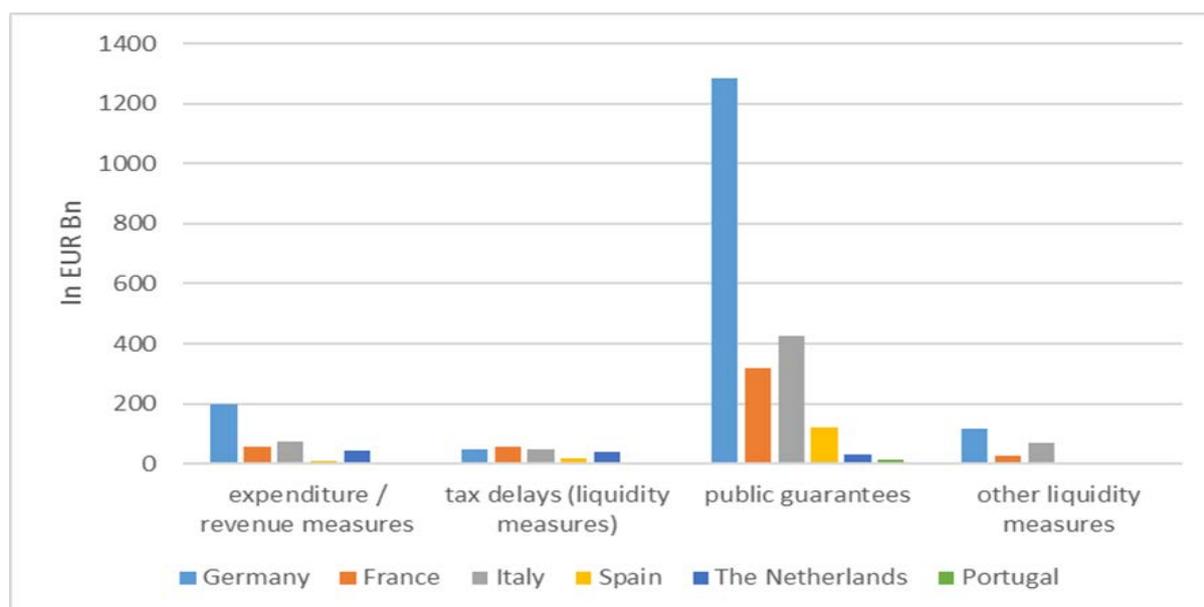
Source: Buti and Messori 2020 (original source: EC).

Centralised expansionary fiscal and monetary initiatives are accompanying these domestic policies. Last spring, the EC offered EUR 540 billion to the EMU's countries by launching three new programmes (Support to mitigate Unemployment Risks in an Emergency [SURE], the European Stability Mechanism [ESM]'s precautionary line for health, and the European Investment Bank [EIB]'s recapitalisation to guarantee or finance investments); and, in cooperation with the European Council and the European Parliament, starting from 2021, it will implement the Next Generation – EU (NG-EU) and the new EU Multiannual Financial Framework for 2021-2027 (MFF) which will potentially allocate more than EUR 1.8 trillion to EU countries in seven years. In addition, by means of various programmes (improved APP, PEPP, improved TLTRO III, and PELTRO) in the March 2020 – mid-2021 period, the ECB will purchase financial assets for around EUR 1.8 trillion in the secondary financial markets, and in the period from mid-2020 to the beginning of 2022 it will refinance EMU banks for up to EUR 3 trillion.[11]

Given the current second wave of the pandemic shock in the EU, the expansionary convergence between the ECB's monetary policies and the centralised fiscal actions should be reproduced and – maybe – strengthened even in 2022. In particular, the ECB would have to extend a strengthened PEPP and an improved APP throughout 2022.[12] Moreover, it will become unavoidable to extend the *de facto* suspension of the SGP and the validity of the EU *Temporary Framework*.

However, despite the new national emergencies and the consequent additional need for public economic and social support, the reduction of the uncertainty would also require some changes in national fiscal policies. In the light of the evidence shown in Figure 10, we can maintain that the most fragile EU countries are fully exploiting their fiscal capacity and are even going beyond that; and that a number of EU "core" countries are approaching the critical threshold of 100% in their government debt/GDP ratio. Hence, an unqualified further increase in national public spending could trigger a new source of uncertainty in the EU: the actual sustainability of sovereign debt, particularly in the EMU

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[11]   See Benigno et al. (2020).

[12]   We are confident that the ECB's Governing Council will take these decisions before the end of 2020 despite the prudent line set out in the last meeting (29 October). In any case, the re-investment until the end of 2022 of the "principal payments" from the bonds that were purchased under the PEPP, and that are at maturity, will eliminate the main risk of monetary tightening during the pandemic phase.

countries with a pre-pandemic high public debt and a low potential of growth. In order to prevent this new source of uncertainty from materialising, national fiscal policies could continue to have an expansionary stance but should be more selective and strongly connected with long-term, growth-stimulating programmes.

It then becomes crucial that – especially - the most fragile EMU Member States carefully calibrate the continuation of the short-term national expansionary policy initiatives, required for managing the economic and social impacts of the second wave of the COVID-19 pandemic. The initiatives of these Member States have to become more selective in the sense that each of them should positively interact, on a complementary basis, with the new initiatives implemented in the EMU (SURE, ESM, EIB), and with the strategic projects and components included in the respective National Recovery and Resilience Plan (NRRP) and in the related National Reform Programme.[13] The content of each NRRP must be assessed by the EC and approved by the European Council to allow for the actual utilisation of the national resources coming from the Recovery and Resilience Facility (RRF) – that is, the most important fund of the NG-EU (in the aggregate, around 90% of the total amount). Moreover, each NRRP is severely constrained by the detailed guidelines recently published by the European Commission (2020). Conversely, EMU initiatives impose some conditionality on the national access to their resources.

We may conclude that the future national short-term initiatives must become compliant with the strategic processes that each country agreed with the European institutions. This implies that:

(i)   national fiscal policies should offer short-term financial support to the firms and households which are in temporary trouble due to the second wave of the COVID-19 pandemic, but

(ii)   they should also be able to positively interact with the long-term policies aimed at triggering a sustainable economic and social development.

This conclusion shows that positive interactions between the short-term national fiscal policies and the national plans for the utilisation of the huge amount of resources made available by the various European programmes are a necessary condition to put the persistent uncertainty in the EU and the EMU under control. However, at least in our view, they are not a sufficient condition to structurally overcome the surplus of uncertainty due to the pandemic shocks. In this last respect, another crucial condition is represented by the re-composition of a significant part of the financial wealth allocated in the households' and institutional investors' portfolios of the most important EU Member States.

The above-mentioned observation introduces our second issue, i.e., the possible public incentives needed to strengthen the non-banking segments of the European financial markets. In order to clarify the point, it is worthwhile to recall some data relating to the main features of the EMU's financial markets at the peak of the recovery in the euro area after the international financial crisis (2007-2009) and the European crises (2010-2013).[14] We report liabilities of non-financial firms by different debt typologies (Table 1) and equities (Table 2) in the EMU and the US.

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[13]   According to the European Commission (2020), the NRRP and the National Reform Programme of each EU Member State are so strictly integrated as components of the European Semester that it is worthwhile to encourage Member States to prepare a single document. In the following, we assume that this opportunity will be implemented. Hence, by referring to the NRRP, we also include the National Reform Programme.

[14]   We are referring to the EMU instead of the EU to overcome the empirical distortion due to the inclusion of the UK in official European statistics. It is well known that the UK, which has the most developed financial market in Europe, launched the process of withdrawing from the EU with the 2016 referendum and the consequent activation of art. 50 of the EU Treaty (March 2017). However, this process resulted in the UK formally leaving the EU only at the end of January 2020. Let us add that we identify the peak of the EMU recovery in the third quarter of 2018, since immediately after that the Italian economy entered a technical recession and the German economy risked doing the same. Hence, it seems appropriate to state that the EMU's economic growth weakened in the last months of 2018.

A descriptive comparison with the US shows that – at the end of 2018 – the EMU's non-financial firms depended on banking loans for their external financing four times more than the US' non-financial firms. Conversely, in the same year, the incidence of equities and market debts (mainly, corporate bonds) as sources of non-financial firms' external financing were more than four times larger in the US than in the EMU. Tables 1 and 2 also show that these huge differences observed in US and EMU financial markets are structural, i.e., the path of convergence between the two areas has been very slow in the last two decades. [15]

Table 1: Liabilities of non-financial firms: debt typologies

	US						Euro area		
	Debt securities			Loans			Debt securities	Loans	
	Corporate bonds	Commercial paper	Municipal securities and loans	Depository institution Loans	Other loans and advances	Total mortgages		MFIs Loans	Other credit Institutions Loans
2018-Q3	10.3%	1.2%	0.7%	4.0%	3.0%	1.5%	4.0%	11.8%	17.0%
2014-Q3	11.1%	0.5%	1.3%	2.1%	2.9%	1.0%	3.9%	14.1%	16.8%
2011-Q3	13.0%	0.5%	1.9%	2.1%	3.7%	2.2%	3.4%	18.1%	16.2%
2008-Q3	11.3%	0.6%	1.6%	3.0%	5.3%	3.5%	2.8%	19.1%	14.5%
2005-Q3	11.0%	0.5%	0.9%	2.4%	3.5%	2.8%	3.1%	15.6%	13.9%
2002-Q3	14.5%	0.7%	0.9%	3.9%	4.0%	2.3%	3.3%	17.7%	15.8%
1999-Q3	10.3%	1.2%	0.7%	4.0%	3.0%	1.5%	2.4%	16.0%	12.8%

Source: Messori (2019).

Table 2: Liabilities of non-financial firms: equities

	US					Euro area			
			Other liabilities			Equity			
	Corporate equity	Trade credits and advances	Taxes payable	FDI in US	Total miscellaneous liabilities	Listed shares	Unlisted shares and other equity	Trade credits and advances	Other liabilities
2018-Q3	60.1%	5.7%	0.4%	4.6%	8.5%	16.1%	38.5%	8.2%	4.5%
2014-Q3	58.6%	5.4%	0.1%	7.5%	9.5%	14.8%	36.8%	8.3%	5.3%
2011-Q3	49.4%	6.6%	0.2%	9.0%	11.5%	11.5%	35.3%	9.9%	5.6%
2008-Q3	50.2%	6.6%	0.2%	8.3%	9.5%	14.1%	34.3%	10.2%	5.1%
2005-Q3	55.2%	6.7%	0.4%	6.3%	10.2%	17.5%	35.1%	9.7%	5.1%
2002-Q3	45.7%	7.9%	0.6%	7.5%	12.0%	14.9%	31.7%	10.7%	5.9%
1999-Q3	60.1%	5.7%	0.4%	4.6%	8.5%	21.8%	31.4%	10.1%	5.5%

Source: Messori (2019).

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[15] The only significant change derives from the reduction in the gap of banking loans from 1999 to 2018. However, note that this observed change was mainly due to the increase in the incidence of banking loans in the liabilities side of US non-financial firms.

It is important to note that the above-mentioned structural differences are not due to a lack of financial wealth held by the EMU's households with respect to the US' households. As shown in Table 3, in terms of its GDP, the aggregate of French households held a higher amount of financial assets with respect to the aggregate of US households at the peak of the EMU's recovery. The Italian figures were also very close to the top. Instead, the structural differences in the functioning of US and EMU financial markets were mainly due to the more binding constraints characterising the demand and the supply sides of the latter area. Even at the peak of the European recovery, 95% of the EMU's non-financial firms had less than 20 employees; and the large majority of the firms were under the proprietary control of a single family who also managed the business. As a result, the EMU's productive activities concentrated their external demand for financing on short-term and medium-term non-market debt instruments. On the other hand, households and institutional investors either had a high risk-aversion or had to comply with very prudential allocative rules. Consequently, in the EMU the supply of financing was primarily composed of highly liquid and low-risk financial assets (cash, guaranteed deposits, shares of mutual funds) (see also Table 4.) The resulting deep heterogeneity in the composition of the supply and demand for financing explained the dominant role played by banks in the EMU's financial markets.

Table 3: Household's financial wealth (Q3-2018)

	Financial assets (EUR, per capita)	Financial assets (% GDP)
France	91,940.9	208.1%
Germany	84,449.8	160.6%
Italy	78,278.3	191.4%
Spain	51,784.9	132.5%
Euro area	79,387.9	175.7%

Source: Messori (2019).

As theoretically shown a long time ago,[16] it is possible to justify the presence of banks in a general equilibrium model only if the non-financial firms, on the demand side, and the holders of financial wealth, on the supply side, are not able to meet directly on the market precisely because of the incompatibility between the time structure and the risk profile of their respective desired financial assets, or because of information imperfections. An intermediary is then necessary, one that is able to transform durations and to absorb risk gaps by taking over their management. Banks are traditionally specialised in this intermediation. Along these lines, we can state that uncertainty implies a failure in the price mechanisms so that the matching of supply and demand for financing is left for banks. If the objective is to strengthen market financing (through equities and/or corporate bonds), it will be necessary to reduce uncertainty in order to weaken the impact of investors' risk-aversion on the composition of their financial portfolios.

Table 4 highlights that this conclusion was strengthened by the recent macroeconomic difficulties and mainly by the pandemic shock. In the EMU, financial wealth holders reacted to uncertainty by increasing the relative weight of the most liquid components of their portfolios. The recent data emphasise that around 35% of the financial wealth held by the EMU's households is composed of cash and banking deposits. It follows that – *ceteris paribus* – the EMU's non-financial firms will still be

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[16] Cf., e.g., Brainard and Tobin (1963), Tobin (1969), and, more recently, Diamond (1984).

relatively more dependent on the banking sector for their external financing in the post-pandemic phase of the recovery.

Table 4: Household's financial portfolio composition in the EMU

	Financial assets (EUR millions)	Deposits and currency (EUR millions)	Deposits and currency[1] (% of financial assets)
2020-Q2	26,070,328	9,010,367	34.56%
2020-Q1	25,140,326	8,764,897	34.86%
2019-Q4	25,926,324	8,663,686	33.42%
2019-Q3	25,760,360	8,539,512	33.15%
2019-Q2	25,330,848	8,485,517	33.50%
2019-Q1	24,807,330	8,337,919	33.61%
2018-Q4	24,117,350	8,240,650	34.17%
2018-Q3	24,394,336	8,106,996	33.23%
2018-Q2	24,374,930	8,081,528	33.16%
2018-Q1	24,130,788	7,948,712	32.94%
2017-Q4	24,144,180	7,916,059	32.79%
2017-Q3	23,865,308	7,805,373	32.71%
2017-Q2	23,687,888	7,783,515	32.86%
2017-Q1	23,483,086	7,691,926	32.76%
2016-Q4	23,167,808	7,657,826	33.05%
2016-Q3	22,920,750	7,529,086	32.85%
2016-Q2	22,623,038	7,501,569	33.16%
2016-Q1	22,457,878	7,394,087	32.92%

Source: Authors' elaboration on ECB data.

Note: (1) Deposits and currency as % financial assets.

This implication is not good news.[17] The EU's centralised fiscal policies based on the NG-EU and on its main programme (RRF) rely on the EC's new strategy, and thus focus on two fundamental issues: a) environmental sustainability and b) digital innovation.[18] Both these issues and their strict interactions require technical innovations and organisational changes which must be based on public investments and an expensive set of financial support and services for potential innovators. To have any chance of success, innovators must be able to adapt their enterprises to different but critical dimensional thresholds. Therefore, to implement the programme proposed by the von der Leyen Commission and to launch new and robust development in the post-pandemic phase, it is necessary that the financing

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[17] Part of the following paragraph reproduces a passage from Messori (2019).
[18] See von der Leyen (2019).

of innovative trajectories is not quantitatively and/or qualitatively limited to self-financing and bank credit (Kremer and Popov, 2018).

This conclusion justifies our previous statement, i.e., that to overcome the surplus of uncertainty due to the pandemic shocks, it is necessary to achieve a re-composition of a significant part of the EMU's financial portfolios. Due to the uncertainty, households' risk aversion and institutional investors' constraints lead to financial portfolios that are too liquid. This hinders the market financing of innovations and organisational changes in the EU's productive system, and hence it weakens the potential of the post-pandemic economic and social development. What results is a vicious circle: to overcome the surplus of uncertainty, strong development would be necessary; to implement the latter, it would be necessary to re-compose the financial portfolios constrained by the surplus of uncertainty. To break out of the vicious circle, European and national policies should incentivise institutional investors to undertake riskier financial investments and should offer positive externalities for the expansion of the non-banking segments of the EMU's financial markets.

The European institutions have already approved the appropriate tool for pursuing these objectives: the Capital Markets Union (CMU). However, for now the CMU is just a bundle of norms waiting for the completion of the Banking Union;[19] it is instead the right time to transform these norms into an actual carrier of effective financial innovations.

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[19] The CMU focuses on various areas of intervention such as: (a) broadening the spectrum of financing accessible to non-financial European firms, including small and small-to-medium-sized ones; (b) facilitating the access and use of non-bank segments of the market; (c) strengthening, to this end, the involvement of institutional and professional investors and – through them – of retail investors; (d) expanding banking functions and the financing of innovative activities. As emphasised by Lannoo and Thomadakis (2019), to implement these measures the EC set twenty targets and committed to translating them into thirty-three actions by 2019. Most of these legal-regulatory actions have actually been drawn up and some of them have been approved. However, the economic impact was quite modest.

5. CONCLUSIONS

The COVID-19 pandemic shocks are an important source of uncertainty which have impacted the European economies in several aspects. As discussed in section 2, this uncertainty is documented by various indicators. An interesting result drawn from these indicators is that the spike in volatility due to the first pandemic shock has been relatively contained with respect to those of the two recent crisis episodes – the 2007 international financial crisis and the 2011-2012 "doom-loop" between the European sovereign debt crisis and the crisis of the EMU banking sector. Recent financial market data show that this uncertainty has been reduced substantially. We believe this evidence demonstrates the importance of the European monetary and fiscal policies' prompt reaction.

Uncertainty shocks also have macroeconomic consequences which are distinct from the direct consequences of the lockdown and of the various restrictions associated with the pandemic. Our econometric analysis in section 3 based on euro area data shows that higher uncertainty causes declines in output, consumption, investment, and hours worked. In the case of the current COVID-19 crisis, the increase in uncertainty may generate additional adverse conditions impeding a rapid recovery from the recession.

The positive interactions between the short-term national fiscal policies and the national plans for the utilisation of the huge amount of resources are a necessary condition to put the persistent uncertainty in the EU and EMU under control and to reduce its economic consequences. However, we argued in section 4 that these interactions are not a sufficient condition for structurally overcoming the surplus of uncertainty due to the pandemic shocks. Furthermore, we stressed that European policymakers should become *forward looking*; despite the current accommodative monetary policy and the low (even negative) interest rates, policymakers should consider "today" the European public finance issue, since some of the EU and EMU Member States will have to manage an enormous public debt in the post-pandemic phase. European policies should take this problem into account, expecting more uncertainty ahead.

Finally, we argue that another crucial condition is represented by the re-composition of a significant part of the financial wealth allocated in the households' and institutional investors' portfolios of the most important EU Member States. Due to the uncertainty, households' risk aversion and institutional investors' constraints lead to financial portfolios that are too liquid. This hinders the financing of innovations and organisational changes in the EU's productive system, and hence it weakens the potential of the post-pandemic economic and social development. European and national policies should thus incentivise institutional investors to undertake riskier financial investments and should offer positive externalities for the expansion of non-banking segments of the EMU's financial markets.

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The COVID-19 pandemic shocks are an important source of uncertainty on several dimensions. In particular, these shocks influence the landscape, in which policymakers operate, and create further uncertainty on policy decisions and on their effectiveness. The aim of this paper is to offer some relative measures of the pandemic uncertainty, and to discuss the impact of this uncertainty on the possible evolution of European economies during the second wave of COVID-19. The emphasis is on the effectiveness of the policies implemented.

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