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The Political Economy of the Belarusian Crisis

Adam Przeworski famously wrote that "authoritarian equilibrium rests … on lies, fear, or economic prosperity."[1] Belarusian dictator Alexander Lukashenko has felt safe for his first twenty years in office primarily due to a strong economic performance. At the time of the previous presidential election in 2015, Belarusian GDP per capita (in purchasing power parity adjusted terms) was almost three times as high as in 1994 – the year when he came to power. On average, in 1994-2014, per capita incomes have been growing at a healthy 5.5% annually. The catch, of course, was that this growth was due to massive subsidies from Russia: 10%-20% of GDP per year, by International Monetary Fund (IMF) estimates. Once the Russian economy went into a recession followed by prolonged stagnation due to a decline in oil prices and Western sanctions, Belarusian economic growth also ran out of steam. Russia went through a major austerity exercise at home and could not afford to be as generous to friendly authoritarian regimes as before. As a result, Belarusian GDP per capita stopped growing: its average annual growth rate in 2014-2019 was precisely zero.

Given the bankruptcy of Lukashenko's growth model, it is not surprising that he lost the 2020 election and resorted to violence and lies (for the latter he even had to import two planeloads of Russian TV propagandists). It is difficult at present to predict the outcome of his fight against Belarusian society. However, it is useful to discuss the structure of the Belarusian economy as this helps understand the country's political economy and thus inform Europe's strategy regarding Belarus.

First and foremost, the Belarusian economy is dominated by state-owned enterprises (SOEs) and state-owned banks. Despite many promises to both Russia and the West, Lukashenko has eschewed privatisation, so the share of the state in the Belarusian economy (and especially in its industry) is much higher than even in China. According to various estimates, SOEs account for half the GDP and almost 60% of employment. Some Belarusian SOEs are profitable but most are not and therefore rely on subsidised inputs from Russia or bailouts by state-owned banks. Much of the SOEs' debt to the banks or the markets will have to be assumed by the government or restructured, which in turn will mean that the banks will have to be bailed out by the government. However, the government's own debt is already growing quickly and further market borrowing is costly: Belarusian eurobonds trade at 7% per year in dollar terms.

The SOE subsidies are not only a fiscal problem; they also limit the chances of restarting economic growth. As SOEs depend on subsidies and bailouts, they have no incentive to restructure and invest efficiently and their productivity stagnates.

While SOEs dominate the commanding heights of the Belarusian economy, there is also a private sector – mostly small and medium-sized enterprises (SME). The private firms face an unfair competitive environment and are harassed by bureaucrats; those that survive are run by highly motivated and talented entrepreneurs. The private sector includes a very important enclave of IT companies – the High Technology Park (HTP). HTP is a special tax and legal regime which is used by more than 800 companies throughout the country. While they employ about 1% of Belarus' labour force, they account for about 10% of the country's exports. Lukashenko has always tried to take credit for the success of HTP. However, by 2020 it became clear that his

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1 Przeworski, A. (1991), *Democracy and the Market: Political and Economic Reforms in Eastern Europe and Latin America*, 58, Cambridge University Press.

outdated regime is a liability rather than an asset for the IT companies' further growth. HTP's falling out with Lukashenko is epitomised by HTP founder Valery Tsepkalo's bid for the presidential nomination in the 2020 elections. Tsepkalo was not registered as a candidate, was harassed by Lukashenko's 'law-and-order' agencies and was forced to emigrate.

Another important economic and political factor is the large diaspora. Various estimates suggest that 3.5 million Belarusians live outside the country – compared to about 9.5 million residing inside. The diaspora sends back remittances and promotes economic and social interactions between Belarus and other countries.

Given the economic dead end of the last few years, it is not surprising that private entrepreneurs and their employees – as well as Belarusians based abroad – saw the need for change. What was more striking is that they were supported by many SOE workers – previously, the stronghold of the regime. The likely explanation for this turnaround is the rise of social media that overcame the propaganda of state TV. Another opposition politician who attempted a presidential run this year, Sergei Tikhanovsky, rose to prominence through his YouTube blog. The blog has 300,000 subscribers and the most popular videos have been viewed over a million times. (Mr. Tikhanovsky was also unable to register as a presidential candidate; he was arrested before the election; however, his wife, Svetlana Tikhanovskaya, ran for president and apparently won the election in the first round). Since August, the main opposition Telegram channel, NEXTA, has grown to two million subscribers. The independent online media have probably convinced the state sector workers that Lukashenko's economic model is struggling – especially compared to already rich and growing European neighbors Poland and Lithuania.

The economic challenges are an important piece of the Belarusian puzzle. In order to continue paying his policemen, Lukashenko needs money. He also needs to roll over his external debt. In September 2020, Moody's warned that the Belarusian banking system faces major risks – and that the Central Bank's foreign currency reserves can only cover 25% of the banking system's foreign currency liabilities. Economic problems have also contributed to the downward pressure on the Belarusian ruble – which has lost a quarter of its value to the euro in the last 12 months.

This brings in the last missing piece of the Belarusian political economy: Russia. As it has done before, Russia could bail Belarus out. Not surprisingly, facing the protests and the growing economic difficulties, Mr. Lukashenko has intensified his contact with Vladimir Putin and has already announced that Russia is ready to help. Whether this is actually the case, and if so, what price Belarus would pay for a Russian bailout remains to be seen. In 2018-2019, Mr. Putin allegedly considered the "integration" of Belarus into Russia as a solution for his 2024 problem: creating a new state would allow him reset his term limits. As this scenario was blocked by Lukashenko then, Putin went for another, blunter approach simply rewriting the Russian Constitution and "zeroing out" term limits for himself. It is not impossible, however, to see that he still wants to return to the unification of Russia and Belarus. But losing national sovereignty would certainly be highly unpopular among Belarusians – and the Kremlin seems to understand this. Thus, it is not clear what Belarus strategy the Kremlin will choose.

What can the EU do? It has both principles and instruments to defend them. As it has done in the past, the EU should state clearly that stealing elections, arresting opposition politicians and beating peaceful protesters is wrong – and follow up with sanctions, putting the money where its mouth is. The EU should also promise economic support to the democratic and reform-oriented Belarus – both through the European Commission's toolkit and via the EU's and its allies' representation in international financial institutions such as the IMF, the World Bank and the European Bank for Reconstruction and Development. If Belarus embarks on the reform trajectory, there are many reasons to be optimistic about its economic performance. This is a well-educated country next to Europe. It does not have oligarchs and petty corruption. Finally, as the last weeks have demonstrated, its society wants to build a modern country based on European values.

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After COVID-19: Rethinking Fiscal Rules in Europe

Following the COVID-19 outbreak in Europe this spring and subsequent measures to contain the pandemic, the European Commission drastically revised its economic and fiscal forecasts. The Summer 2020 Economic Forecast projects that the euro area economy will contract by 8.7% in 2020. The coronavirus crisis is expected to push the general government deficit to about 8.5% of GDP this year. Even in an optimistic V-shaped recovery scenario with a GDP growth rate of 6.1% in 2021 due to the temporary nature of lockdown measures taken in 2020, the headline deficit is expected to decrease to about 3.5% of GDP. Furthermore, both the downturn and the rebound of economic activity are expected to be asymmetric across member states, exposing entrenched divergences. The recent outlook highlights the problem of pro-cyclical revisions of potential output and output gap estimates. Some economists warn that the current fiscal framework may lead to pro-cyclical and thus destabilising fiscal policies, a problem encountered in Southern Europe during the European sovereign debt crisis that has implications for the entire European Union. In order to avoid repeating past mistakes, the debate on how to reform European fiscal policy should be settled before the rules are re-enacted when the coronavirus crisis has passed.

Reforming EU Fiscal Rules: More Leeway, Investment Orientation and Democratic Coordination

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Lessons From the COVID-19 Crisis for Euro Area Fiscal Rules

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The Eurozone as a Trap and a Hostage: Obstacles and Prospects of the Debate on European Fiscal Rules

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Eurozone Output Gaps and the COVID-19 Shock

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Reflections on the Stability and Growth Pact's Preventive Arm in Light of the COVID-19 Crisis

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Achim Truger

Reforming EU Fiscal Rules: More Leeway, Investment Orientation and Democratic Coordination

In February 2020, the European Commission started its Economic Governance Review, in which EU fiscal rules obviously play a prominent part. The unprecedented economic crisis caused by the COVID-19 pandemic has understandably shifted attention away from the fiscal framework. In March, the European Council activated the general escape clause of the Stability and Growth Pact (SGP) and since then the debate focused on EU level emergency measures to overcome the crisis. After a somewhat shaky start, the EU responded with collective financial support. Safety nets worth €540 billion were approved in April, with credit lines for all member states. Encouraged by the joint initiative of Emmanuel Macron and Angela Merkel, a one-off recovery plan for Europe with €750 billion was approved – part of which is earmarked in particular as direct support for heavily affected states. The funds are to be raised through borrowing in the name of the EU, to be serviced through the EU budget – partly through its to-be-created own tax revenues. The agreement reached at the EU summit in July 2020 represents a major breakthrough on the road to reforming the EU's fiscal governance, which had largely come to a standstill before the crisis.

EU fiscal rules, however, still urgently need a reform in order to strengthen the role of fiscal policy. First, the abolition of national monetary policy in the euro area means that fiscal policy must play a much larger role in stabilising national economies. The ECB has to orient its interest rate policy by the Economic and Monetary Union (EMU) average and therefore is unable to respond to specific economic circumstances in individual countries. In the absence of fiscal countermeasures at the national level, this threatens to create persistent boom-bust cycles capable of endangering the stability of the EMU. Second, particularly during periods of crisis, fiscal policy must support monetary policy, whose stabilisation possibilities are restricted at the zero lower bound for interest rates. Third, as recent empirical results for the fiscal multiplier show, fiscal policy is much more effective macroeconomically than previously assumed, especially in periods of crisis. Fourth, fiscal policy must enable strong long-term productivity growth through high and consistent public investment in traditional and ecological infrastructure and in education and research.

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The threat of further austerity

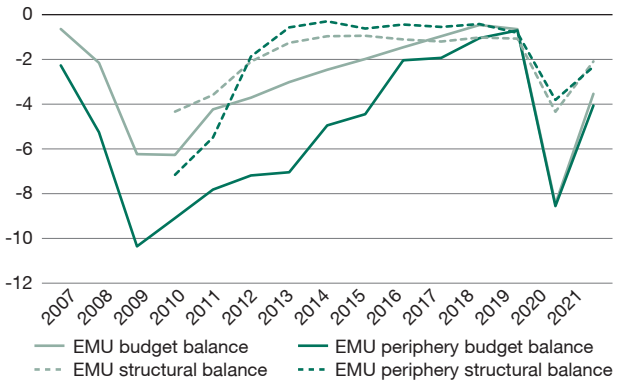
The crucial importance of fiscal policy for macroeconomic development in the euro area is illustrated by the fact that the acute economic crisis in the countries of the European periphery could – at least for the time being – only be overcome by relaxing fiscal rules and thus by a much less restrictive fiscal policy stance. After the tightening of European fiscal rules (six-pack, Fiscal Compact, two-pack) had led to a strict austerity policy in these countries (Seikel, 2016), the EU Commission under Jean-Claude Juncker interpreted and applied the rules in a more relaxed way (European Commission, 2015; European Council, 2015). This, together with the ECB's willingness, declared in 2012, to provide guarantees for the government bonds of the affected countries, finally paved the way for an economic recovery.

Figure 1 uses the EMU's and the average of four crisis countries' (Greece, Italy, Portugal and Spain) structural budget balance[1] to show the orientation of fiscal policy. If structural balances rise (decrease), this signals a restrictive (expansive) fiscal policy. With the austerity policy in place between 2010 and 2013, the structural budget balance was reduced by more than 6% of GDP in only three years, dragging the periphery into a severe double-dip recession. The initially weak and then somewhat stronger upswing since 2014 was driven by domestic demand and coincides with a perceptible relaxation of the consolidation policy: in 2014, fiscal policy switched to a neutral stance. Brussels' budgetary surveillance ultimately tolerated the deterioration of the structural budget balance. This was partly also a consequence of the reinterpretation of the rules of the SGP.

Another important aspect relates to the development of public investment (Figure 2): from 2009 to 2012, during the

1 The structural budget balance is the government budget balance adjusted by the European Commission for cyclical influences and one-off effects. The EU Commission has published both balances since 2010 (see Mourre et al., 2014).

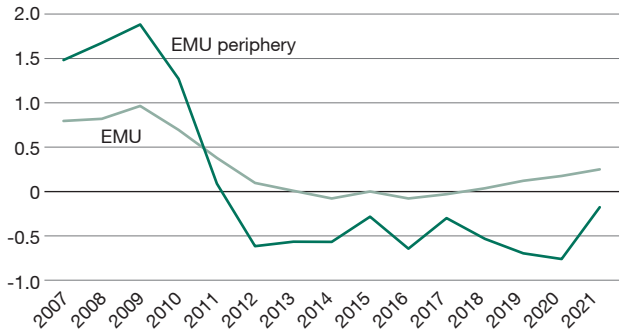
Figure 1
General government budget balance and structural balance, EMU and EMU periphery, 2007-2021
in % of (potential) GDP



Note: The EMU periphery refers to Greece, Italy, Portugal and Spain; unweighted arithmetic average.

Source: European Commission (2020); author's calculations.

Figure 2
General government net capital formation, EMU and EMU periphery, 2007-2021
in % of GDP



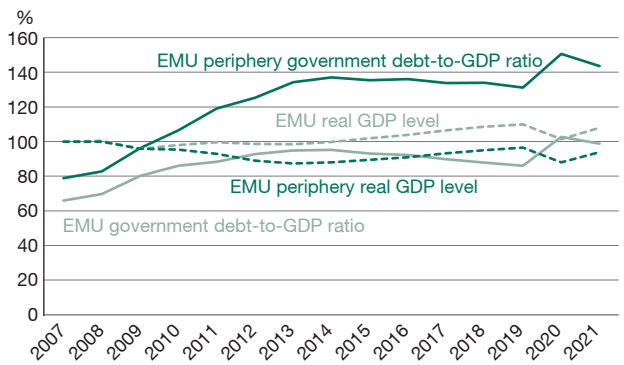
Note: The EMU periphery refers to Greece, Italy, Portugal and Spain; unweighted arithmetic average.

Source: European Commission (2020); author's calculations.

acute austerity phase, net public investment in the periphery dropped by more than 2% of GDP. The multiplier of public investment is particularly high and reductions are therefore particularly harmful (Gechert, 2015). Nevertheless, investment was severely affected by cuts because it is usually a non-compulsory task and therefore the first target of austerity. It was not until 2012 that net public investments stabilised, albeit at a negative level of around -0.5% of GDP. This can be interpreted in the sense that the public capital stock in the periphery has been shrinking since then.

The euro area was hard hit by the coronavirus shock, with all indicators hinting at a record recession in 2020. According to the European Commission Spring forecast, the average GDP level of the periphery countries Italy, Spain, Portugal and Greece will be driven back below its 2007 pre-crisis level at least until 2021 after they had slowly recovered from the austerity crisis to that level in 2019 (Figure 3). Obviously, neither the euro area nor the crisis countries can afford a return to strict fiscal tightening or austerity. However, as can be seen in Figure 1, headline fiscal deficits in the periphery can be expected to be around 4% of GDP in 2021 and structural deficits between 2% to 3% of GDP with a very uncertain outlook for the years ahead. Once the general escape clause of the SGP is given up, many euro area countries will find themselves in trouble with the preventive arm of the SGP where structural deficits have to be substantially reduced to reach the medium term objective (MTO), if they do not find themselves in an excessive deficit procedure. Worse still, public debt levels in the periphery must be expected to increase strongly by 15 to 20 percentage points compared to 2019 (Figure 3), which could lead to stricter MTOs or an excessive deficit procedure; this, in turn, would lead to even stronger consolidation requirements. The resulting fiscal contraction could well ruin the prospects of recovery and medium term growth. However, it is clear that a return of austerity policies would not be sustainable economically, socially or politically. The recovery plan approved by the extraordinary Council meeting will alleviate the problems substantially in the short run, but it does not remove the necessity to reform fiscal rules to prevent further austerity over the medium term.

Figure 3
General government debt-to-GDP ratio and real GDP level (2007=100), EMU and EMU periphery, 2007-2021



Note: The EMU periphery refers to Greece, Italy, Portugal and Spain, unweighted arithmetic average.

Source: European Commission (2020); author's calculations.

More cyclical leeway for fiscal policy

So what direction should reform of the fiscal rules take? The first key element would be to significantly increase the cyclical flexibility of the SGP. One very pragmatic reform option which could be realised purely technically without amending the EU treaties would be to reconsider the EU Commission's method of cyclical adjustment, which plays an important role in budgetary surveillance. A major reason for the lack of economic adequacy of the SGP is that the procedures used for cyclical adjustment – though useful in principle – function only imperfectly. The structural budget balance is a fundamental factor in assessing national fiscal policy. Its development is used within the preventive arm of the SGP to assess whether member states have already achieved their MTO or whether they are taking adequate consolidation measures to achieve it. The change in the structural budget balance is also used as part of the excessive deficit procedure (exceeding the 3% limit) to assess whether progress towards consolidation is sufficient.

It is now widely accepted, however, that the change in the structural balance is a problematic indicator for the orientation of fiscal policy because it considerably underestimates the extent of fiscal restraint in phases of crisis and overestimates the success of consolidation during an upswing vice versa (see also Brooks and Fortun, 2020). The structural balance is calculated by cyclically adjusting the actual budget balance and correcting it for one-off effects (privatisation revenues, etc.). The usual cyclical adjustment methods underestimate the extent of cyclical fluctuations and lead to procyclical policies if they are used as a yardstick for fiscal policy. The EU Commission's method in particular has proven to be problematic because the calculated potential output is strongly influenced by the current economic situation. In phases of economic downturns, for example, potential output is quickly and sharply revised downwards, although this does not reflect real conditions (Truger, 2015a, 2016).

The downward revision of potential output has severe consequences for the calculated structural deficits and the consolidation efforts identified correspondingly. Consolidation efforts are usually estimated to be much lower than they actually were because a major part of the deficit is considered to be structural, although it may only have been caused by the economic downturn.[2] The easiest option would be to use medium-term averages for potential growth or, even better, to revise potential output estimates only in the medium term, e.g. every five years and not two or three times a year as is the case today. Such a potential calculation that is less sensitive to cyclical fluctuations, and which would have suspended the potential adjustment from spring 2010 onwards, would have opened up considerable room for manoeuvre for all member states under the preventive arm of the SGP (Truger, 2016). Italy, Luxembourg, the Netherlands, Austria and Finland would have reached their medium-term budgetary targets already by 2015 and would have had room for expansionary measures. Finally, the strongly negative output gaps would also have indicated an urgent need for fiscal action for the countries under the excessive deficit procedure. For the euro area as a whole, the output gap would have been -6.7% instead of -1.7% of GDP. This would have made it easy to justify the use of the exceptions to the SGP and would have made fiscal policy much less restrictive, even before 2015. Conversely, during recovery, the consolidation would automatically be greater and faster.

There are additional pragmatic changes that would simply make the fiscal leeway already expanded by the Commission (European Commission, 2015) even more flexible. As a matter of fact, following the changes to the decision-making rules for the deficit procedure by the six-pack and the Fiscal Compact, the Commission had considerable room to manoeuvre in decision-making (Seikel, 2016), which it already used in the cases of France, Spain and Portugal. A more far-reaching interpretation of the room to manoeuvre within the existing fiscal policy framework would be a seamless continuation of the EU Commission's new interpretation (Seikel and Truger, 2019).

More far-reaching, and well-justified, reforms could be to adjust the numerical limits in the SGP to more feasible levels. In order to avoid member states with predictably high levels of post-crisis debt being plunged immediately into counterproductive austerity, the SGP government debt limit would have to be raised significantly, for example, to 90% of GDP. The current limit of 60% was merely the EU average at the time the Maastricht criteria were adopted and is in no sense an evidence-based critical threshold. Such a move could not be expected to impair debt sustainability, especially in a situation where interest rates are low and can be expected to remain so. In line with a higher debt limit, the deficit variables of the SGP, the 3% deficit limit and the MTO, which ultimately correspond directly or indirectly with it, could also be adjusted upwards in order to provide substantially larger leeway for fiscal policy.

Investment orientation: Implementing the golden rule

It would be even more important to reform the SGP so as to encourage public investment. As demonstrated in the EMU austerity crisis since 2010, public investment has been frequently cut hard during consolidation phases, as one of

2 The EU Commission has already acknowledged this problem (Carnot and Castro, 2015). It has revised the adjustment method several times (Hristov et al., 2017) and is now using additional indicators based on expenditure growth. This, however, considerably increases complexity and hardly alleviates the basic problem.

the few areas where economies can be realised rapidly. A reformed SGP should therefore strengthen public investment and protect it from crisis-driven cuts. As a pragmatic way to deal with public investment that is quite compatible with the current SGP framework, a golden rule for public investment should be introduced (see, for example, Truger, 2015b). This widely accepted traditional public finance concept would exclude net public investment from both the calculation of the headline and the structural deficit, so that net public investment is financed via deficits. Privileging public investment makes sense from an economic point of view. The golden rule strives for an intertemporal realisation of the pay-as-you-use principle in the case that present government spending provides future benefits. It allows financing of such spending (net public investment) by government deficits, thereby promoting intergenerational equity. Net public investment increases the public and/or social capital stock and provides benefits for future generations. Therefore, it is justified that future generations contribute to financing those investments via debt servicing. Future generations inherit the burden of public debt, but in exchange, they receive a corresponding public and/or social capital stock. Failure to allow for debt financing of future generations' benefits will lead to a disproportionate burden for the present generation through higher taxes or lower spending, creating incentives for the under-provision of public investment to the detriment of future generations.

While the exact definition of public investment must be discussed, a natural starting point for the analysis would be the classification in the national accounts, as it has received the most attention in the literature on growth effects. Bom and Ligthart (2014) conducted meta-regressions for the public capital-growth nexus. According to their results, the implied marginal returns are in the range of 10% (short run, national, all public capital) to 34.6% (long run, regional, core infrastructure). One may safely assume that traditional public investment has markedly positive growth effects. In addition to the longer-run supply-side effects, the short-run demand-side effects of public investment are also very favourable. In addition to its long-term economic advantages, it can be seen as the most effective short-run fiscal policy instrument (see, for example, Gechert, 2015).

The golden rule approach could also be combined with an expenditure rule concept abandoning the contested concept of structural deficit within the SGP (Alvarez et al., 2019; Dullien et al., 2020). Public investment should be favoured by separating current and investment budgets and submitting only the current budget to limits for nominal expenditure growth. The limits should be determined by the medium-term growth rate of real potential output plus the ECB target inflation rate of 2%. Increases in permanent nominal expenditure growth above this limit – which can be necessary to tackle social and ecological challenges – are then allowed if revenues are increased correspondingly. In case of general tax cuts, which are not recommended, expenditure growth rates should incorporate these withdrawals of resources. Using medium-term potential growth rates and the target inflation rate stabilises expenditure growth over the cycle and enables full working of automatic stabilisers.

Welfare orientation and democratisation

Beyond the rather technocratic proposals for a reform of the fiscal rules, fiscal policy ultimately needs a reorientation, replacing technocratic limits on deficits and debt with the top-line goal of sustainable economic and social well-being (Alvarez et al., 2019, 20-25). Fiscal policy should be part of a broader multi-level governance framework aiming, for example, at the 'well-being of its peoples' or sustainable 'economic and social progress'. Both principles are also expressed in the European Treaties (see Feigl, 2017), in the overall global United Nations priorities provided by the Agenda for Sustainable Development (2015) and by Stiglitz et al. (2018).

In order to achieve sustainable and upward-convergent well-being, the EMU needs policy coordination well beyond numerical fiscal targets. The necessary coordination between member states could target material well-being, full employment, quality of life, ecological and economic sustainability. Countries should then follow an economic policy strategy that allows them to meet commonly agreed economic, social and environmental targets (see Mersch, 2018). One achievable proposal in this direction is to develop an integrated scoreboard of economic, social and environmental indicators to monitor developments and draw attention to deviations, which should be addressed by coordinated policies. They could be analysed in an annual well-being and convergence survey (AWCS; Feigl, 2017, 4) and broadly discussed at the beginning of the European Semester before drafting the priorities, at least within the European Parliament, the European Economic and Social Committee and the Macroeconomic Dialogue. The AWCS could be written by a council of economic, social and environmental experts, nominated, for example, by the European Parliament together with the European Economic and Social Committee. This council of experts should identify developments in well-being, convergence and sustainability and qualitatively assess targets, indicators and the current situation.

In order to increase transparency, accountability and democratic participation in EU decisions about fiscal policy and to make sure that the aforementioned results of the AWCS receive proper attention, one proposal would state that the positions taken by each minister within the Eurogroup should be made public so that a qualified discussion could take place at the national level. A second proposal would

address more co-decision-making by the European Parliament, which should be expanded with regard to fiscal policy so that European citizens could really vote for certain policies and reject others. For that purpose, some kind of EMU parliament, for example as a subgroup of the European Parliament, could be created with the right to co-decide on all aspects of eurozone economic decision-making (see Andor et al., 2018).

The approval of the recovery plan for Europe by the extraordinary Council summit in July 2020 was a major breakthrough on the path to reforming EMU economic governance. The European Union should grasp this as an opportunity for deep reform of its dysfunctional fiscal rules.

References

Álvarez, N., G. Feigl, N. Koratzanis, M. Marterbauer, M. Mathieu, T. McDonnell, L. Pennacchi, C. Pierros, H. Sterdyniak, A. Truge and, J. Uxó (2019), Towards a Progressive EMU Economic Governance, *ETUI Working Paper*, 2019.13.

Andor, L., P. Berès, L. Bini Smaghi, L. Boone, S. Dullien, G. Duval, L. Garicano, M. A. Landesmann, G. Papaconstantinou, A. Roldan, G. Schick, X. Timbeau, A. Truger and S. Vallée (2018, 28 February), Blueprint for a Democratic Renewal of the Eurozone, *Politico*, https://www.politico.eu/article/opinion-blueprint-for-a-democratic-renewal-of-the-eurozone/ (15 September 2020).

Bom, P. and J. Ligthart (2014), What Have We Learned From Three Decades of Research on the Productivity of Public Capital?, J*ournal of Economic Surveys*, 28(5), 889-916.

Brooks, R. and J. Fortun (2020), Eurozone Output Gaps and the COVID-19 Shock, *Intereconomics*, 55(5), 291-296.

Carnot, N. and F. de Castro (2015), The Discretionary Fiscal Effort: An Assessment of Fiscal Policy and its Output Effect, *European Commission Economic Papers*, 543.

Dullien, S., C. Paetz, A. Watt and S. Watzka (2020), Proposals for a reform of the EU's fiscal rules and economic governance, *IMK Report*, 159e.

European Commission (2015), Making the Best Use of the Flexibility within the Existing Rules of the Stability and Growth Pact, COM (2015) 12 final.

European Commission (2020), Annual Macro-Economic Database, Spring.

European Council (2015), Commonly Agreed Position on Flexibility in the Stability and Growth Pact, 14345/15 ECOFIN 888 UEM 422.

Feigl, G. (2017), From growth to well-being: a new paradigm for EU economic governance, *ETUI Policy Brief*, 2/2017.

Gechert, S. (2015), What fiscal policy is most effective? A meta-regression analysis, *Oxford Economic Papers*, 67(3), 553-580.

Hristov, A., C. Planas, W. Roeger and A. Rossi (2017), NAWRU Estimation Using Structural Labour Market Indicators, European Commission, *European Economy Discussion Papers*, 069.

Juncker, J.-C., D. Tusk, J. Dijsselbloem, M. Draghi and M. Schulz (2015), Completing Europe's Economic and Monetary Union, Report, European Commission.

Mersch M. (ed.) (2018), Well-being for everyone in a sustainable Europe, Report of the independent commission for sustainable equality, https://www.progressivesociety.eu/publication/report-independent-commission-sustainable-equality-2019-2024.

Mourre, G., C. Astarita and S. Princen (2014), Adjusting the budget balance for the business cycle: the EU methodology, European Commission Economic Papers, 536.

Seikel, D. (2016), Flexible Austerity and Supranational Autonomy, The Reformed Excessive Deficit Procedure and the Asymmetry between Liberalization and Social Regulation in the EU, *Journal of Common Market Studies*, 54(6), 1398-1416.

Seikel, D. and A. Truger (2019), The blocked completion of the European Monetary Union: Making the case for a pragmatic use of fiscal leeway, *WSI Report*, 52.

Stiglitz J. E., J.-P. Fitoussi and M. Durand (2018), Beyond GDP: Measuring what counts for economic and social performance, OECD Publishing.

Truger, A. (2015a), Austerity, cyclical adjustment and the remaining leeway for expansionary fiscal policies within the current EU fiscal framework, *Journal for a Progressive Economy*, 6, 32-37.

Truger, A. (2015b), Implementing the Golden Rule for Public Investment in Europe- Safeguarding Public Investment and Supporting the Recovery, *Materialien zu Wirtschaft und Gesellschaft*, 138.

Truger, A. (2016), Austeritätspolitik und Bildungskürzungen: Zur Diagnose und Therapie einer europäischen Krankheit, in L. Bellmann, G. Grözinger, W. Matiaske (eds.), Bildung in der Wissensgesellschaft, *Jahrbuch Ökonomie und Gesellschaft*, 28, 153-173.

United Nations (2015), Transforming our world: the 2030 agenda for sustainable development, Resolution adopted by the general assembly on 25 September 2015, https://sustainabledevelopment.un.org/post2015/transformingourworld (15 September 2020).

Daniel Gros

Lessons From the COVID-19 Crisis for Euro Area Fiscal Rules

The main thrust of the existing rules, although they were not really enforced, did go in the right direction, namely they were intended to reduce deficits and debts. The countries that stick to these principles went into the coronavirus crisis with lower debt and more fiscal space. Germany's fixation with the *schwarze Null*, or black zero, must now appear in a different light. It was always meant to be an appropriate stance for an economy close to full employment. By sticking to it during good times, the German government has been in a very strong position to react forcefully to this unprecedented crisis.

The real issue now is not whether the old rules should be reinstated immediately. Nobody argues that in 2021 the government should keep deficits below 3% of GDP. But some principles are still needed – unless one assumes

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that debt is free. Few would argue that governments can spend as much as they want. Even proponents of a permanent stimulus seem to recognise that fiscal space has its limits. Looking at the US for example, Krugman (2020) argues for a permanent stimulus in the form of a permanent increase in investment spending, broadly defined, of 2% of GDP without increasing taxes. He acknowledges that this would push the US debt-to-GDP ratio towards 200%, which he considers sustainable at today's low interest rates. Even this proposition contains some implicit consideration about sustainable debt levels. Why would a debt ratio of 300% be unacceptable? Why not go for deficit-financed investment spending of 3%-5% of GDP?

Some guidelines for fiscal policy are thus unavoidable. The key issue is what general considerations should guide fiscal policy in these uncertain times. I propose two:

- Large shocks might be more prevalent than we thought before the crisis. This would reinforce the case for 'keeping some powder dry', i.e. limiting the increase in debt during the crisis, and reducing debt levels when normality is restored.

- This time is different. The overall output gap should not be used to guide aggregate fiscal policy as this crisis directly affects very specific sectors. Some output gap is unavoidable as long as the virus remains a threat. No amount of demand management can change this.

Keep debt low in an uncertain world

Many take the current level of interest rates as a given and observe that it is lower than growth rates. Krugman (2020) constitutes just one particular example of this tendency. However, this neglects two risks. First of all, it is possible that future, post-pandemic, growth rates will be lower than those experienced over the last few years. This is not desirable, but it cannot be excluded. Second, one cannot rule out that inflation will also remain even more subdued than over the last few years, leading to much lower growth rates in nominal GDP. This happened in Japan, where nominal GDP barely grew over decades. One argument for large fiscal deficits is that even unconventional monetary policy is no longer effective. But if monetary policy has indeed become ineffective in increasing inflation, one cannot exclude that in a post-pandemic environment, nominal GDP growth rates might be much lower than in the past, making it more difficult to reconcile high deficits and stable debt levels.

At the same time, this crisis has shown that a low level of debt (and deficit) provides a much stronger base for governments to respond to large shocks. The coronavirus crisis is already the second 'once-in-a-century' crisis to hit the euro area in the space of one decade. One certainty of this crisis is that nobody can know for sure about the distribution of large shocks and how likely it is that another shock materialises any time soon. But, as Kozlowski et al. (2020) argue, having experienced two pandemics in the space of 140 years must lead one to re-evaluate the likelihood of another one occurring during the next generation.

This does not mean that fiscal policy today should prepare for the next pandemic. The next major shock is likely to be quite different. But this heightened uncertainty suggests that prudent policy should keep debt levels well below the level that might be sustainable if the current constellation of ultra-low interest rates and moderate growth rates were to continue forever.

In this tug of war between low interest rates and increased uncertainty, the latter is more important. Interest rates have fallen only marginally, whereas the uncertainty about the outlook for future nominal growth rates has increased and the likelihood of large future shocks has risen dramatically. Letting the debt ratio explode towards 200% would be reckless.

The sectoral specificity of the COVID-19 recession[1]

As argued above, the COVID-19 crisis is different from 'normal' recessions. Even if the first and second waves can be contained, some restrictions on mobility and hesitancy of consumers to buy some services requiring close contact will remain. This implies that some sectors of the economy will remain weak for some time, while others bounce back.

Model-based analysis of the policy implications of a sectoral recession

Two recent papers analyse the sectoral nature of the COVID-19 recession in a formal model. One, Guerrieri et al. (2020) considers the pandemic crisis as a supply shock to a specific sector. The authors' main insight is that "a 50% shock that hits all sectors is not the same as a 100% shock that hits half the economy".

The conclusion associated with the sectoral nature of the shock has several implications for policy. One is that standard aggregate fiscal stimulus becomes less effective than usual because the sectoral shutdown mutes the Keynesian multiplier feedback. This is straightforward. An increased purchasing power might result in more spending on the sectors not affected by COVID-19, such as durable goods. This might result in excess demand for these goods. But the output gap will persist as long as service sectors requiring close contact remain closed.

1 This section is based in large part on Gros (2020).

Another recent contribution argues that COVID-19 should not be considered only as a sectoral supply shock (because of government-ordered social distancing measures), but also as a sectoral demand shock as households and firms voluntarily reduce demand for travel, tourism and other contact-intensive services. Farhi and Baqaee (2020) study supply and demand shocks in a general disaggregated model across multiple sectors. A major element in their approach is the input-output linkages across sectors that propagate these sectoral shocks (both demand and supply) to the entire economy.

Their major finding is that "aggregate demand stimulus is only about a third as effective as in a typical recession". This finding applies to both fiscal and monetary policy. The authors also argue, "More targeted forms of demand stimulus deliver better bang for the buck".

Fiscal policy should not target the output gap in a sectoral recession

In the current situation, governments need to look forward to a longer period during which they need to provide replacement income for those rendered idle by the direct and indirect impact of the pandemic. Moreover, some GDP gap will persist since a number of important sectors will operate below normal capacity for some time. The question for macroeconomic policy is thus whether government should go beyond providing replacement income and try to lift aggregate demand.

Common sense suggests that no amount of support to aggregate demand can bring the sectors affected by COVID-19 back to their previous level. Those previously employed in travel would remain unemployed, even if spending on durable goods were to increase greatly.

Moreover, economic modelling suggests that consumers might be more careful in spending today when there are some goods that they temporarily cannot or do not want to buy. Most economic models suppose that many households are cash constrained and will spend a good portion of any transfer they receive from the government. However, this mechanism does not work as well when households today cannot afford their normal consumption basket.

An example can illustrate this proposition.[2] Consider a person who wants to buy new sports equipment or clothes to use in a gym or on holiday abroad. Normally, a higher income would make it more likely that the entire consumption basket (vacation and sports equipment) is bought today. But if today, due to the pandemic, foreign travel is impossible and gyms are closed, the sports equipment and clothes will not be bought. Higher cash transfers would probably just lead to more savings. The counterpart to higher government deficits (over and above those needed to provide substitute incomes) would thus lead mainly to higher savings – as it occurred this summer.

The observation that aggregate demand stimulus becomes less efficient in a sectoral downturn implies that one should not judge deficits by the metrics used during normal recessions; namely by relating the deficit to the output gap or the unemployment rate. Both metrics are misleading in the current circumstances. Any remaining fiscal space should be used to support adjustment and new jobs, rather than to try to fill the bank accounts of households with transfers they are likely to save. Coibon et al. (2020) find that US consumers saved most of the transfers distributed under the US Coronavirus Aid, Relief, and Economic Security (CARES) Act.

With much lower multipliers, it also becomes more difficult to argue that austerity would be 'self-defeating' because higher deficits increase demand and GDP so much that the denominator in the debt-to-GDP ratio falls. This argument does not hold in the longer-term perspective as shown in Gros (2011), but it becomes even more shaky when multipliers are low to begin with.

Aggregate fiscal policy multipliers are likely to remain low for some time. But it is possible, indeed even likely, that they will increase again once the sectoral health concerns have been overcome. Fiscal multipliers are thus likely to be higher tomorrow than today. Blanchard and Leigh (2013) argue convincingly:

> Large multipliers do not necessarily affect the optimal timing of fiscal consolidation .... If they remain just as large in the future, the adjustment will be as painful later. But, if they are larger now than later, this tilts the adjustment toward doing more later: Less pain now, less pain later.

The logic of this argument is that it is the time path of the multiplier that should inform the consolidation effort. Blanchard and Leigh (2013) wrote at a time when one could make the case that multipliers were high given financial market dislocations and the then widespread expectation was that interest rates would 'normalise' soon. What is different today is that multipliers are likely to be lower today than tomorrow. The logic of this argument would thus imply more fiscal consolidation today and less tomorrow.

2 The extreme example made by Keynes is that of shoes: If only right-foot shoes are available today, consumers will not buy them; they would rather wait until both right and left shoes are available again as pairs. For this reason, interest rates will not have a big impact on consumption decisions.

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Conclusions

It is easy to shoot down the idea that the pre-COVID-19 fiscal rules could be somehow resurrected without any change. This seems impossible also for purely technical reasons. For example, one key element of the improved Stability Pact has been the emphasis on cyclically adjusted deficits.

The difficulties with all calculations of potential output and its growth are obviously magnified by the coronavirus crisis. A mechanical implementation of the econometric procedures used so far to recover potential output from past data about GDP would lead to a sharp drop in the level of potential output, including presumably revisions in past output gaps.

A mechanical resurrection of the old rules is thus out of the question. But the fundamental question remains: Should governments try to limit the increase in the unavoidable run-up in debts, or should they just run large deficits for as long as interest rates remain low?

Limiting the deficits and increases in the debt level does not imply that governments should immediately cut expenditure. The prudent course of action would be to limit expenditure to the provision of replacement income for workers as long as needed, but not to try to increase deficits beyond this level in the vain hope of having a substantial impact on the recovery in the short run. If aggregate private demand remains weak even after the health crisis has been overcome, one could make the case for some continuing deficits. Whether or not this will be the case in a few years is impossible to predict today. What is certain, however, is that those governments who have not used up all of their fiscal space today will be better prepared for that eventuality.

References

Blanchard, O. and D. Leigh (2013, 3 May), Fiscal consolidation: At what speed?, *VoxEU*, https://voxeu.org/article/fiscal-consolidation-what-speed (16 September 2020).

Gros, D. (2011, 29 November), Can austerity be self-defeating?, *VoxEU*, https://voxeu.org/article/can-austerity-be-self-defeating (16 September 2020).

Gros, D. (2020), Benefits and drawbacks of an "expenditure rule, as well as of a "golden rule", in the EU fiscal framework, *Study for the European Parliament*, https://www.europarl.europa.eu/RegData/etudes/STUD/2020/614523/IPOL_STU(2020)614523_EN.pdf (10 September 2020).

Gros, D. (2020), Europe and the Covid-19 crisis: the challenges ahead, *CEPS Policy Insights*, 2020-20, https://www.ceps.eu/ceps-publications/europe-and-the-covid-19-crisis/ (10 September 2020).

Krugman, P. (2020, 10 May), The case for permanent stimulus, *VoxEU,* https://voxeu.org/article/case-permanent-stimulus (9 September 2020).

Olivier C., Y. Gorodnichenko and M. Weber (2020, 8 September), How US consumers use their stimulus payment, *VoxEU*, https://voxeu.org/article/how-us-consumers-use-their-stimulus-payments (10 September 2020).

Farhi, E. and D. R. Baqaee (2020), Supply and Demand in Disaggregated Keynesian Economies with an Application to the Covid-19 Crisis, Mimeo.

Guerrieri, V., G. Lorenzoni, L. Straub and I. Werning (2020), Macroeconomic Implications of COVID-19: Can Negative Supply Shocks Cause Demand Shortages?, *National Bureau of Economic Research Working Paper*, w26918.

Kozlowski, J., L. Veldkamp and V. Venkateswaran (2020), Scarring Body and Mind: The Long-Term Belief-Scarring: Effects of COVID-19, Federal Reserve Bank of St. Louis, https://research.stlouisfed.org/wp/more/2020-009 (16 September 2020).

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The Eurozone as a Trap and a Hostage: Obstacles and Prospects of the Debate on European Fiscal Rules

The debate about what, whether and when fiscal rules should be reinstated is of existential relevance for the European Union for at least two main reasons. First, the recovery is, or should be, a public good that governments must take care of (Shapiro, 2019). Previous attempts to privatise the burden of recovery have failed and a quick return to austerity entails serious economic, social, environmental, and probably political risks. Second, the European fiscal framework impacts much more than just the size of the budget deficit. It influences defining aspects of the social contract, including universal access to healthcare, pensions, inheritance taxes and social mobility, youth employment and the gender divide.

As much as economists, as citizens, should contribute to the discussion, the problem is essentially political (Roncaglia, 2015; Di Majo, 2020). But no fair intra-European debate can occur if the financial stability of the euro area is not somewhat secured. This, alas, may amount to a conundrum.

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Circumstantial actions have so far allowed the eurozone bumblebee to keep flying. But key factors of fragility are entrenched in its architecture. If the risks associated with a monetary union without fiscal transfers have been highlighted for a long time,[1] some additional factors were introduced during and after the debt crisis of 2010. In fact, what was a lost decade for growth, was a productive decade in terms of legislative innovation both nationally and at the EU level (Costantini, 2017; Clency, 2019).

Some innovations came from a functional, but far from uncontroversial, expansion of the pre-existing rules. Those were, if belated, often vital to the survival of the euro and include the ECB public bonds purchasing programmes. In contrast, the more political evolution seemed to push in an opposite destabilising direction, as were the private sector involvement, and the establishment of an incomplete banking union. The fiscal constraints were tightened and forced upon some member countries as a condition for accessing the rescue programmes. All of these reforms took advantage of and then reinforced a pecking order among the member countries, ultimately establishing austerity as a common social and political project (Truger, 2013; Storm and Nastepaad, 2016). Nationally, most countries underwent regressive reforms of public spending – especially of pensions, healthcare and other social policies – and the labour market.

While destabilising, this restriction of national policy autonomy has not established institutions capable of providing prompt response to crises. With the exception of the ECB, only intergovernmental action can do that, which helps shape the debate as a clash of national interests. Even if the current crisis has opened up possibilities previously unimaginable, the negotiations at the July heads of state meeting proved to be difficult, revealing how maintenance or acquisition of national privileges are prioritised over common solutions. Meanwhile, the European Parliament was essentially silenced (Bordignon, 2020).

Crucially, the agreed measures, including the temporary suspension of some ECB and SGP constraining rules and the provision of additional funds for recovery, do not mitigate the risk associated with the EMU architecture that still exposes its members and their banking systems to potentially devastating liquidity and solvency risks (Ferguson and Kane, 2020). Proof is the continuous capital flight out of Italy recorded on the Target 2 system, which has intensified since the beginning of the pandemic (Minenna et al., 2018). In this situation, in which avoiding financial panic depends on a shaky agreement between current governments (Tooze, 2020) and on the ECB keeping its current course, any legitimate concern or debate that risks throwing the bumblebee off balance – such as on the national uses of common funds, or on monetary policy – is instantly 'weaponised', i.e. strategically abused on one side to generate market reactions, and branded as irresponsible on the other.

At once a trap and a hostage, the eurozone and the EU are stuck: the obstacles to a more stable union are political, but no fair political debate can occur without a financial stabilsation because the risk of instability cripples the political debate.

A first step, thus, is to consolidate some basic functional innovations to guarantee 'minimal sovereignty conditions' for countries to be able to represent their electorates at the EU tables, and for the political debate within countries to happen unconstrained – even when this makes them unpopular with big financial investors and credit agencies or other EU members. We cannot have a repetition of what induced Mario Monti in 2012 to agree to an incomplete banking union. The minimal conditions are addressed in this article.

The second step could amount to a new constitutional moment for the EU and lead to a reform of economic governance. The process requires free the fiscal policy framework from its technocratic chokehold and reconnect it to its social and political function. Obscurely estimated targets and benchmarks must be abandoned and the mystification of independent fiscal authorities rejected. As much as it would be nice to separate the technical from the political in economic policy, as auspicated by the European Fiscal Board (2019), it is simply impossible and usually a strategy to favour interests that do not command democratic support. A better option, as a recent proposal by the Macroeconomic Policy Institute (IMK, 2020) of the Hans-Böckler-Stiftung suggests, is to set up tables of discussions between experts, political representatives and the social partners. The second and final section of this article discusses some recent proposals for a reform of the Stability and Growth Pact and possible alternatives. In particular, I argue that it is necessary to drop the idea of a trade-off between sustainability of public finances and macroeconomic stabilisation, and that any rule must take into account the asymmetric problems posed by membership in a monetary union without fiscal transfers. I re-state the merits of a budget structure based on large built-in automatic stabilisers, which can be agreed up on in advance and then left alone to do their job over the cycle, accompanied by a separate capital budget for long-term investment plans with a full employment and other social and environmental targets that can, *ex post*, create the savings that guarantee sustainability.

1 Godley (1992), Goodhart (1998), Parguez (1999), and Simonazzi and Vianello (1999).

The challenge is existential: In a world ravaged by a pandemic, an export-led growth strategy is simply not feasible (United Nations Conference on Trade and Development [UNCTAD], 2020). As the euro appreciates, the eurozone members, especially Germany, France and Italy, must rise to the challenge and contribute to global development as engines of growth rather than subtract resources, savings and people from the rest of the world.

Minimal sovereignty conditions: The ECB as a lender of last resort and the reform of the banking union

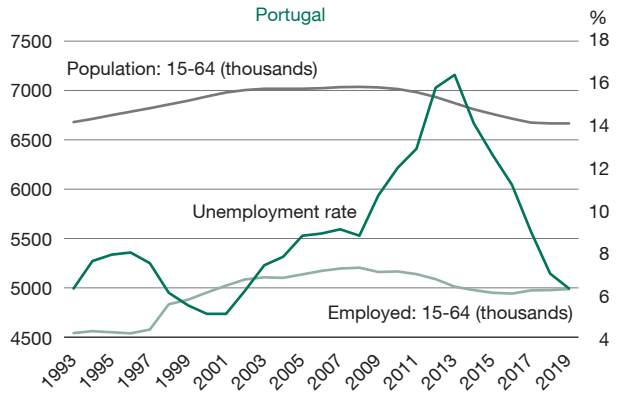
The European debt crisis revealed – once again – how central bank policies are crucial to protect the national fiscal space from self-fulfilling prophecies of debt unsustainability. Speculative appetite can nullify the most 'responsible' action on the part of governments, whatever that is believed to be. This, of course, raises questions about the political role of monetary policy institutions and on the meaning of their 'independence'.

The direct trigger of the European debt crisis was the disproportionate rise in the public debt burden of some smaller peripheral economies of the eurozone, due to the failure of member countries to share responsibility for stabilising the national banking sectors in 2008 and 2009. But it was the ECB architecture and policy orientation, that prevented it from being the lender of last resort and induced Trichet to prematurely raise interest rates, which actively produced instability, creating the opportunity for a speculative attack that pushed the yields to unsustainable heights. Even at that point, the central bank was unable and unwilling to act to normalise market pricing, by purchasing the bonds herself. It was then that financial contagion also hit countries, such as Italy, whose debt had not changed in a significant way, as a proportion to GDP, during the crisis.

In fact, the post-2010 European 'rescue' programmes were based on the idea that austerity would reassure the markets, but not only did they fail to reduce the spreads, they also crippled the economy. By the time Draghi pronounced his famous "whatever it takes", the peculiar European double-dip recession was already well underway and bound to leave permanent scars on the welfare and demographics of the hardest hit regions.

For instance, Portugal asked for a bail out on 11 April 2011. The 'Troika' required commitment to a programme to cut deficits by more than six percentage points in three years, which included extensive privatisations, a forced reduction of the public and private employee compensation as well as of pensions, VAT and income tax increases, cuts to all social services and transfers, and a shift of social contribution security burden away from selected companies (especially in the export sector) to workers (Weeks, 2019).

Figure 1
Employment in Portugal, 1993-2019



Source: AMECO.

During that time, the rating agencies repeatedly downgraded the country's bonds, eventually to junk, generating further tensions and effectively closing Portugal's access to market finance. Its growth rate was negative for two consecutive years. The unemployment rate reached 16.4% in 2013, just as a mass emigration started which, together with the increase in discouraged workers, contributed to contain unemployment figures (Figure 1). Portugal still (before the burst of the pandemic) payed a larger share of output in interest than it did in 2010.

Unfortunately, Draghi's expression of commitment and the subsequent quantitative easing (QE) programmes did not always prevent market tensions, arising from intra-EU political disputes, from suddenly affecting yields, nor were they sufficient to close the spreads. Part of the reason is the capital key rules and the fact that the ECB always seems to act discretionally and at the limit of legitimacy. For instance, recently, the newly appointed president Christine Lagarde's 'slip' reminded the world that the ECB could change its stance at any time.

This discretion is not denied and actually positively viewed by many at the ECB such as ECB board member Isabel Schnabel (2020), who recently reassured us that "sovereign bond markets are still performing their disciplinary role, in spite of the ECB's asset purchases." In fact,

> Although interest rates have fallen broadly across advanced economies in recent years, risk premia in euro area sovereign bond markets have not disappeared. Today, for example, 10-year yield spreads on Italian government bonds over their German equivalents are high-

> er than when the ECB started to purchase government bonds in early 2015. They also remain responsive to idiosyncratic news. The marked response of Italian sovereign bond yields to the 2018 episode of political instability, which by the way was not countered by monetary policy, underlines the disciplinary role played by financial markets. (Schnabel, 2020)

Of course, we are left in the dark about why Italy, which has primarily run budget surpluses since 1995, except in 2009, and has not once defaulted on debt payments in its entire history, does not qualify as a credible borrower as much as Germany, Portugal or the Netherlands (Cesaratto and Zezza, 2018; Storm, 2019). We are also left wondering how the concept of political instability is defined, if not as 'whatever upsets financial markets'.

But what Schnabel said is nothing new; it is written down in the Treaties. The statute of the ECB and its restrictive mandate were designed precisely to regulate member states with respect to their fiscal policy; that is, to allow the financial markets to orient fiscal choices by determining the *space* within which they can move. This idea presumes that the markets are effective at pricing correctly and ultimately resolve risk differentials by directing capital flows; this also ignores or downplays the possibility of speculation. After the debt crisis, the ECB has not been able to ignore that possibility altogether but, as Schnabel's speech indicates, it still considers it an exception.

On the contrary, price movements have represented a risk in themselves, largely independent of real conditions: speculative thinking lies at the heart of how finance works (Lincei, 2020). After all, it was speculation that allowed large imbalances between core and periphery to accumulate during the 2000s, which ultimately became unsustainable, causing a major bank crisis in Spain, Portugal, Ireland and Germany – but not in Italy (O'Connell, 2015).

Indeed, the entire eurozone system is based on the idea that freedom-limiting moral hazard comes from the state, not the market (Buchanan and Wagner, 1977). In practice, it is geared towards letting speculation strive. A perfect case in point is the banking union which, in 2012, was presented as a three-pillar project that would allow for the recovery and full integration of the European banking system. It included a common supervision system, a procedure for rescue or resolution of banks in crisis, and a common insurance on deposits. In reality, "the banking union generated huge asymmetries and unfair competitive conditions across the Eurozone" (Giacchè, 2017), furthering fragmentation.

First, the failure to this day to institute the third pillar, i.e. the European insurance on deposits, implied that member countries remained responsible for protecting savers, hence maintaining the risk of a doom loop between banking and a sovereign debt crisis. Furthermore, the resolution process requires that a fixed portion of the uninsured assets be used to absorb the losses (bail in). The decision was taken only after many European countries had extended unprecedented financial support to their national banks, thus significantly distorting competition. With holders of subordinated bonds suddenly facing higher risks, the measure triggered a bank run, intensifying otherwise manageable difficulties that banks were facing. The rigidity of the bail-in rule is rather unique in the international landscape and its financial convenience has been questioned even by the International Monetary Fund (2018).

If the second pillar created risks where there were none, the first pillar made sure that the pre-existing high systemic risk from some of the larger banks in the area would grow undetected. In fact, not only does the common banking supervision system cover various national banking systems very unevenly, it also crucially downplays and underestimates market risk (linked to financial activity), putting a much greater emphasis on credit risk (Kane, 2017; Biondi and Del Barrio, 2019).

In the words of the Chair of the European Central Bank's Supervisory Board himself, Andrea Enria (2019):

> The banking union has been successful in promoting a more resilient banking sector. But it is still failing to deliver an integrated domestic market for banking business. Rather than smoothing idiosyncratic shocks to individual Member States, the banking sector still operates as a shock amplifier.

Hence, if a broad reconsideration of the principles behind the structure of the banking union and supervisory mechanisms is needed, at a minimum, the third pillar should be instituted to guarantee the "minimal sovereignty conditions" necessary to even begin such discussion. Given the obvious system risks that the absence of the third pillar poses, its institution should be considered a mere functional innovation.

That might be controversial, but the challenge is not new to European institutions. In fact, the acceptable limits of 'functional' innovation in monetary policy have also been repeatedly questioned by the German Constitutional Court, which claims that the ECB's decisions regarding the QE were taken beyond the powers granted. In the most recent decision, which re-states the prerogative of member states to conduct a judicial review of the ECB's policies, the Court demanded that the ECB provide further information to assess if the second QE programme violates the democratic

principle by which fiscal policy is a national responsibility (Righi, 2020).

The German Court's ruling is appropriate in so far as it poses the question of monetary and fiscal sovereignty in political and constitutional terms. Unfortunately, it puts the cart before the horse. As conceived from the outset in the eurozone, monetary policy is not neutral with respect to fiscal policy, but aims at influencing it with action that is independent only in accordance with a specific economic theory, i.e. independent from elected bodies and reliance on the markets' less-than-perfect risk assessment. No government is sovereign in absence of a lender of last resort that follows an explicit mandate to protect the fiscal and political space and, hence, no fair intra-European discussion can occur without such an explicit commitment from the ECB.

Reform of the Stability and Growth Pact

In March of this year, the Stability and Growth Pact was temporarily suspended to allow for extraordinary budget deficits during the COVID-19 crisis. However, the spectre of a reinstatement looms over the EU, affecting the choices that governments make today.

The economic rationale for the institution of the Stability and Growth Pact in 1997 was well explained by Isabel Schnabel (2020), in the same previously mentioned speech:

> The Stability and Growth Pact was designed to ensure that governments would pursue sound fiscal policies and that public debt would remain low and stable, or at least converge to such levels in a gradual and credible manner. The fiscal framework of the European Union was meant to shield the ECB from fiscal dominance and protect its independence.

What Schnabel did not say is that the SGP failed its purpose.

With the ECB forced to resort to unconventional policies, the European fiscal framework induced pro-cyclical budgetary measures that reduced growth, increasing unemployment and reducing tax receipts, and intensified inequality, with negative effects on the capacity to reduce the debt-to-GDP ratio and on the capacity of the ECB to reach the inflation target. In the past decade, countries in the Southern periphery experienced a dramatic impoverishment (Celi et al., 2015). Germany – if compared, for instance, with the US – had a disappointing economic performance and, in 2019, was already on the brink of a contraction.

European fiscal rules are flawed in many respects; the estimates that they are based on need constant revision and deny, by assumption, that lower debt-to-GDP ratios can result from fiscal expansion (see IMK, 2020, for a review of the flaws). They are founded on the assumption that actual output, with its cyclical fluctuations, naturally gravitates around a normal or potential level that is supply-determined, that is, it does not respond to changes in demand. However, in practice, this unobservable potential output is calculated as more or less sophisticated average, thus itself moving with the cycle and absorbing fluctuations in actual output which are then attributed to changes in the supply-side factors (Palumbo, 2013; Heimberger and Kapeller, 2017). This explains why in the EU, discussions on cyclically adjusted budgets have reached, as we know, grotesque dimensions, with unemployment rates above 20% considered normal. Already in April, the European Commission has revised downwards the estimates of potential income for member countries, therby reducing the fiscal space that it considers to be non-inflationary in 2021 (Heimberger, 2020).

In addition to their poor technical performance and their macroeconomic failure, the severe fiscal supervisory procedures have intensified instability 'mechanically' with abrupt admonishments of the national governments, often in the form of recurring letters that create financial tensions and political pressure (Costantini, 2018).

An even more fundamental problem exists: in a monetary union, with countries with different levels of inflation, productivity and industrial specialisation, symmetric budget constraints can hardly be appropriate (Irvin and Izurieta, 2011; Horn and Watt, 2017).

But the other reason for the adoption of the Stability and Growth Pact was the mere fact that the much sounder alternative, i.e. the creation of a fiscal union, was not politically acceptable. In addition, the presence of an 'external constraint' proved useful for governments implementing unpopular austerity reforms. Even today, the legitimate concerns about the use each country makes of the common recovery funds could be solved by giving more power to the Parliament and putting it in charge, in a federal setting, of a bigger budget, but national pressures prevent that outcome. It is unclear whether the creation of a fiscal union can be postponed for much longer. But, for now, the Stability and Growth Pact is still seen as a necessary compromise.

In the face of widespread criticisms about its formulation, however, the Commission initiated a review process and assigned the European Fiscal Board the task of producing a report. The 2019 report (European Fiscal Board, 2019) starts with the premise that a trade-off exists between debt sustainability and macroeconomic stabilisation and envisages a simplified set of rules and a recommendation to set up an independent fiscal authority. The recommended rules include a 'fiscal anchor' corresponding to a debt-to-GDP ratio and a declining

path towards it, and an 'indicator of fiscal performance', that is a ceiling on the growth rate of net (non-cyclical) primary expenditures for countries with debt in excess of 60% of GDP.

> Concretely, the growth rate of the expenditure ceiling would be capped by the trend rate of potential output growth … Member States with a debt ratio below 60% of GDP would not be subject to a net expenditure ceiling, but would still have to observe the 3% deficit. (European Fiscal Board, 2019, 88)

Naturally, the impact of this set of rules would depend on various details, such as how potential output is estimated and the timeframe for the debt ratio reduction. The report itself notes some caveats:

> To bring about a convergence to the 60% of GDP debt norm in the Treaty over a relatively short time span of, say, 15 or 20 years (as envisaged in the current rule) … Italy and Portugal would have to run primary budget surpluses … in the order of 4-5% of GDP over a decade or more. (European Fiscal Board, 2019, 89)

Ultimately, struggling to find a solution to the asymmetric burden that debt reduction requires of different member countries, the Board envisages shifting to a procedure of country specific assessments and recommendations, with the involvement of technical institutions.

Unfortunately, the report's suggestions do not seem to distance themselves fundamentally from the current rules. For instance, the idea that countries with debt-to-GDP ratios higher than 60% should spend less in order to reduce it remains foundational to the plan.

Several objections can be raised: for instance, that the 60% threshold is arbitrary (Pasinetti, 1998). Moreover, there is no macroeconomic basis for arguing that a ratio should reduce rather than simply stabilise, in a country issuing debt in its own currency, with a lender of last resort (Blanchard, 2019). But even if there were such a need, an expansionary fiscal policy is the fastest way to achieve that goal (Ciccone, 2013; UNCTAD, 2020). And actually the countries that have the highest debt ratio at the moment are, with the exception of France, those that implemented the harshest austerity in the past ten years, which caused a deterioration of the quality of the public services offered and of the productive capacity: they are the countries that should be spending the most.

The report, moreover, remains mute about the lack of tax harmonisation in the EU that makes it difficult for countries to increase tax rates on some categories of incomes and wealth, and induces privilege to spending cuts, with regressive consequences.

As a form of flexibility, the suggested new framework would allow for a series of escape clauses that guarantee the unconstrained ability to spend during an emergency, such as the one we are living. This is consistent with the neo-Keynesian recipe for timely, targeted and temporary fiscal expansion (Bernanke, 2008). However, it is precisely underspending in normal times that produces more violent cycles and intensifies the need for discretionary spending which often cannot quickly compensate for a lack of investment over time. A perfect case in point is the current crisis, which exposed underfunding of the health care facilities (Prante et al., 2020).

In that regard, European fiscal rules have led to a consequence that would seem paradoxical. Designed originally to minimise discretion, they actually induced a reduction of the built-in counter-cyclical budget elements, such as tax progressivity, social transfers and buffers, precisely so that the budget deficit would tend to increase less in response to downward income fluctuations. Similarly, permanent programmes, such as health care and education, which are countercyclical in the downward part of the cycle, were a favoured target of austerity. Hence, a reform of the Stability and Growth Pact should take its initial vocation seriously and de-emphasise reliance on discretionary spending in favour of stronger automatic stabilisers and farsighted plans that will smooth the cycles and reduce the need for extraordinary deficits.

Of course, the economy does not normally oscillate around its optimal state, and crises can have long-term negative effects on growth. Hence, automatic stabilisers alone cannot guarantee that the path to full employment is maintained (Costantini, 2015). For this reason, the idea of a golden rule for public investment (Truger, 2016; IMK, 2020), which would exempt it from the restrictive deficit targets, should be seriously considered. In an entirely new fiscal framework, however, countries could be asked to institute separate capital investment budgets[2] with a full employment and other targets.[3] In other words, the capital budget should be allowed to run a deficit until they achieve full employment, as well as a carbon footprint reduction target or any other preferred social or environmental objective. In the meantime, a process of EU-wide harmonisation should help re-orient European policies from self-defeating competition over labour costs or tax rates into a mutually benefitting coordination. In this framework, there would be no need for an expenditure rule, as the current budget would balance over the cycle.

2 See for instance Myrdal (1939), Kregel (1985), Seccareccia (1995).
3 Others suggested the reform and involvement of the European Investment Bank (Arestis et al., 2001; Watt, 2016).

Conclusions

In this paper, I argue that the European fiscal framework needs to be reformed to guarantee that the EU spends its way to recovery, re-emerges from the previous prolonged stagnation and fully contributes to the relaunch of global growth on a sustainable path. Abandoning the pro-austerity bias that is hard wired into the current Stability and Growth Pact and its arsenal of estimates is also the only way to stabilise public finances, allowing for expansionary budgets that boost growth and create, *ex post*, enough savings, or *fiscal space*, to guarantee sustainability.

I discuss how the most influential proposals still accept the existence of a trade-off between financial sustainability and macroeconomic expansion, and limit growth-friendly budget flexibility to the creation of escape clauses for occasional discretionary spending. On the contrary, I argue that a new pact should reinforce and harmonise automatic stabilisers and create national capital investment budgets with a full employment and a set of social and environmental targets. A successful strategy of public investments should allow the current budget to balance over the cycle, taking care of the long-term stimulus to expand the economy's potential.

Budget policies, however, need to be de-technicised and democratised (Di Majo, 2020). In fact, both expansionary and restrictive fiscal policies have distributive effects and can deeply transform the economy as well as society: they are fundamentally political. Indeed, the largest part of the stimulus in 2008 and 2009 was a direct or indirect subsidy to the banking and financial sector or to the immediate damages it had done. On the contrary, the post-2010 programmes targeted key social institutions and public services, such as the labour market and the health care sector. Today, as the debt ratios spike, talks of further privatisations and pension reforms have already started.

Unfortunately, however, the entire EU system suffers from a democratic deficit and is geared towards maintaining austerity. In fact, the persistence of elements of financial fragility that (now) operate particularly on the Southern periphery all but rules out political debate both at the Union level and within each country about the principles that should guide fiscal policy. In this article, I discuss how filling that deficit depends on establishing some 'minimal sovereignty conditions' in the euro area, which is the only way to secure space for a 'safe' political discussion, free from asymmetric market pressures. Namely, eurozone members need to, at a minimum, formally commit the central bank to be the lender of last resort, and eliminate the financially destabilising features of the current banking union.

References

Arestis, P., K. McCauley and M. Sawyer (2001), Commentary. An alternative stability pact for the European Union, *Cambridge Journal of Economics*, 25(1), 113-130.

Bernanke, B. (2008), The Economic Outlook, Testimony before the Committee on the Budget, U.S. House of Representatives.

Biondi, Y. and C. del Barrio (2019), Unravelling economic solidarity: A systemic view on risk-sharing in the European banking sector, Financial Stability Conference-FSC Research Workshop.

Blanchard O. (2019), Public debt and low interest rates, Presidential Address at the American Economic Association Annual meeting, *American Economic Review*, 109(4), 1197-1229.

Bordignon, M. (2020, 21 July), Recovery Fund, non è tutto oro quel che luccica, La Voce: https://www.lavoce.info/archives/68641/recovery-fund-non-e-tutto-oro-quello-che-luccica/ (17 September 2020).

Buchanan J. and R. Wagner (1977), Democracy in Deficit, The Political Legacy of Lord Keynes, in *The Collected Works of James Buchanan*, Volume 8, Liberty Fund.

Celi, G., A. Ginzburg, D. Guarascio and A. Simonazzi (2017), *Crisis in the European Monetary Union: A core-periphery perspective*, Routledge.

Cesaratto, S. and G. Zezza (2018), What went wrong with Italy, and what the country should now fight for in Europe, *FMM Working Paper*, 37.

Ciccone, R. (2013), Public debt and aggregate demand: some unconventional analytics, in *Sraffa and the Reconstruction of Economic Theory*, Volume 2, Palgrave Macmillan, 15-43.

Costantini, O. (2015), The cyclically adjusted budget: history and exegesis of a fateful estimate, *Institute for New Economic Thinking Working Paper*, 24.

Costantini, O. (2017), Political economy of the Stability and Growth Pact, *European journal of economics and economic policies: Intervention*, 14(3), 333-350.

Costantini, O. (2018, 10 October), Why Hysteria Over the Italian Budget Is Wrong-Headed, *Institute for New Economic Thinking blog*, https://www.ineteconomics.org/perspectives/blog/why-hysteria-over-the-italian-budget-is-wrong-headed (17 September 2020).

Clancy, E. (2020), Discipline and Punish: End of the Road for the EU's Stability and Growth Pact, A Report Commissioned by Martin Schirdewan MEP, https://emmaclancy.files.wordpress.com/2020/02/discipline-and-punish-eu-stability-and-growth-pact.pdf (17 September 2020).

Di Majo, A. (2020), Democrazia di bilancio e governo delle finanze pubbliche nella storia del budgeting pubblico, *Società italiana di economia pubblica Working Paper*, 752.

Dullien, S., C. Paetz, A. Watt and S. Watzka (2020), Proposals For A Reform Of The EU's Fiscal Rules And Economic Governance, *IMK Report*, 159e.

Enria, A. (2019, February 18), Banking union – challenges ahead, Introductory remarks, session on Banking Union – Challenges Ahead, *European Parliamentary Week*.

European Fiscal Board (2019), Assessment of EU fiscal rules with a focus on the six- and two-pack legislation.

Ferguson, T. and E. Kane (2020, 16 May), Coronavirus Means Zero Hour for the European Union, *Institute for New Economic Thinking blog*, https://www.ineteconomics.org/perspectives/blog/coronavirus-means-zero-hour-for-the-european-union (16 September 2020).

Giacchè, V. (2017, 19 July), The Real Cause of the Italian Bank Bailouts and Euro Banking Troubles, *Institute for New Economic Thinking blog*, https://www.ineteconomics.org/perspectives/blog/the-real-cause-of-the-italian-bank-bailouts-and-euro-banking-troubles (16 September 2020).

Godley, W. (1992), Maastricht and all that, *London Review of Books*, 14(19), 2-3.

Goodhart, C. A. E. (1998), The two concepts of money: implications for the analysis of optimal currency areas, *European Journal of Political Economy*, 14(3), 407-432.

Heimberger, P. and J. Kapeller (2017), The performativity of potential output: pro-cyclicality and path dependency in coordinating European fiscal policies, *Review of International Political Economy*, 24(5), 904-928.

Heimberger, P. (2020), Potential Output, EU Fiscal Surveillance and the COVID-19 Shock, *Intereconomics*, 55(3), 167-174.

Horn, G. and A. Watt (2017), Wages and Nominal and Real Unit Labour Cost Differentials in EMU, *European Commission DG ECFIN Discussion Papers*, 2015-059.

International Monetary Fund (2018), Euro Area Policies. Financial Sector Assessment Program Technical Note – Bank Resolution and Crisis Management, *IMF Country Report*, 18/232.

Irvin, G. and A. Izurieta (2011), Fundamental Flaws in the European Project, *Economic and Political Weekly*, 14-16.
Lincei Committee on Covid-19 (2020, 9 May), The Covid crisis and a possible turning point for the European Union, Accademia dei Lincei.
Kane, E. J. (2017), Europe's Zombie Megabanks and the Differential Regulatory Arrangements that Keep Them in Play, *Institute for New Economic Thinking Working Paper Series*, 64.
Kregel, J.A. (1985), Budget Deficits, Stabilisation Policy and Liquidity Preference: Keynes's Post-War Policy Proposals, in F. Vicarelli (ed.), *Keynes's Relevance Today*, 36-47, Macmillan.
Minenna, M., G. Dosi and A. Roventini (2018), ECB monetary expansions and euro area TARGET2 imbalances: a balance-of-payment-based decomposition, *European Journal of Economics and Economic Policies: Intervention*, 15(2), 147-159.
Myrdal, G. (1939), Fiscal Policy in the Business Cycle, American Economic Review, 29(1), Supplement, *Papers and Proceedings of the Fifty-first Annual Meeting of the American Economic Association*, 183-193.
O'Connell, A. (2015), European crisis: a new tale of center–periphery relations in the world of financial liberalization/globalization?, *International Journal of Political Economy*, 44(3), 174-195.
Palumbo, A. (2013), Potential output and demand-led growth, in E. S. Levrero, A. Palumbo and A. Stirati (eds.), *Sraffa and the Reconstruction of Economic Theory*, 92-119, Palgrave Macmillan.
Parguez, A. (1999), The expected failure of the European economic and monetary union: a false money against the real economy, *Eastern Economic Journal*, 25(1), 63-76.
Pasinetti, L. L. (1998), The myth (or folly) of the 3% deficit/GDP Maastricht 'parameter', *Cambridge Journal of Economics*, 22(1), 103-116.
Prante, F. J., A. Bramucci and A. Truger (2020), Decades of Tight Fiscal Policy Have Left the Health Care System in Italy Ill-Prepared to Fight the COVID-19 Outbreak, *Intereconomics*, 55(3), 147-152.
Righi, S. (2020, 16 May), La sentenza di Karlsruhe tra diritto e politica, *Pandora Rivista*, https://www.pandorarivista.it/articoli/la-sentenza-di-karlsruhe-tra-diritto-e-politica/#_ftnref1 (24 September 2020).
Roncaglia, A. (2017, 8 February), The economist as an expert: a prince, a servant or a citizen?, *Institute for New Economic Thinking blog*, https://www.ineteconomics.org/perspectives/blog/the-economist-as-an-expert-a-prince-a-servant-or-a-citizen (17 September 2020).
Schnabel, I. (2020, 11 September), The shadow of fiscal dominance: Misconceptions, perceptions and perspectives" Speech at the Centre for European Reform and the Eurofi Financial Forum, https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp200911~ea32bd8bb3.en.html (17 September 2020).
Seccareccia, M. (1995), Keynesianism And Public Investment: A Left-Keynesian Perspective On The Role Of Government Expenditures And Debt, *Studies in Political Economy*, 46, 43-78.
Shapiro, N. (2017, 13 June), The Hidden Cost of Privatization, *Institute for New Economic Thinking blog*, https://www.ineteconomics.org/perspectives/blog/the-business-of-government (16 September 2020).
Simonazzi, A. and A. Vianello (1999), Liberalizzazione finanziaria, moneta unica europea e occupazione, in F. R. Pizzuto (ed.), *Globalizzazione, Istituzioni e Coesione Sociale*, 227-253, Meridiana.
Storm, S. and C. W. M. Naastepad (2015), Europe's Hunger Games: income distribution, cost competitiveness and crisis, *Cambridge Journal of Economics*, 39(3), 959-986.
Storm, S. (2019), Lost in deflation: Why Italy's woes are a warning to the whole Eurozone, *International Journal of Political Economy*, 48(3), 195-237.
Tooze, A. (2020, August 7), It's a New Europe – if You Can Keep It, Foreign Policy, https://foreignpolicy.com/2020/08/07/merkel-macron-eu-its-a-new-europe-if-you-can-keep-it/ (16 September 2020).
Truger, A. (2013), Austerity in the euro area: the sad state of economic policy in Germany and the EU, *European Journal of Economics and Economic Policies: Intervention*, 10(2), 158-174.
Truger, A. (2016), Reviving fiscal policy in Europe: towards an implementation of the golden rule of public investment, *European Journal of Economics and Economic Policies: Intervention*, 13(1), 57-71.
United Nations Conference on Trade and Development (2020), Trade and Development Report: From Global Pandemic to Prosperity for All: Avoiding Another Lost Decade.
Watt, A. (2016), Monetary financing of public investment: a viable way forward for the euro area?, *European Journal of Economics and Economic Policies: Intervention*, 13(2), 241-254.
Weeks, S. (2019), Portugal in Ruins: From "Europe" to Crisis and Austerity, *Review of Radical Political Economics*, 51(2), 246-264.

Robin Brooks and Jonathan Fortun*

Eurozone Output Gaps and the COVID-19 Shock

The eurozone was marked by economic divergence in the decade before the COVID-19 shock, something that was a starting point for our Campaign against Nonsense Output Gaps (CANOO), which we unveiled in Brooks and Fortun (2019a) over a year ago. In the years leading up to the pandemic, countries in the euro core had recovered quickly from the global financial crisis in 2008/9, while the periphery suffered stagnant and intermittent growth, leaving GDP in some cases well below pre-crisis levels. One reason for this divergence can be found in financial conditions, which tightened substantially for countries like Italy and Spain during the sovereign debt crisis in 2011/12. That tightening in financial conditions made a uniform recovery across the eurozone difficult and some echoes of this can be found in financial markets today. Concerted ECB action has prevented real yields on the euro periphery from rising materially, but it is still the case that real Italian bond yields exceed those in the euro core. As a result, the potential for continued economic divergence within the eurozone exists, which may also exacerbate deflation risk for the region overall.

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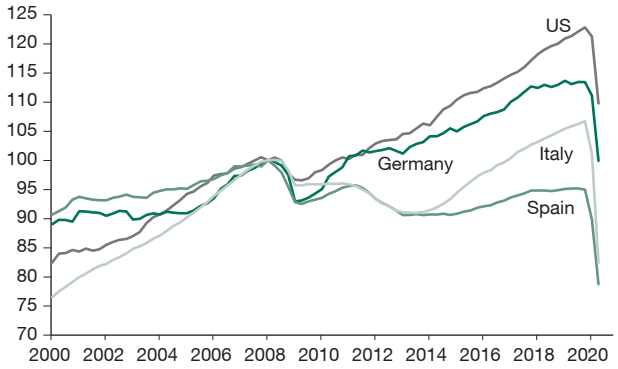
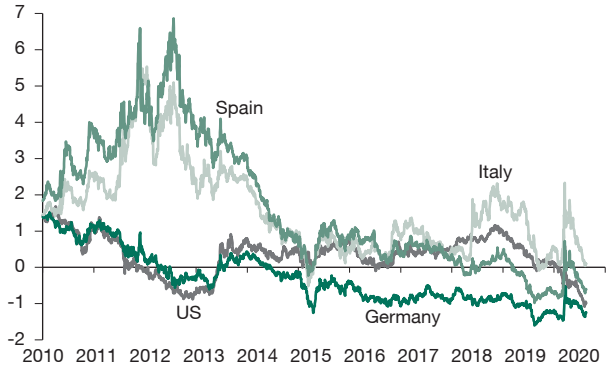
Figure 1
Real GDP levels
index, Q1 2008 = 100



Note: Last data point is Q2 2020.

Sources: Haver Analytics and Bloomberg.

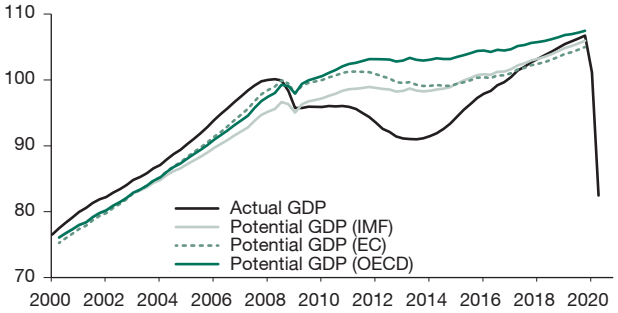
Figure 2
Real interest rates
10-year real yields, in %



Note: Nominal yields minus inflation breakevens.

Sources: Haver Analytics and Bloomberg.

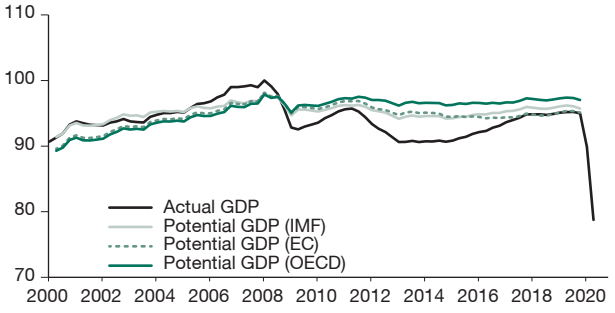
Figure 3
Real GDP and potential GDP estimates for Spain
index, Q1 2008 = 100



Note: Estimates for potential GDP from 2019.

Source: Haver Analytics.

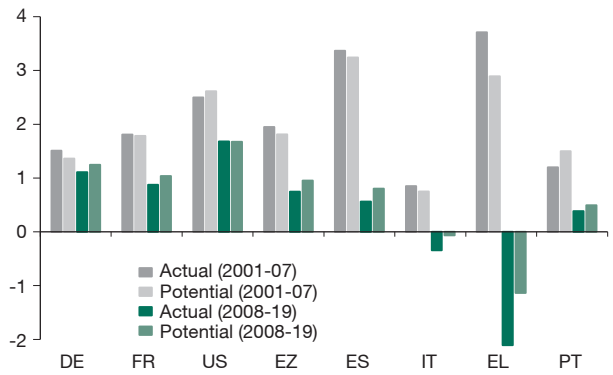
Figure 4
Real GDP and potential GDP estimates for Italy
index, Q1 2008 = 100



Note: Estimates for potential GDP from 2019.

Source: Haver Analytics.

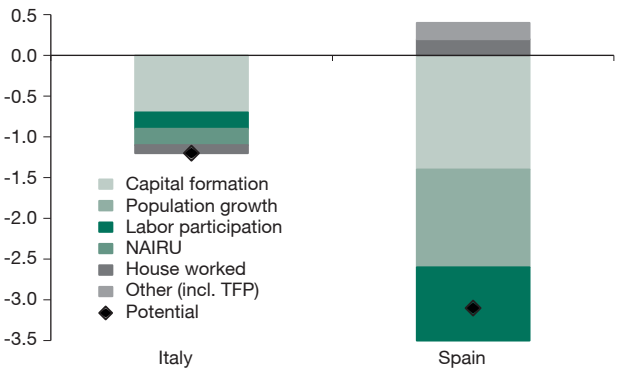
Figure 5
Real versus potential GDP growth
in %



Note: Average annual GDP growth in 2001-07 and 2008-19 versus "consensus" estimates of potential GDP growth (average of IMF, EC & OECD).

Source: Haver Analytics.

Figure 6
Production function approach
in percentage points



Note: Contributions to lower potential GDP growth (black) in the EC production function approach: 2010-18 vs 2001-7.

Source: Haver Analytics.

Cyclical weakness on the euro periphery before COVID-19

The pace of eurozone recovery was highly uneven after the global financial crisis in 2008/9. Countries in the euro core recovered quickly, including Germany, while the periphery suffered prolonged stagnation and in some instances – Italy being the most notable example – still had GDP below 2008 levels in the run-up to the COVID-19 shock (Figure 1). One driver of this divergence is found in financial conditions. We calculate real ten-year sovereign bond yields for the US, Germany, Italy and Spain using inflation breakevens to deflate nominal bond yields (Figure 2). This exercise shows that the real yield for Italy and Spain rose to punitive levels in 2011/12, even as the real yield for Germany fell to what at the time were unprecedentedly low levels. This divergence in financial conditions made a uniform recovery across the eurozone difficult and is an important explanation for why Italy and Spain suffered a decade of stagnation after the global financial crisis. The reason this explanation is so important is because there is a lot of disagreement about whether it is structural or cyclical factors that are behind the depressed activity in periphery countries. The fact that financial conditions tightened so much puts us firmly in the cyclical camp, i.e. we believe that the slump on the periphery reflects depressed demand rather than structural constraints.

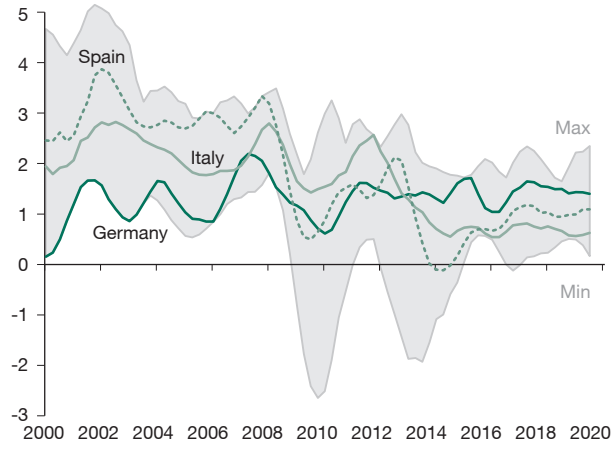
This view is at odds with 'consensus' estimates for potential GDP from before COVID-19, which 'bend down' in the case of Spain (Figure 3) and Italy (Figure 4). Our discussion here is not a criticism of these potential GDP estimates. Rather, it should be understood as pointing to how difficult it is to disentangle structural from cyclical factors when demand is depressed for long periods of time. To illustrate this, we calculate actual versus potential GDP growth rates for two windows: 2001 to 2007, i.e. before the global financial crisis, and 2008 to 2019, i.e. the aftermath of the Great Recession. Figure 5 shows average annual growth rates during these two windows, where we average potential growth estimates from the OECD, the IMF and the European Commission (EC) as an admittedly imperfect proxy for consensus. This shows that potential growth estimates closely track actual GDP growth, i.e. may not adequately capture 'potential' or what might have been possible under alternative policy settings. More specifically, these estimates of potential may not reflect growth that could have materialised had financial conditions for Italy and the rest of the periphery not tightened so much in 2011/12. In short, consensus estimates of potential are really much closer to realised 'trend' growth in different time windows, as opposed to potential.

The fact that estimates of potential track actual GDP so closely is not simply due to the widespread use of statistical techniques like the Hodrick–Prescott filter, which are essentially moving averages of actual GDP. The reasons run deeper than that. Figure 6 uses our approximation of the European Commission production function approach to decompose the slowdown in estimated potential growth in our two time windows into the underlying drivers for Italy and Spain. In Italy, potential growth is estimated to have fallen by slightly more than a full percentage point from the 2001 to 2007 window to the 2008 to 2019 window. The principal driver of that slowdown is capital formation, i.e. investment, followed by labour force participation, which declines. In Spain, potential growth is estimated to have slowed by a much larger amount, close to three percentage points. Again, the main driver by far is capital formation, with population growth and labour force participation as the other important drivers. All these things, especially investment, can be thought of as endogenous to financial conditions, i.e. the real interest rate. Given that the real interest rate was allowed to rise to punitive levels in Italy and Spain during the 2011/12 sovereign debt crisis, the fall in capital formation should most certainly not be seen as a 'structural' phenomenon, but instead as a largely cyclical response to tighter financial conditions and depressed demand.

Low core inflation on the euro periphery

The ultimate arbiter in all this is inflation. If there was indeed a cyclical element to depressed GDP levels prior to COVID-19, it should be the case that estimates of underlying inflation – cleaned for temporary shocks – are low. Figure 7 shows a core harmonised index of consumer prices (HICP) inflation across the eurozone, where we use the year-over-year rate of annual average inflation to highlight slow-moving trends and filter out short-lived distortions. The grey area tracks the minimum and maximum of core inflation across countries in the eurozone. Core inflation in Italy and Spain was towards the upper end of the eurozone range before the global financial crisis; it spent the years since the sovereign debt crisis, however, at the lower end of that range. Meanwhile, core inflation in Germany was trending steadily higher in the run-up to the COVID-19 shock, even if that run-up was slow in the global disinflationary environment. Figure 8 takes a detailed look at the cross-section of core inflation in the eurozone. It shows the Q2 2020 readings of year-over-year annual average core HICP inflation, i.e. the end-points of the series shown in Figure 7. Countries for which financial conditions did not tighten in 2011/12, including the Netherlands, Austria, Belgium, Germany and France, were recording comparatively high inflation in the run-up to COVID-19. Meanwhile, Spain, Italy, Portugal and Greece saw low inflation rates,

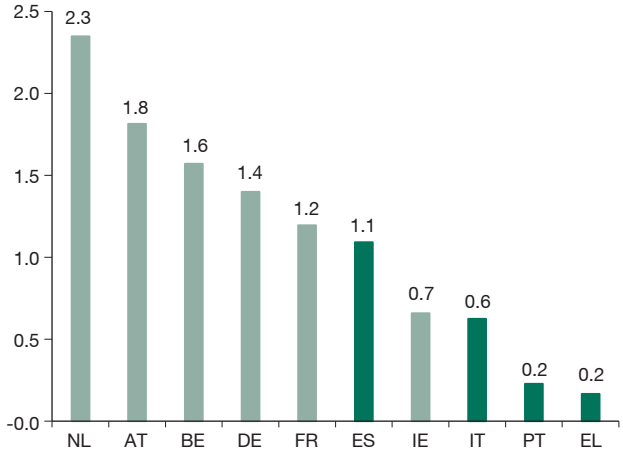
Figure 7
Core HICP inflation in the eurozone, 2000-20
year-over-year rate, in %



Note: Annual average. Last data point is Q2 2020.

Source: Haver Analytics.

Figure 8
Core HICP inflation in Q2 2020
year-over-year rate, in %



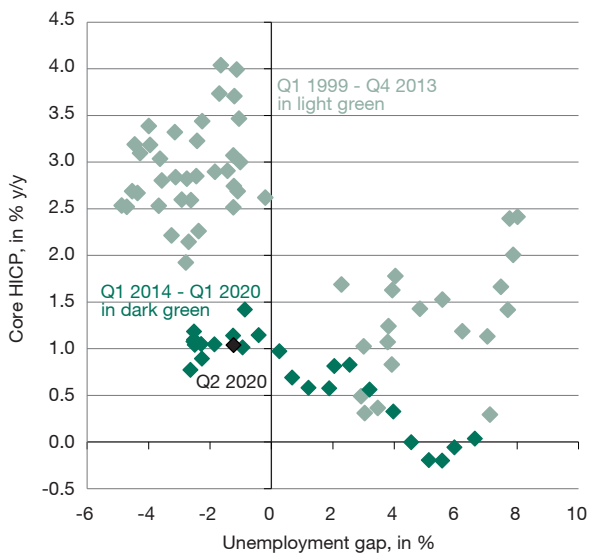
Note: Annual average.

Source: Haver Analytics.

consistent with the idea that low GDP levels in the run-up to the virus had a heavy cyclical component, i.e. were due to depressed demand.

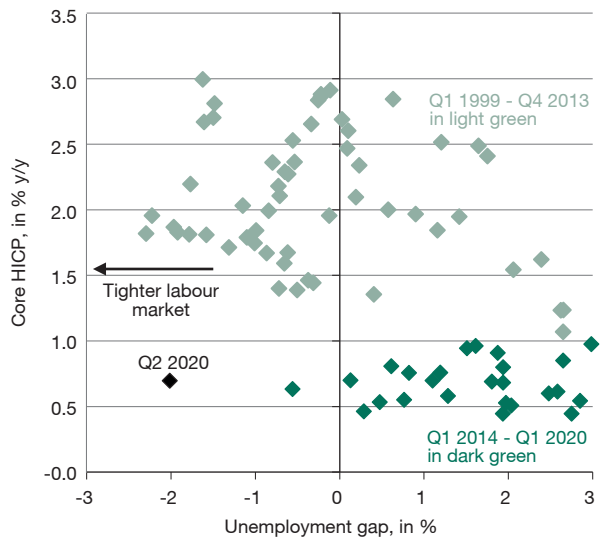
In follow-up research to our output gap work, we use Phillips curves to compare consensus estimates of economic slack with trends in core inflation, starting with Brooks and Fortun (2019b). The idea here is simple. If estimates of diminishing slack are correct, they should coincide with rising inflation, once we control for other shocks like currency and commodity price moves. If core inflation remains too subdued relative to estimates of diminishing slack, this could be a sign that consensus unemployment or output gaps may be too conservative and that more slack exists. Figure 9 shows what this looks like for Spain, where the horizontal axis shows year-over-year

Figure 9
Spain: Phillips curve since 1999 using European Commission estimates for the unemployment gap



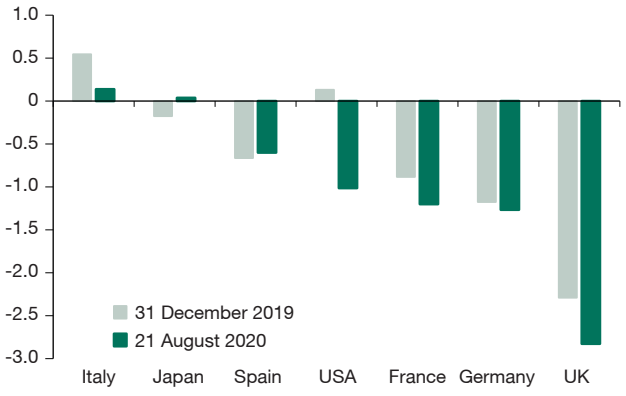
Source: Haver Analytics.

Figure 10
Italy: Phillips curve since 1999 using European Commission estimates for the unemployment gap



Source: Haver Analytics.

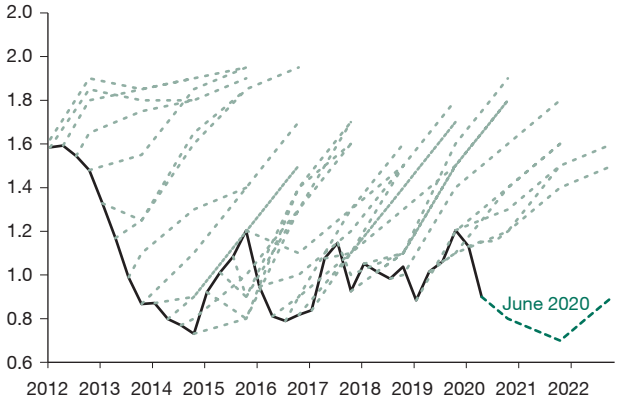
Figure 11
Real interest rates
in %



Note: Real 10-year sovereign bond yields (nominal - inflation breakevens).

Source: Haver Analytics.

Figure 12
ECB inflation forecasts
year-over-year rate, in %



Note: ECB forecast for core inflation, March 2012 to June 2020.

Source: Haver Analytics.

core HICP inflation, based on quarterly average data, and the horizontal axis shows the unemployment gap, which is based on non-accelerating inflation rate of unemployment (NAIRU) estimates from the European Commission. The scatter plot highlights that core inflation remains very low relative to a labour market that at this point is considered 'tight', suggesting that more slack may remain or that NAIRU is potentially a lot lower. A similar story holds for Italy, as Figure 10 shows. Indeed, the COVID-19 shock has exacerbated the decoupling of core inflation and the consensus unemployment gap because declines in labour force participation have resulted in a 'spurious' decline in the unemployment rate. The Phillips curve framework suggests that the unemployment gap, based on still depressed core inflation, is still sizable and that NAIRU is potentially far below where consensus estimates put it. For the eurozone in aggregate, we have estimated that NAIRU may well be three full percentage points below the consensus estimate, which we believe lies around 8%, as flagged in Brooks and Fortun (2019c). Doing this same exercise for output gaps, Brooks, Heimberger and Tooze (2020) show that towards the end of 2019, Italy still had an output gap of 7%, while Spain had an output gap of 5%. In other words, key economies on the euro periphery went into the COVID-19 shock with large, pre-existing output gaps, which have since grown due to the severity of the economic shock.

Conclusion

The reason this matters at the current juncture is because financial markets contain echoes of 2011/12. While concerted ECB action has prevented the kind of rise in real yields that took place during the sovereign debt crisis, it is the case that real yields in Italy and Spain are higher than in the eurozone core, including in France and Germany (Figure 11). As a result, it is possible that the COVID-19 shock is sowing the seeds for continued economic divergence within the eurozone and – as a result – mounting deflation risk for the single currency area overall. For European policymakers, this issue is one of first-order importance and one they have embraced. Key policymaking institutions are revisiting their output gap estimates, as Brooks and Fortun (2019d) document, and the European Commission has announced that its budget rules will remain suspended through the end of 2021, a welcome development given how elevated uncertainty is likely to remain for the foreseeable future. There are also policy implications beyond fiscal budgeting. Eurozone core inflation has failed to rise for many years and part of the underlying issue may be that economic slack was greater than consensus estimates allowed. Figure 12 shows the evolution of core HICP inflation and ECB core inflation forecasts over the years. If the COVID-19 shock ends up exacerbating the degree of economic divergence within the eurozone, this could add to the low inflation dynamic in the single currency area, increasing the need for additional monetary policy accommodation. The very latest ECB forecast certainly shows core inflation stuck at a very low level.

References

Brooks, R. and J. Fortun (2019a, 23 May), Campaign against Nonsense Output Gaps (CANOO), Institute of International Finance, *Global Macro Views*, https://bit.ly/3j8dneE (4 September 2020).

DOI: 10.1007/s10272-020-0919-8

Brooks, R. and J. Fortun (2019b, 8 November), Inflation-consistent NAIRUs for Italy and Spain, Institute of International Finance, *Global Macro Views*, https://bit.ly/2FQJYHq (4 September 2020).
Brooks, R. and J. Fortun (2019c, 31 October), Reverse-Engineering the Euro Zone NAIRU, Institute of International Finance, *Global Macro Views*, https://bit.ly/32gy2pX (4 September 2020).
Brooks, R. and J. Fortun (2019d, 3 October), The Growing Debate over Output Gaps, Institute of International Finance, *Global Macro Views*, https://bit.ly/3j8dzdS (4 September 2020).
Brooks, R., P. Heimberger and A. Tooze (2020), Inflation-Consistent Output Gaps, Mimeo.

Sebastian Hauptmeier and Nadine Leiner-Killinger*

Reflections on the Stability and Growth Pact's Preventive Arm in Light of the COVID-19 Crisis

Over the last decade and in light of the past great financial crisis, the EU's fiscal framework has been modified in many respects. One major modification with material consequences for the euro area's aggregate fiscal stance pertains to the introduction in 2015 of a so-called matrix of fiscal adjustment requirements under the preventive arm of the Stability and Growth Pact (SGP).[1] For countries that have not achieved their medium-term budgetary objectives, these fiscal adjustment requirements need to feed into their budgetary planning for the next year. Importantly, the matrix has also become the guiding post for adjustment requirements in countries with high government debt ratios, de facto replacing the application of the SGP's debt rule, which had been introduced with the six-pack and two-pack regulations in 2011.

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1 On 13 January 2015, the European Commission issued a Communication on "Making the best use of the flexibility within the existing rules of the Stability and Growth Pact", which entered into force with immediate effect.

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By the end of 2019, all euro area member states were subject to the SGP's preventive arm. As the devastating COVID-19 shock hit Europe, however, they were allowed to deviate from the fiscal adjustment requirements that would normally apply thereunder, and for the first time since it was introduced in 2011, the SGP's general escape clause was activated. Although deployed independently, this has allowed fiscal and monetary policy to counteract the economic impact of the pandemic in a mutually reinforcing manner. Once the economies have sufficiently recovered, the important fiscal support provided during the crisis will need to be withdrawn and government debt must be reduced.

This article argues that the application of the SGP's preventive arm matrix should cease to be the reference point for such future fiscal adjustment. Among others, the matrix is a reflection of the many inconsistencies in the EU's fiscal framework that have built up over the years. These need to be addressed within the upcoming so-called economic governance review to support a sustained recovery from the deep coronavirus crisis. The shortcomings identified in this article also speak in favour of shifting the EU's fiscal framework towards government debt as an anchor, something that is advocated frequently in the debate on SGP reform. From a central bank perspective, it will be particularly important that a future reform of the fiscal framework internalises the important interactions between monetary and fiscal policies as well as considerations related to the overall macroeconomic policy mix.

The SGP's preventive arm matrix

As shown in Table 1, the SGP's preventive arm matrix modulates countries' fiscal adjustment requirements for the next year according to the output gap, i.e. the dif-

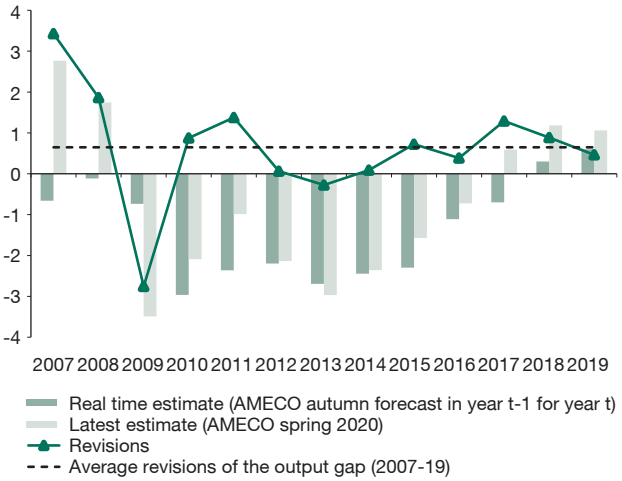
Table 1
Matrix specifying the annual fiscal adjustment requirements under the SGP's preventive arm

		Required fiscal adjustment (in percentage points of GDP)	
	Condition	Debt < 60% of GDP and no sustainability risk	Debt > 60% of GDP or sustainability risk
Exceptionally bad times	Real growth < 0 or OG < -4	No adjustment needed	
Very bad times	-4 ≤ OG < -3	0	0.25
Bad times	-3 ≤ OG < -1.5	0 if growth below potential, 0.25 if above potential	0.25 if growth below potential, 0.5 if above potential
Normal times	-1.5 ≤ OG < 1.5	0.5	> 0.5 [*0.6*]
Good times	OG ≥ 1.5	> 0.5 if growth below potential, ≥ 0.75 if above potential	≥ 0.75 if growth below potential, ≥ 1 if above potential

Note: 'OG' refers to output gap.

Source: Stability and Growth Pact, Code of Conduct.

Figure 1
Revisions to the AMECO output gaps, real time versus *ex post*, 2007-19



Source: AMECO, own calculations.

ference between real GDP and potential output, and whether the government debt-to-GDP ratio is above or below the Maastricht Treaty's reference value of 60% of GDP. Specifically, the requirements for the budget year t+1 are set in spring of year t. Compliance with these requirements is reviewed in spring t+2 based on outturn data. The partitioning of the business cycle and the output gap as well as the resulting adjustment needs for the structural balance are highly granular. As a result, small decimal-point changes in output gap estimates can be associated with a difference in a country's annual structural adjustment requirement of a quarter percentage point of GDP.

Problems for policy guidance based on the matrix

The unobservable output gap

The steering of countries' fiscal stance in the EU's fiscal framework based on the unobservable output gap – the key element of the matrix – is prone to making policy mistakes in real time (Kamps et al., 2014).

Several analyses have shown that in favourable (weak) economic times, unobservable potential output tends to be over(under-)estimated and the output gap under(over-) estimated. As a consequence, in real time, postulated fiscal adjustment requirements risk being smaller (larger) than what the matrix would prescribe for the actual position in the cycle. For the period 2007-19, the output gap as measured by the Economic Policy Committee's commonly agreed methodology[2] (European Commission, 2014) has been underestimated by on average two-thirds of a percentage point (Figure 1).[3] Consequently, with the benefit of hindsight, fiscal adjustment requirements over this period should have been higher on average, notably by way of building higher fiscal buffers in good economic times.[4]

The granularity of the matrix' recommendations for fiscal adjustment and the associated fine-tuning of the fiscal stance based on the unobservable output gap adds a layer of unreliability to the policy prescriptions.[5] To illustrate

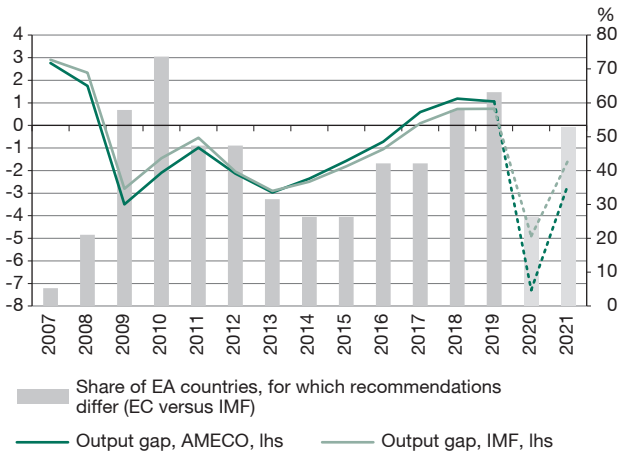
2 The Economic Policy Committee's Working Group on Output Gaps has the mandate to improve on the methodology, which is frequently happening, such as the recent introduction of a so-called plausibility tool.

3 When looking only at the period since the inception of the matrix, the average underestimation of the output gap in real time rises to three-quarters of a percentage point. As Figure 1 shows, the forecast error is captured as the difference between the output gap estimate for year t as put forward in autumn t-1 and the *ex post* output gap outturn. Capturing the forecast error as such implies that at least a small part refers to possible errors made in forecasting developments in GDP.

4 Due to a so-called freezing principle, countries are shielded from the need to deliver after the finalisation of the budget year an additional structural adjustment in case the *ex post* estimate of the output gap would have warranted a higher adjustment. In contrast, in case the output gap turns out worse than expected, the adjustment requirement declines *ex post*.

5 The European Commission has shown evidence of such misspecifications of policy advice in real time resulting from the choice of a "wrong" matrix category for a number of years and countries, though it considers that these have not been broad-based across its own forecast vintages. See for details European Commission (2018) on the review of the flexibility under the Stability and Growth Pact, which captured the years 2000-17.

Figure 2
Output gap estimates: European Commission versus IMF, 2007-21



Notes: The bars capture the number of euro area countries in percent of the total, for which the European Commission's and the IMF's forecasts of output gaps fall into a different category under the SGP's preventive arm matrix and would thus tend to imply different structural adjustment requirements.

Sources: European Commission Spring 2020 Economic Forecast and IMF World Economic Outlook, July 2020.

this point, Figure 2 compares the measures of the euro area output gap over 2007-21 as prepared by both the European Commission and the IMF. For the period 2007-19, for which *ex post* data are available, the output gap estimates of both institutions are closely aligned. As *ex post* data on real GDP should be broadly the same for both institutions, differences in *ex post* output gaps should solely reflect differences in potential output estimates. Notwithstanding the closely aligned potential output gap estimates during 2007-19, the fiscal adjustment that both institutions would have prescribed the individual euro area countries to deliver according to the matrix would have differed widely. As the grey bars indicate, if the institutions' policy advice would have been given based on their *ex post* estimates of the output gap, the policy guidance that both institutions would have issued based on the matrix for 2019 would have differed for 60% of the euro area countries. This risks undermining countries' ownership of recommendations for fiscal adjustment under the EU's policy framework.

Governments' responses to the COVID-19 shock

Governments' responses to the unprecedented shock and the recovery from the coronavirus pandemic make it even more difficult to gauge the unobservable output gap in real time over the medium to long term.

As the COVID-19 crisis hit, European governments enacted economy-wide lockdowns, the impact of which on potential output is very difficult to capture. One extreme interpretation is that the temporary lockdown of an economy does not affect its full production capacity as factors of production remain in place. For example, in most countries, short-time work schemes have allowed workers to maintain ties with their employers. The other extreme interpretation is that a large part of the factors of production have become unavailable during the lockdown, implying a sizeable decline in a country's productive capacity. The choice of interpretations or a mixture thereof has direct consequences for the assessment of an economy's cyclical position.[6]

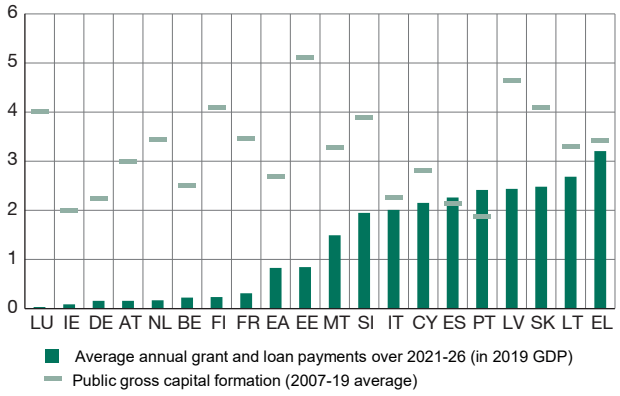
As Figure 2 indicates, the European Commission and the IMF had very different assessments in mid-2020 of the pandemic's impact on the euro area's potential output.[7] According to the European Commission, potential output is gauged to decline only marginally in 2020, giving rise to a large negative output gap estimate. In contrast, the IMF estimates potential output to decline rather strongly as a result of the pandemic with in a comparably smaller size of the negative output gap. Actually, however, risks of mismeasurement of the output gap during the acute phase of the COVID-19 crisis will not immediately translate into potentially inadequate structural adjustment requirements according to the matrix. This is because the SGP's general escape clause will remain in place at least in 2020. However, the difficulty with assessing the extent to which the COVID-19 shock and the associated exceptionally high degree of uncertainty translates into lasting scars and thus lower potential output in the long run will prevail. This will undermine the meaningfulness of granular adjustment requirements over the coming years.

An additional factor undermining the quality of the 'standard' methods of gauging potential output over the medium term relates to the difficulties of assessing the impact of the EU's unprecedented measures in support of the recovery from the COVID-19 shock. On 17-21 July 2020, the European Council agreed on an EU recovery package, called Next Generation EU, worth up to €750 billion. For the euro area as a whole, this package will provide sizeable financial support of almost 5% of GDP over the period 2021-26 (when measured in 2018 prices). At the heart of

6 See for details a forthcoming article in ECB's Economic Bulletin (2020).

7 It should be noted that the European Commission Spring 2020 Economic Forecast was released in May, i.e. at an earlier stage of the pandemic than the IMF's projections, which were released in July 2020. In an updated forecast released in July, the Commission pointed to a deeper than initially expected economic downturn following the pandemic. This forecast, however, does not entail updates of potential output and output gap estimates.

Figure 3
The EU's Recovery and Resilience Fund: Implications for the euro area, 2021-26
in % of GDP



Sources: Council conclusions on Next Generation EU, European Commission Spring 2020 Economic Forecast, own calculations.

this recovery package is the EU Recovery and Resilience Facility (RRF), which makes up about 90% of total financial support. The RFF is intended to finance investment and structural reforms in the EU, with a major focus on supporting a transition towards greener and more digital economies. The setting in place of the RFF is associated with two imponderabilities for the measurement of the output gap. On the one hand, some countries are expected to receive a large amount of additional resources for government investment in a short period of time. For example, over the period 2021-26, Italy and Greece could receive each year financial support for additional investment of around 2% and 3% of GDP, respectively (see Figure 3). This implies that these countries could potentially double the public gross capital formation compared to the average of the past five years prior to the COVID-19 crisis. It will also be difficult to capture exactly how these additional resources will translate into higher potential output. This is all the more so as it is not yet clear to what extent the RRF will be used for *additional* investment and increase potential output accordingly, or rather replace existing capital spending plans. On the other hand, the intended shift towards more digital economies implies that a larger share of investment will be intangible. Such intangible investment is difficult to capture with traditional measures. Some literature has already pointed out that potential output – and negative output gaps accordingly - might be underestimated due to an increasing share of intangibles that are not captured by standard measures of potential output (Anderton et al., 2020). The difficulties of capturing such structural changes in an economy – and thus the size of the output gap – call for further caution with respect to resting fiscal policy guidance granularly on the unobservable output gap.

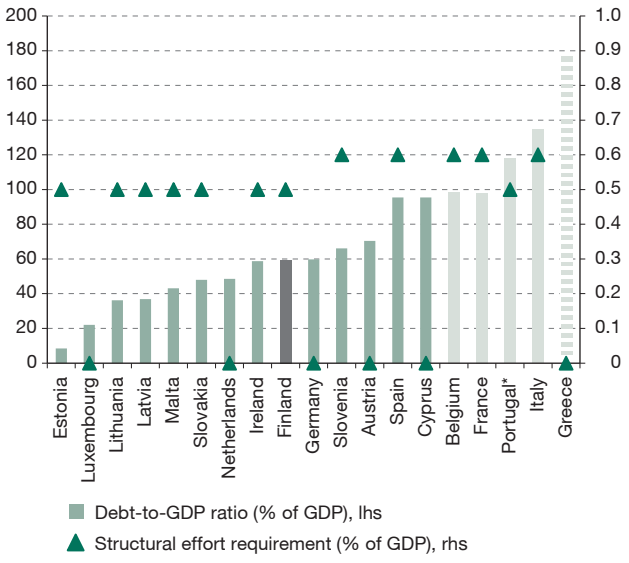
Inconsistencies in the EU's fiscal framework

The SGP's preventive arm matrix is a reflection of a major inconsistency in the EU's fiscal framework. As it stands, the anchor of the EU's fiscal framework is countries' medium-term budgetary objective, which for signatories of the fiscal compact is defined as a nearly balanced budget in structural terms. If countries were to achieve such a balanced budget and maintain it over the long term, government debt-to-GDP ratios would theoretically converge to very low levels far below the Maastricht Treaty's threshold for government debt of 60% of GDP. This is in contradiction with the SGP's debt rule, which is supposed to steer countries with high government debt towards but not below the Maastricht threshold. Given that the SGP's debt rule has been de facto replaced in the past years by (broad) compliance with the preventive arm, the matrix requirements also pertain to countries with high government debt ratios. Consequently, the matrix can imply fiscal adjustment requirements that may be counterintuitive from the viewpoints of fiscal sustainability and stabilisation. Figure 4 illustrates information on the euro area countries in terms of different aspects. The colour coding reflects the European Commission's latest overall assessment of countries' debt sustainability, with risks rising with higher government debt-to-GDP ratios (European Commission, 2020a). The triangles refer to the structural adjustment requirements that countries would have needed to deliver in 2019, *ex post*, under the SGP's preventive arm.[8] The following are conclusions that can be drawn from Figure 4.

The matrix is a reflection of the fiscal framework's insufficient provision of room for stabilisation in countries with low government debt ratios. Notwithstanding low risks to government debt sustainability and sizeable fiscal space towards the Maastricht debt threshold, these countries need to deliver fiscal adjustment towards the SGP's anchor, i.e. the medium-term budgetary objective. For example, although Estonia posted a government debt-to-GDP ratio of below 10% of GDP in 2019, the matrix foresees a tightening of the structural balance of 0.5% of GDP. This was actually larger than the zero adjustment needed in some countries with very high debt ratios, which had achieved their medium-term budgetary objective, such as Cyprus and Greece. Overall, the constraints on fiscal policies for countries with low government debt limit the euro area's capability to provide needed fiscal support in times of low growth and inflation.

8 For this purpose, a few simplifying assumptions are made, see the note in Figure 4.

Figure 4
Government debt-to-GDP ratios and output gap-based structural effort requirements, 2019



Notes: The structural effort requirements reflect the adjustment requirements that would have applied in retrospective had the matrix been applied, though with the following limitations: (i) the adjustment requirements may be lower for countries for which the *ex-ante* adjustment requirements relate to a lower output gap and associated smaller requirements; this is because the required adjustment cannot be larger *ex post* than what was required *ex ante*; ii) it may be higher for countries with closing and/or opening up output gaps. As regards the latter, the adjustment requirement of 1% has de facto never been applied. As regards the European Commission's debt sustainability assessment, Greece is coloured differently as it is not included in the Commission's assessment.

Sources: European Commission Spring 2020 Economic Forecast, European Commission Debt Sustainability Monitor 2019, own calculations.

The matrix is also a reflection of an insufficient differentiation among countries in terms of government debt ratios. As Figure 4 shows, a country such as Slovenia with government debt just above the Maastricht threshold would need to deliver the same structural adjustment as e.g. Italy, which recorded a debt ratio twice as high.

Towards government debt as an anchor

The COVID-19 crisis and the exit from it will make estimates of the output gap even more difficult. This is likely to reduce the ownership of the associated fiscal adjustment requirements. Seeking the truly independent advice of, for example, national fiscal councils, may help in improving the reliability of output gap measures. It would, however, remain challenging to issue fully consistent policy advice.

The above analysis supports the calls for shifting the EU's fiscal framework towards government debt as an anchor. In principle, the SGP's debt rule is in place to ensure a gradual reduction of high debt towards the Maastricht reference value. As discussed in Hauptmeier and Kamps (2020), the existing debt rule of the SGP gives rise to a pro-cyclical bias which has hindered its implementation in the low-growth low-inflation environment. This calls for changes to the current specification of the rule in order to ensure that adjustment requirements towards the debt anchor appropriately reflect prevailing macroeconomic conditions so as to better balance the objectives of macroeconomic stabilisation and debt sustainability.

From a euro area perspective, it would be important for a reform of the fiscal framework to internalise the important interactions between monetary and fiscal policies as well as considerations related to the overall macroeconomic policy mix. First, the existing debt rule framework implies higher adjustment requirements when inflation is low. This is suboptimal from the viewpoint of the monetary policy authority given that fiscal support may be desirable in times of below-target inflation, especially when the effective lower bound has been reached. Second, the current framework is asymmetric in that it does not foresee the use of fiscal space when government debt is low and medium-term objectives have been overachieved. In this context, it has been argued that an effective coordination of the fiscal policy stance in the euro area is hindered by the inherent asymmetry of the rules.

References

Anderton, R., V. Jarvis, V. Labhard, J. Morgan, F. Petroulakisans and L. Vivian (2020), Virtually everywhere? Digitalisation and the euro area and EU economies, *ECB Occasional Paper*, 244.

European Central Bank (2020), The impact of COVID-19 on potential output in the euro area, *Economic Bulletin*, forthcoming.

European Commission (2014), The Production Function Methodology for Calculating Potential Growth Rates & Output Gaps, *Economic Papers*, 535.

European Commission (2015), Making the best use of the flexibility within the existing rules of the Stability and Growth Pact, *Communication from the Commission*, COM(2015)12 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52015DC0012 (21 September 2020).

European Commission (2018), Communication from the Commission on the review of the flexibility under the Stability and Growth Pact, *Commission staff working document*, SWD(2018) 270 final, https://ec.europa.eu/info/sites/info/files/economy-finance/swd_2018_270_en.pdf (21 September 2020).

Hauptmeier, S. and C. Kamps (2020), Debt Rule Design in Theory and Practice: The SGP's Debt Benchmark Revisited, *ECB Working Paper*, 2379.

Kamps, C. and N. Leiner-Killinger (2019), Taking stock of the EU's fiscal rules over the past 20 years and options for reform, *Journal of Economics and Statistics*, 239(5-6), 861-894.

Kamps, C., R. De Stefani, N. Leiner-Killinger, R. Rüffer and D. Sondermann (2014), The identification of fiscal and macroeconomic imbalances – synergies under the strengthened EU governance framework, *ECB Occasional Paper*, 157.

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Leonor Coutinho and Alessandro Turrini*

Real Convergence Across the Euro Area

What Role Do Macroeconomic Imbalances Play?

This paper studies the relationship between real convergence in the euro area and macroeconomic imbalances. It compares the main features of convergence within the euro area with other EU and non-EU country groups, looking at both 'sigma' and 'beta' convergence in output and total factor productivity. Expected convergence paths for euro area countries are estimated using growth regressions run on a large panel of advanced and emerging market economies and compared to actual growth. The findings support the view that EU and euro area countries display similar convergence patterns to those of other country groups, while the group of countries that adopted the euro first exhibit relatively weak convergence since before the financial crisis. Such differences could be partly linked to relatively low dispersion in per capita incomes across this country group, although lack of convergence is also largely due to persisting differences in total factor productivity performance. The findings also suggest that macroeconomic imbalances accumulated in the pre-crisis period such as high private and government debt and strong growth in the non-tradable sector have been associated with lower convergence, particularly for euro area countries.

In the run-up to the Economic and Monetary Union (EMU), the Maastricht criteria emphasised nominal convergence as a requirement for achieving a stable common currency, with the entry criteria requiring convergence in nominal variables including inflation, interest and exchange rates, public deficits and debts. At the same time, the academic debate was largely focused on the desirable characteristics of countries sharing a common currency. In line with the optimal currency area (OCA) theory (Mundell, 1961), countries ought to be sufficiently similar and integrated to reduce the likelihood of asymmetric shocks and have flexible product and labour markets to lower the costs of adjusting in the absence of nominal exchange rates. In this respect, the academic debate in the period preceding the EMU was focused on real rather than on nominal convergence, emphasising the structural transformations along the convergence process that would reduce differences in economic institutions, the occurrence of asymmetric shocks and adjustment costs in a monetary union.

During the first decade of the EMU, nominal convergence appeared to go hand in hand with real convergence. Nominal interest rates converged on the back of financial integration and a reduction in perceived risks. In anticipation of a stable currency and no redenomination risks, both the mean and the variance of ten-year government bond rates across 12 euro area (EA) countries dropped significantly between 1994 and 1997 (see Figure 1). This process lasted for about a decade, but was interrupted by the European sovereign debt crisis of 2010-2012, during which this variance spiked to levels last seen only prior to the 1990s. Real convergence in per capita incomes was observed across the whole euro area but not among the EA11 (founding members including Greece but excluding

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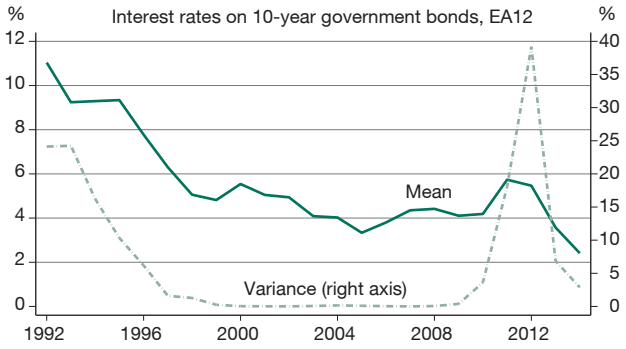
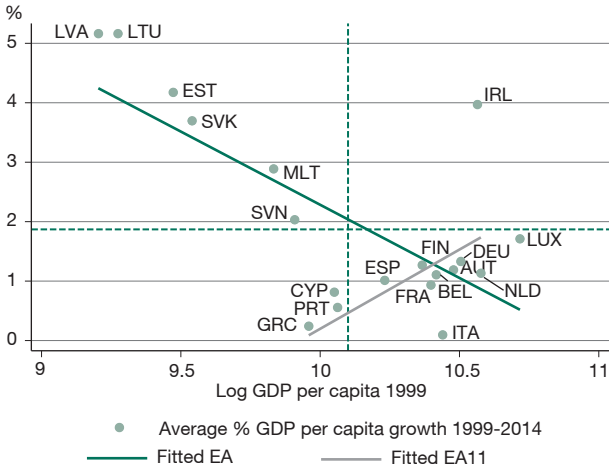
Alessandro Turrini, European Commission, Brussels, Belgium.

Figure 1
Nominal convergence in the euro area



Source: AMECO database, European Commission.

Figure 2
Real convergence in the euro area



Source: Penn World Tables 9.1.

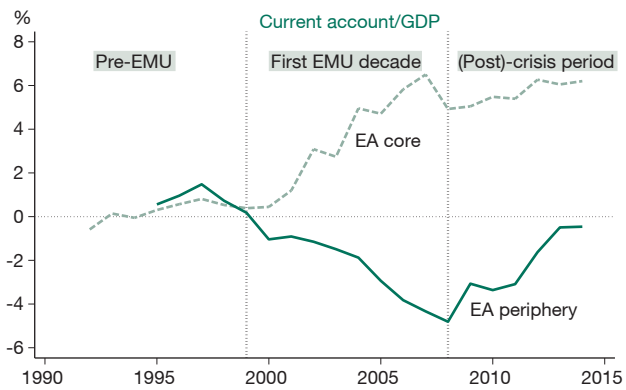
Luxembourg, see Figure 2), and divergent patterns became predominant in the years following the crisis.[1]

Convergence patterns in the euro area have been closely connected to dynamics in capital flows and current account balances. In the run-up to the EMU, capital flew from countries in the euro area 'core' to the 'periphery'. Current account divergences were generally seen as supportive of the convergence process as capital moved from relatively high-income countries to relatively low-income ones (Blanchard and Giavazzi, 2002). The global financial crisis, however, implied a reappraisal of risk and a sudden withdrawal of capital from the periphery. 'Sudden stops' in current accounts led to a major contraction in domestic demand and a reversal in the convergence process (Diaz del Hoyo, 2017).

The dispersion in external positions was mirrored in diverging unemployment trends (see Figures 3 and 4). Between 1999 and 2007, the periphery was in a relatively strong cyclical position resulting in falling unemployment rates. Over the same period, cyclical positions were weaker in the core and unemployment increased between 2002 and 2005. This pattern reversed in the post-crisis period, when current account reversals were followed by surging unemployment in the periphery.

1 See also ECB (2015).

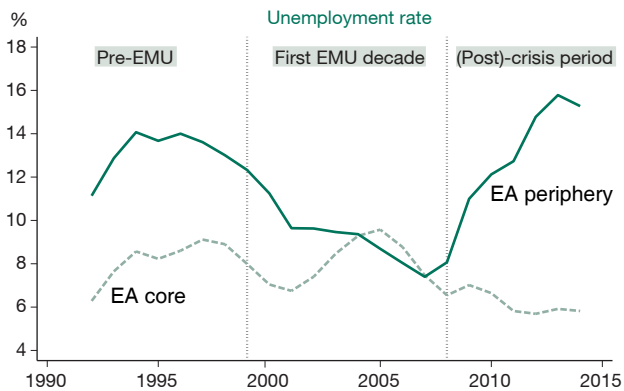
Figure 3
External balances in the euro area



Note: Core includes BE DE LU NL AT FI. Periphery includes EE IE EL ES FR IT CY LV LT MT PT SI SK. Core and periphery euro area countries grouped according to their external position over the 1999-2009 period (GDP weights).

Source: Eurostat.

Figure 4
Unemployment in the euro area



Note: Core and periphery defined as before.

Source: Eurostat.

These developments had implications not only for the cycle but also for the growth potential. Prior to the crisis, the flow of investment to the periphery was channelled primarily to the non-tradable sector. This meant that persistent real interest rate differentials were reflected not only in the differences in cyclical positions, according to the Walters critique of the EMU, but also in divergent economic structures, notably the composition of output between tradables and non-tradables (Buti and Turrini, 2015).[2] The growth of the non-tradable sector in the euro area periphery – in some cases the counterpart of large-scale housing market bubbles – was generally accompanied by cost competitiveness losses and worsened the prospects for a more durable growth engine based on exports.

The aim of this paper is to test the hypothesis that pre-crisis macroeconomic imbalances had implications for real convergence within the euro area. Previous work has analysed the link between business cycle synchronisation and variables related to macroeconomic imbalances.[3] The present instead focuses on the role of imbalances in explaining the pace of convergence.

In doing that, this paper goes a step further than existing companion papers in several respects.[4] First, it assesses convergence patterns across the euro area against the experience of other non-EU and non-euro area benchmark country groups. To this purpose, a large panel including advanced and emerging economies is considered. Second, it explores convergence along different dimensions, not only in terms of per capita GDP but also in terms of total factor productivity (TFP). Both 'sigma' and 'beta' convergence are analysed. Third, it relates deviations from expected convergence paths to a number of variables associated with the presence of macroeconomic imbalances, including government and private debt, current account balances, net international investment positions (NIIP), credit flows and growth in the non-tradable sector.

Real convergence in the euro area

The dataset used in this analysis is a large panel of advanced and emerging economies, obtained mostly from the Summers–Heston Penn World Tables (PWT) version 9.1.[5] These contain comparable information on variables expressed in purchasing power parity for many countries and years.

Before turning to evidence on real convergence across the euro area, the notions of beta convergence and sigma convergence are recalled.

Unconditional beta convergence is observed when the growth rate of real per capita GDP is negatively related to the starting level of real per capita GDP.

Conditional beta convergence is observed when the growth rate of real per capita GDP is negatively related to the initial level of real GDP per capita, taking into account the impact of other variables that may affect growth. Formally,

$$\Delta logY_{it} = \alpha + \beta\, logY_{it-1} + \zeta Z_{it} + u_{it} \qquad (1)$$

where, the average growth rate of country i over a time period t is approximated by the log difference of GDP per capita, $\Delta logY_{it}$, and is put in relation with the level of GDP per capita at the start of the period Y_{it-1}, a set of Z_{it} conditioning variables, and a random disturbance u_{it}.

Beta convergence implies that poorer economies eventually catch up with richer countries by growing faster, hence parameter β in equation (1) is expected to be negative. Moreover, conditional beta convergence implies that countries converge to steady-state growth rates that may differ depending on country characteristics.

The concept of *sigma convergence* relates to the cross-sectional dispersion of income. There is sigma convergence if income dispersion across a specific group of countries declines over time. Abstracting from the set of conditioning variables Z, equation (1) can be rewritten as follows (see Barro Sala-i-Martin, 2004).

$$\Delta logY_{it} = \alpha - (1 - e^{-\lambda})\, logY_{it-1} + u_{it} \qquad (2)$$

If $\lambda > 0$, equation (2) implies that poor countries grow faster than rich ones (i.e. there is beta convergence). Defining the variance of $logY_{it}$ as σ_t^2, equation (2) also implies

$$\sigma_t^2 = e^{-2\lambda}\, \sigma_{t-1}^2 + \sigma_t^2, \qquad (3)$$

where σ_t^2 is the variance of u_{it}. Equation (3) implies that beta convergence is a necessary but not sufficient condition for sigma convergence (as $\lambda > 0$ implies $e^{-2\lambda} < 1$).

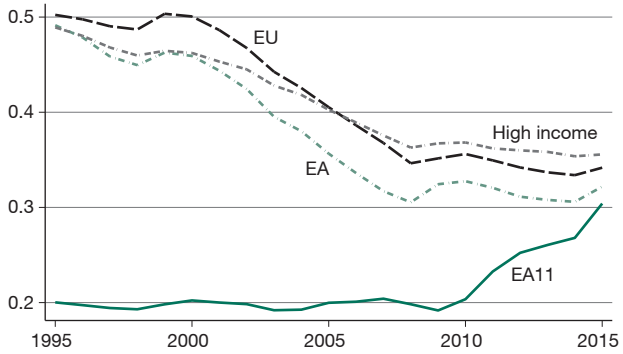
2 Buti and Turrini (2010) argue that the economic structure shapes the way the economy responds to shocks. For instance, the excessive weight of the construction sector left several economies particularly vulnerable to the credit crunch experienced in the global financial crisis.

3 See Inklaar et al. (2008) and Lukmanova and Tondl (2017).

4 See Sondermann (2014), Estrada and López-Salido (2013), ECB (2015) and Diaz del Hoyo et al. (2017).

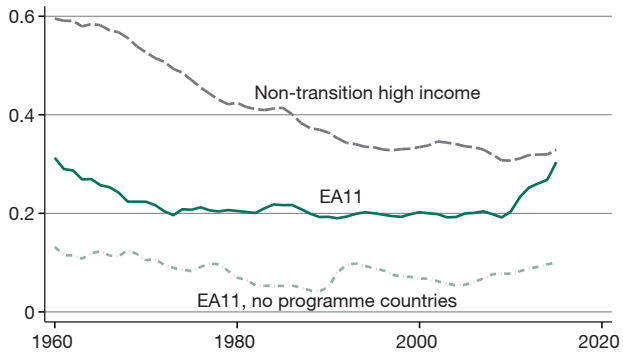
5 See Inklaar and Woltjer (2019).

Figure 5
Sigma convergence: Standard deviation of log GDP per capita, 1995-2015



Sources: Penn World Tables 9.1.

Figure 6
Sigma convergence: Standard deviation of log GDP per capita, 1960-2020



Sources: Penn World Tables 9.1.

Moreover, the fall in dispersion is stronger the higher the existing degree of dispersion σ^2_{t-1}.

Sigma convergence

To assess sigma convergence, Figures 5 and 6 show the standard deviation of log GDP per capita for the euro area, the EU, the EA11 and a broader group of high-income countries. Figure 5 displays data from 1995 to avoid missing data for former transition countries, while Figure 6 has a longer horizon by excluding transition countries from the country groups. The dynamics of income dispersion indicate that sigma convergence has been faster in the EU and the euro area than among other high-income countries. This confirms previous studies that regard the EU as a 'convergence club'.[6] However, the group of EA11 countries displays convergence mostly up to the mid-1970s (when the longer horizon is considered) and divergence after the global financial crisis, particularly when countries that underwent macroeconomic adjustment programmes in the aftermath of the global financial crisis are included.

In the neoclassical growth model (Solow, 1956; Swan, 1956), output convergence is driven by convergence in the capital stock. Incentives to invest are higher in countries with a relatively low capital stock and higher marginal productivity of capital. Figure 7 looks at convergence patterns in the capital stock per capita to check whether the neoclassical model prediction matches the data. The graph compares the EA11 group and the larger group of advanced non-transition economies since 1960 and the euro area countries since 1995 (due to missing data). It appears that convergence is much more visible when looking at capital per capita rather than GDP per capita, including for the EA11 group. This confirms the standard mechanism of convergence from neoclassical growth theory.

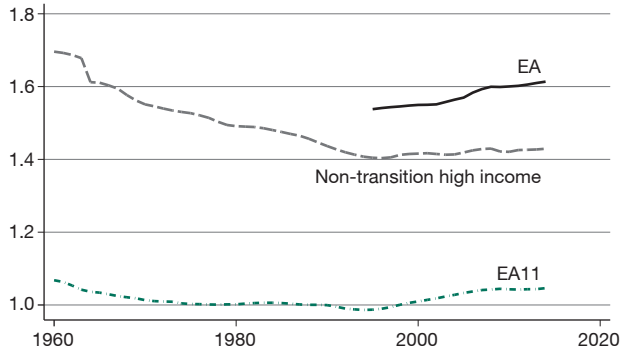
Dynamics in GDP per capita may differ from those in capital per capita because of the impact of TFP.[7] In modern growth theory, where TFP growth is the result of a process of innovation and gradual adoption of new vintage technologies, income convergence can also be driven by TFP convergence (Aghion and Howitt, 2006). Countries further away from the frontier have more room to grow by adopting better technologies that already exist. Figure 8 shows the standard deviation of TFP in the EA11. Some limited convergence seems to have played a role up until the 1990s. However, TFP dispersion fluctuated afterwards. There is more evidence of steady convergence for the broader set of advanced economies as well as for the euro area, despite the short time series available for the latter.

A comparison of sigma convergence for GDP per capita with that of GDP per employee is provided in Figure 9 for the EA11 group. The graph shows quite clearly that while the dispersion in the two variables co-moved quite closely over the whole period starting from the 1960s, an upward spike occured in GDP per capita after the crisis, whereas evidence of divergence is much more limited for the GDP per employee. This finding permits a better interpretation of the divergence process in the post-crisis period as a

6 See Böwer and Turrini (2010).

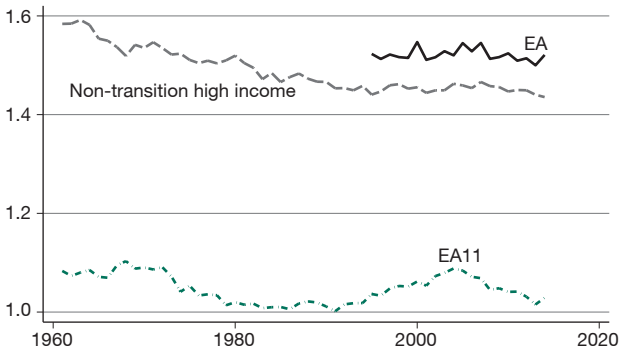
7 Using a standard Cobb-Douglas production function, $y = Ak^{\alpha}$, where y and k stand, respectively, for output and capital per worker and A is TFP.

Figure 7
Sigma convergence: Standard deviation of log capital per capita



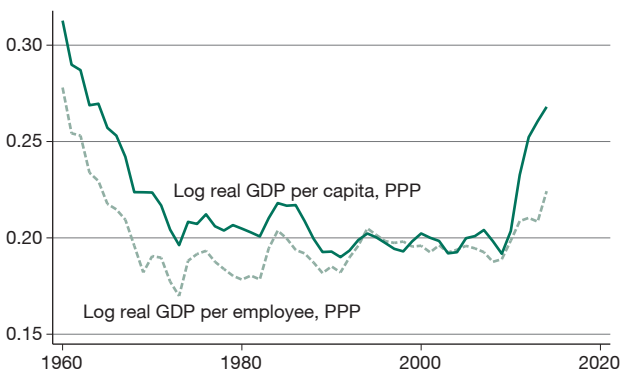
Sources: Penn World Tables 9.1.

Figure 8
Sigma convergence: Standard deviation of log TFP



Sources: Penn World Tables 9.1.

Figure 9
Sigma convergence: GDP per capita vs GDP per employee – standard deviations, EA11



Sources: Penn World Tables 9.1.

phenomenon that was not caused by strong divergence in capital per employee or TFP, but rather by a very large divergence in employment rates.

Overall, there is evidence of sigma convergence in the euro area occurring at rates similar to those observed across other country groups. For the EA11, sigma convergence appears to have occurred slowly up until the mid-1970s. The relatively slow rate of convergence in GDP per capita is partly due to the EA11 group being highly homogeneous in terms of income conditions. An additional factor that underpins the stall in income convergence is the lack of TFP convergence in recent decades. The divergence in income per capita in the post-crisis period is mainly linked to divergent employment rates. This phenomenon is likely transitory and concentrated in the few countries most affected by post-crisis recessions, induced by the unwinding of macroeconomic imbalances and debt crises.

The absence of sigma convergence does not imply absence of beta convergence. In other words, it does not exclude that in general countries with relatively low income per capita have witnessed faster growth, as the occurrence of certain types of shocks can produce dispersion.

Beta convergence

Beta convergence takes place when countries with a lower income per capita grow faster over a medium- to long-term period. Figure 2 shows prima facie evidence of beta convergence in the euro area. A more rigorous analysis also needs to take into account that growth rates across countries not only vary because of different initial income conditions, but also because of other factors that explain long-term growth performance. In this respect, growth regressions are estimated to take these variables into account as well. Evidence on convergence obtained from growth regressions are interpreted as a test for 'conditional' convergence. In addition to initial income per capita, growth rates are put in relation to other possible explanatory variables by means of a panel regression that exploits both cross-sectional and time-series variation. More specifically, the regression estimated is as follows:

$$\Delta_5 logY_{it} = \alpha + \beta logY_{it\text{-}5} + \zeta Z_{it} + \gamma_i + \delta_t + \varepsilon_{it}\,, \qquad (4)$$

where the dependent variable Y_{it} is either output per capita (in PPP) or TFP and Z_{it} is a vector of control variables. The subscript i refers to countries, and t is the time period over which growth rates are computed. Following standard practice in the estimation of growth regressions

Table 1
Conditional beta convergence: Output per capita

Dep var: GDP p.h. growth, 5-year averages	(1) All sample	(2) All sample, IV	(3) EU	(4) EA	(5) EA11	(6) EU>1999	(7) EA>1999	(8) EA11>1999	(9) EU>2007	(10) EA>2007	(11) EA11>2007
Ln GDP p.h. PPP, 5 lags	-2.266**	-2.566**	-3.072**	-2.802**	-0.749	-3.905**	-4.149**	-2.291+	-0.547	-0.423	7.148
	[-6.80]	[-7.04]	[-6.91]	[-6.43]	[-0.86]	[-7.97]	[-7.11]	[-1.86]	[-0.56]	[-0.53]	[1.40]
Human capital, 5 lags	0.436	0.566	0.366	0.479	-0.317	1.355**	1.541**	1.311+	2.293**	2.655**	-1.434
	[1.16]	[1.61]	[1.11]	[1.47]	[-0.47]	[2.99]	[3.34]	[2.11]	[3.84]	[3.94]	[-0.47]
I/GDP, avg	10.422**	15.589**	8.211**	5.003+	2.846	2.559	3.747	9.090	5.976	14.611	5.449
	[6.76]	[7.48]	[3.66]	[1.90]	[0.86]	[0.46]	[0.54]	[0.69]	[0.55]	[1.46]	[0.27]
Pop growth, avg	-0.449*	-0.404*	-0.437+	-0.583*	-0.051	-0.387	-0.415	0.173	-1.934**	-2.516**	-0.750
	[-2.27]	[-2.17]	[-1.98]	[-2.72]	[-0.17]	[-1.48]	[-1.44]	[0.31]	[-2.92]	[-6.34]	[-0.20]
Economic freedom, avg	0.514**	0.470**	0.945**	0.498	0.344	1.303*	2.398**	1.740+	3.356**	3.177*	3.089
	[3.71]	[3.45]	[3.53]	[1.25]	[0.64]	[2.62]	[3.52]	[1.97]	[2.87]	[2.29]	[1.18]
Openness, avg	0.794*	0.565+	0.870+	1.350**	2.386	1.445**	1.316*	1.670	2.161**	2.216*	-1.376
	[2.29]	[1.81]	[1.78]	[2.98]	[1.64]	[3.07]	[2.59]	[1.12]	[3.06]	[2.41]	[-0.54]
Observations	516	516	203	143	99	84	57	33	28	19	11
Countries	66	66	28	19	11	28	19	11	28	19	11
R-squared	0.41	0.40	0.57	0.64	0.62	0.70	0.74	0.54	0.71	0.83	0.80

Note: Constant, time effects and regional effects included. Robust (clustered) t-statistics in brackets. **p<0.01, *p<0.05, +p<0.1. I/GDP instrumented with investment deflator (5 lags). IV tests: Kleibergen-Paap rk Wald F statistic: 66.2; Exogeneity test (Hausman type) p-value: 0.3434.

Source: Authors' estimation.

with panel data, annual observations are converted into averages over five-year, non-overlapping sub-periods, in order to avoid short-term disturbances (see Barro Sala-i-Martin, 2004).

The control variables capture factors that affect steady-state growth in the neoclassical growth model. Population growth accounts for the dilution of capital stock per capita and is associated with an expected negative coefficient. The share of investment in GDP serves as a proxy for the savings rate, which should be associated with faster capital accumulation (positive coefficient expected). A measure of human capital accumulation (the PWT 9.1 index of human capital based on years of schooling and return to education) is also included to account for investment in skills yielding improvements in labour input (a positive coefficient is expected).[8] Two additional variables aim to control for factors that may affect TFP growth: openness to trade (imports plus exports as a share of GDP) accounts for the fact that open economies can import technology and know-how (Edwards 1996; Frenkel and Romer, 1999); quality of institutions, as measured by the Fraser index of economic freedom, takes into account the fact that good institutions are associated with stronger incentives to innovate and take risks (Glaeser et al., 2004). The terms γ and δ are region and time effects, respectively. The inclusion of fixed effects capturing main world regions permits the control of unobserved factors specific to geographical areas without the loss of cross-section variation implied by a full set of country fixed effects (Temple, 1999).

The estimation results are shown in Table 1. Results are displayed for the full sample of 66 advanced and emerging economies and for country sub-samples and sub-periods.[9] The control variables generally have the expected signs, even though some coefficients are not significant for all regions and periods. A well-known difficulty when estimating growth regressions is the possible endogeneity of investment, as this variable not only affects growth, but is also driven by expected growth rates. The issue does not seem to be relevant in these estimates, however, as the coefficient of the investment variable is qualitatively

8 See Mankiw et al. (1992).

9 Albania, Argentina, Australia, Austria, Belgium, Bulgaria, Brazil, Canada, Switzerland, Chile, China, Colombia, Costa Rica, Cyprus, Czechia, Germany, Denmark, Egypt, Spain, Estonia, Finland, France, the United Kingdom, Greece, Guatemala, Hong Kong, Croatia, Hungary, Indonesia, India, Ireland, Iceland, Israel, Italy, Japan, Korea, Sri Lanka, Lithuania, Luxembourg, Latvia, Morocco, Mexico, Malta, Malaysia, the Netherlands, Norway, New Zealand, Pakistan, Peru, the Philippines, Poland, Portugal, Romania, Russia, Singapore, Serbia, Slovakia, Slovenia, Sweden, Thailand, Tunisia, Turkey, Ukraine, Uruguay, the United States, South Africa. Data are available at the earliest for 1960, and the latest data included in the regression sample are for year 2014 (last five-year complete cycle), but the sample is unbalanced.

Table 2
Conditional beta convergence: TFP

Dep var. TFP growth	(1) All sample	(2) All sample	(3) EU	(4) EA	(5) EA11	(6) EA 1999-2007	(7) EA>2007	(8) EA11, 1960-2007	(9) EA11>2007
Log TFP level PPP, 5lag	- 1.537**	-1.499**	-2.064**	-2.058*	0.500	-3.900**	-1.983+	0.035	3.539+
	[-4.88]	[-4.73]	[-4.41]	[-2.76]	[1.04]	[-5.10]	[-1.98]	[0.07]	[2.06]
Avg. schooling, 5 lags	0.337+								
	[1.75]								
I/GDP, avg	-0.496								
	[-0.45]								
Economic freedom, avg.	0.201*	0.241**	0.386**	0.340	0.880**	0.389	2.580+	0.845**	1.827+
	[2.09]	[2.93]	[3.01]	[1.31]	[4.06]	[0.98]	[2.05]	[4.19]	[1.94]
Openness, avg.	0.153								
	[0.59]								
Observations	502	502	203	143	99	38	19	88	11
Countries	64	64	28	19	11	19	19	11	11
R-squared	0.25	0.25	0.30	0.36	0.55	0.64	0.35	0.55	0.81

Note: Constant, time effects and region effects included. Robust (clustered) t-statistics in brackets. ** p<0.01, * p<0.05, + p<0.1.

Source: Authors' estimation.

unchanged when using instrumental variables estimation, using the price of investment goods as an instrument for investment, as is customary in related literature.[10]

For the whole sample of countries, there is evidence of beta convergence as the coefficient on the logarithm of the initial GDP per capita is negative and statistically significant, providing therefore support to the catching-up hypothesis. This is also the case for the EU (column 3) and for the euro area (column 4), but not for the EA11 (column 5). Looking only at the period after euro adoption (columns 6-8), the same results still hold for the euro area, the EU and the EA11. However, looking at the period after 2007, which includes mostly the global financial crisis and the European sovereign debt crisis, evidence of convergence for the euro area and the EU becomes weaker (columns 9 and 10). In the case of the EA11, after 2007 the evidence points to divergence rather than convergence, as the coefficient for initial per capita income becomes positive, although insignificant in column 11.[11]

Growth regressions have also been run to test for convergence in TFP growth. Table 2 shows the estimation results. Initial TFP, human capital, investment, institutions (Fraser index) and openness have all been considered as possible control variables. Initial TFP is expected to be negatively associated with TFP growth as laggard countries have more room to grow by adopting existing technologies. Human capital controls for the fact that countries with a more educated population tend to innovate more. The variable that measures institutional quality accounts for different incentives for innovation and entrepreneurship. Openness controls for the degree of impediments to technology absorption. Apart from initial TFP levels and institutions, other control variables appear to be statistically insignificant in explaining TFP growth (column 1). Once restricting the specification to significant variables in column 2, the coefficient for initial TFP levels are barely affected. Columns 3-9 therefore use this restricted specification, controlling only for initial TFP and institutions captured by the Fraser index.

Results provide evidence that TFP convergence exists among the whole sample of countries (columns 1 and 2), as well as for the EU and the euro area (columns 3 and 4). There is instead no evidence of convergence for the EA11, and TFP appears to diverge over the period following the financial crisis (columns 5, 8 and 9). Conversely, there is evidence of convergence across the EU as a

10 Exogeneity tests also indicate that investment can be treated as exogenous. Tests for exogeneity and validity of instruments are reported in Table 1.

11 The estimation results for the shorter sample starting after 2007 are only indicative as the number of observations is small. In particular, inference for this sample should be viewed with caution throughout the analysis.

Figure 10
Actual growth rates in GDP per capita and predictions from growth regressions

Sources: PWT 9.1 and authors' estimations.

whole even for the post-crisis sub-sample (columns 6 and 7).

Deviations from convergence paths: A role for macroeconomic imbalances?

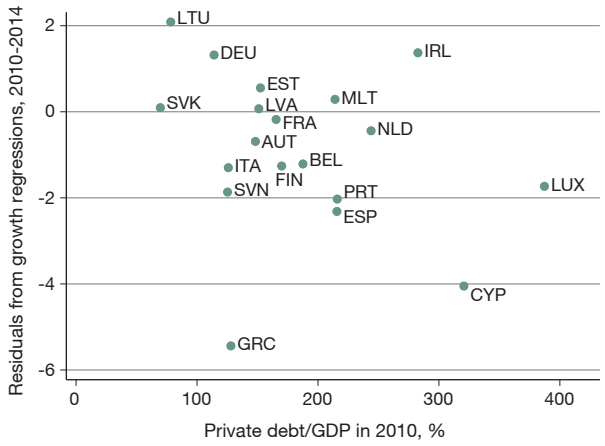
What factors could have been responsible for the lack of convergence across the euro area? Did macroeconomic imbalances play a role? To answer these questions, a first necessary step is to construct a measure of the 'convergence gaps', namely quantify the gap between actual growth and the growth paths to steady-state growth rates expected on the basis of the relevant characteristics of countries, i.e. the initial level of output per capita and all other conditioning factors. These paths are obtained using the prediction from the regression estimated on the largest panel of countries and sample period (column 1, Table 1 for GDP and column 2, Table 2 for TFP). The predictions are based on the full sample to obtain more robust and less distorted estimates. As an illustration, Figure 10 plots actual GDP growth with the predicted growth paths for GDP for euro area countries over five-year periods.

The second step is to relate deviations of per capita GDP (or TFP) from these predicted convergence paths to variables reflecting the presence of macroeconomic imbalances. Figures 11 and 12 indicate some correlation between deviations and stocks of private debt and current accounts, respectively. To simultaneously take into account the role of different sources of macroeconomic imbalances, a multivariate regression analysis is carried out. To formally test for the role that imbalances have played in the convergence process, regression (5) is estimated using OLS:

$$\varepsilon_{it} = \alpha + \lambda IMB_{it\text{-}5} + \gamma_i + \delta_t + u_{it}\,, \qquad (5)$$

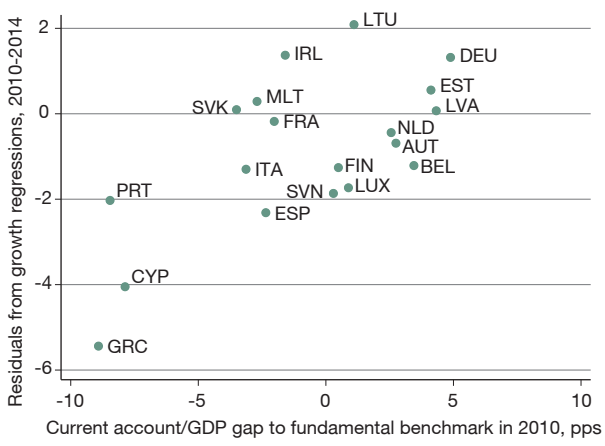
where ε_{it} measures the convergence gap from GDP per capita or TFP regressions (i.e. the residuals obtained from the regressions estimated on the full sample, see Table 1 and Table 2), while *IMB* stands for a set of variables associated with macroeconomic imbalances. Six variables reflecting possible macro-economic imbalances are considered: (i) the initial private debt-to-GDP ratio; (ii) the initial government debt-to-GDP ratio; (iii) the initial net international investment position (NIIP) in percent of GDP; (iv) credit to the private sector as a share

Figure 11
Convergence gaps and private debt stocks



Source: Eurostat and authors' estimations.

Figure 12
Convergence gaps and current accounts



Source: Eurostat and authors' estimations.

of GDP; (v) the current account gap; and (vi) the share of construction in total value added, as a proxy for changes in the weight of the non-tradable sector.[12] The credit variable and the construction share are both demeaned by the country long-term average to allow for different economic structures. The current account gap is estimated as the difference between the actual current account balance as a share of GDP and the one that can be explained by the fundamentals of the economy (current account norm), following the methodology proposed in

12 In Lukmanova and Tondl (2017), the excess weight of non-tradables is captured by the growth in unit labour costs. The two variables correlate and the weight of the construction sector in total gross value added is available for a broader set of countries.

Table 3
Deviations from convergence paths and macroeconomic imbalances

	GDP growth residuals				TFP growth residuals			
	(1) EA>1999	(2) Non-EA>1999	(3) EA>2007	(4) Non-EA>2007	(5) EA>1999	(6) Non-EA>1999	(7) EA>2007	(8) Non-EA>2007
Private debt/GDP, 5 lags	-0.009** [-3.78]	-0.014** [-4.13]	-0.014** [-3.33]	-0.001 [-0.18]	-0.005* [-2.53]	-0.009** [-2.76]	-0.007* [-2.34]	0.001 [0.32]
Gov. debt/GDP, 5 lags	-0.029** [-5.67]	-0.005 [-1.35]	-0.035* [-2.31]	-0.000 [-0.05]	-0.025** [-5.39]	-0.005 [-1.57]	-0.027+ [-2.09]	0.001 [0.21]
NIIP/GDP, 5 lags	0.009* [2.72]	-0.002 [-0.79]	0.015+ [1.97]	-0.001 [-0.15]	0.006+ [1.99]	-0.000 [-0.12]	0.008 [1.27]	0.002 [0.76]
Credit flow/GDP, 5 lags (relative to country long-term average)	0.018+ [2.00]	0.025+ [1.78]	-0.012 [-0.63]	-0.017 [-0.54]	0.016 [1.53]	0.002 [0.23]	0.006 [0.44]	0.001 [0.07]
Current account gap, 5 lags	0.018 [0.56]	0.092+ [1.94]	0.033 [0.34]	-0.030 [-0.34]	-0.000 [-0.01]	0.048 [1.64]	0.005 [0.06]	-0.030 [-0.80]
Construction VA share, 5 lags (relative to country long-term average)	-0.579** [-3.21]	-0.228+ [-1.75]	-0.929** [-3.85]	-0.317 [-1.39]	-0.500** [-3.58]	-0.133 [-0.96]	-0.623** [-2.88]	0.047 [0.39]
Observations	53	93	19	32	53	93	19	32
Countries	19	32	19	32	19	32	19	32
R-squared	0.53	0.36	0.72	0.36	0.50	0.26	0.62	0.41

Note: Robust t-statistics in brackets. Constant, time effects and regional effects included. ** p<0.01, * p<0.05, + p<01

Source: Eurostat and authors' estimation.

Coutinho et al. (2018). The main data sources are Eurostat and AMECO. For non-EU countries, these sources were complemented with data from the World Economic Outlook and the Bank of International Settlements databases.

Table 3 shows the results, displayed separately for the euro area and for a comparison group consisting of all countries in the sample except the euro area. It also shows two sample splits in time: after 1999, the year when the euro was introduced, and after 2007, i.e. after the eruption of the financial crisis. Results are displayed both for convergence gaps relating to GDP per capita growth and to TFP growth.

For the sample starting in 1999, private debt, government debt, NIIP and the share of construction are significant in explaining euro area GDP per capita convergence gaps. The corresponding coefficients have the expected signs. By looking at results for non-euro area countries, a loss in significance is observed for all variables except private debt, while current accounts acquire some explanatory power. Results remain similar for the euro area when restricting the analysis to the post-crisis period. Wald tests fail to reject the null hypothesis that the estimated coefficients for the two sub-periods are equal at the 95% confidence level. Conversely, for non-euro area countries, the significance is lost for all variables.

Overall, this evidence indicates that high private debt is significantly associated with subsequent growth below the one expected on the basis of fundamentals. This result appears robust across country groups and time. For the euro area, high public debt and a high weight of non-tradables in output also seem important in driving growth below expected paths. As for external imbalances, the results are less robust. Deviations from TFP growth paths are confirmed in the euro area especially the role of private debt and the tradable sector, while for non-euro area countries, a significant role is found only for private debt.

The above results suggest an association between convergence gaps and macroeconomic imbalances, and that this association presents particular features in the case of euro area countries. The relatively stronger role of government debt in explaining convergence gaps of euro area countries is consistent with the fact that the probability of bond market tensions increases with the size of debt. As government debt is higher on average in euro area countries and since bond market tensions affect growth notably via reduced credit availability linked to sovereign-bank doom loops, one should expect a stronger impact of government debt on subsequent convergence paths for euro area countries.[13] Current accounts seem instead less important for euro area countries in explaining deviations from convergence paths. A possible interpretation is that the liquidity provision by the European System of Central Banks helps mitigate the real effects of current account sudden stops (Merler and Pisani-Ferry, 2012). Finally, convergence paths among euro area countries appear to be comparatively more related to the growth in the non-tradable sector. The narrowing of interest rate differentials in the euro area periphery, as a result of the monetary union, was matched by capital inflows largely channelled into the construction sector and other non-tradable activities. The fact that resources were largely absorbed in non-tradable activities meant the euro area periphery had less room to grow out of exports when domestic demand became constrained by deleveraging needs. Moreover, as TFP growth is generally faster in the tradable sector, the growth of construction and non-tradable activities was associated with subsequent disappointing growth rates in TFP.

Conclusions

This paper reviews convergence patterns across the euro area and analyses the role of macroeconomic imbalances in providing a possible explanation for lack of convergence in the post-crisis period. The analysis shows that convergence in the euro area was similar to that observed among other country groups, while convergence within the EA11 (founding members excluding Luxembourg) has been lacking since the 1980s, in light of persistent absence of TFP convergence and partly associated with the fact that this is an already relatively homogeneous group in terms of per capita income. Post-crisis divergent employment rates reinforced this pattern.

Our analysis also shows that deviations from expected convergence paths are associated with a number of initial conditions, which summarise the presence of macroeconomic imbalances – private debt in particular. Most interestingly, convergence gaps within the euro area seem to be affected by a number of peculiar factors, notably government debt and the share of the non-tradable sector on value added, which do not play a significant role in a comparison group. Convergence gaps across euro area countries also appear to have been comparatively less affected by external imbalances, possibly in light of the more limited extent of current account reversals within the euro area.

13 For evidence on the relation between government debt and credit risk on government bonds, see Bernoth et al. (2012). De Grauwe and Ji (2013) also find that bond spreads are more sensitive to investor sentiment in countries of a monetary union than in stand-alone countries.

Overall, the analysis underscores the importance of conditions ensuring macro stability and resilience for economic convergence. Preventing the accumulation of excessive private debt is particularly important both inside and outside the euro area. In addition, there is a specific role for maintaining prudent levels of public debt and running prudent fiscal policies within the euro area. An important policy implication is that sustainable convergence requires addressing legacy imbalances.

References

Aghion, P. and P. Howitt (2006), Joseph Schumpeter lecture appropriate growth policy: A unifying framework, *Journal of the European Economic Association*, 4(2-3), 269-314.

Barro, R. J. and X. Sala-i-Martin (2004), *Economic Growth*, MIT Press.

Blanchard, O. and F. Giavazzi (2002), Current account deficits in the euro area: the end of the Feldstein-Horioka puzzle?, *Brookings Papers on Economic Activity*, 2, 148-186.

Böwer, U. and A. Turrini (2010), EU Accession: A Road to Fast-track Convergence?, *Comparative Economic Studies*, 52, 181-205.

Buti, M. and A. Turrini (2015, 17 April), Three waves of convergence. Can Eurozone countries start growing together again?, *VoxEU*, https://voxeu.org/article/types-ez-convergence-nominal-real-and-structural (21 August 2020).

Coutinho, L., A. Turrini and S. Zeugner (2018), Methodologies for the Assessment of Current Account Benchmarks, *European Economy Discussion Paper*, 086.

De Grauwe, P. and Y. Ji (2013), Self-fulfilling crises in the Eurozone: An empirical test, *Journal of International Money and Finance*, 34, 15-36.

Diaz del Hoyo, J.-L., E. Dorrucci, F. F. Heinz and S. Muzikarova (2017), Real convergence in the euro área: a long-term perspective, *European Central Bank Occasional Paper*, 203.

ECB (2015), Real convergence in the euro area: evidence, theory and policy implications, *European Central Bank Economic Bulletin*, 5.

Edwards, S. (1998), Openness, productivity and growth: what do we really know?, *The Economic Journal*, 108(447), 383-398.

Estrada, Á. and D. López-Salido (2013), Patterns of convergence and divergence in the euro area, *IMF Economic Review*, 61(4), 601-630.

Frankel, J. A. and D. H. Romer (1999), Does trade cause growth?, *American Economic Review*, 89(3), 379-399.

Glaeser, E. L., R. La Porta, F. Lopez-de-Silanes and A. Shleifer (2004), Do institutions cause growth?, *Journal of Economic Growth*, 9(3), 271-303.

Inklaar, R. and P. Woltjer (2019), *What is new in PWT 9.1?*, University of Groningen.

Inklaar, R., R. Jong-A-Pin and J. de Haan (2008), Will business cycles in the euro area converge? A critical survey of empirical research, *Journal of Economic Surveys*, 22(2), 234-273.

Lukmanova, E. and G. (2017), Macroeconomic imbalances and business cycle synchronisation. Why common governance is imperative in the Eurozone, *Economic Modelling*, 62, 130-144.

Mankiw, N. G., D. Romer and D. N. Weil (1992), A contribution to the empirics of economic growth, *Quarterly Journal of Economics*, 107, 407-437.

Merler, S. and J. Pisani-Ferry (2012), Sudden stops in the euro area, *Bruegel Policy Contribution*, 2012/06.

Mundell, R. A. (1961), A theory of optimum currency areas, *The American Economic Review*, 51(4), 657-665.

Solow, R. (1956), A contribution to the theory of economic growth, *Quarterly Journal of Economics*, 70(1), 65-94.

Sondermann, D. (2014), Productivity in the euro area: any evidence of convergence?, *Empirical Economics*, 47(3), 999-1027.

Swan, T. (1956), Economic growth and capital accumulation, *Economic Record*, 32(63), 334-361.

Temple, J. (1999), The new growth evidence, *Journal of Economic Literature*, 37(1), 112-156.

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The Impact of Structural Funds on Regional Growth: A Panel Data Spatial Analysis

The European Union is one of the most prosperous areas of the world. However, huge disparities remain among its member states and regions. Given the persistence of those large regional inequalities, it is pertinent to analyse the efficiency of structural funds. In light of the neoclassical theory, these funds should contribute to improving the economic efficiency among the poorest regions, promoting regional convergence. However, the new economic geography states that structural funds may also facilitate the geographic concentration of economic activities, thus perpetuating regional imbalances. This article measures the impact of structural funds on regional convergence using a spatial econometric approach applied to an extended sample of European regions across a long time interval. Based on data for 96 EU regions during the period 1995-2009, a Durbin model with panel data is estimated in order to capture the effects of spatial dependence in both the lagged dependent variable and the independent variables. The results confirm the existence of conditional convergence and the importance of neighbourhood and spillover effects but do not detect the existence of positive impacts from structural funds.

Although the European Union is one of the most prosperous areas of the world, huge disparities remain among its member states and regions. With the entry of new members in 2004, this disparity increased significantly. In this sense, the economic and social cohesion became a fundamental objective of the EU, implying mechanisms of solidarity between regions.

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Regional imbalances were mentioned in the Treaty of Rome, founding the European Economic Community in 1957. However, the first fund to finance explicitly regional cohesion policies began in 1975 with the creation of the European Regional Development Fund. Later, in 1993, the Cohesion Fund was created to finance investment in the field of environment and transport networks in countries with GNP per inhabitant of less than 90% of the EU average (Hooghe, 1996). Since then, the financial envelope for the structural funds has increased, representing approximately €350 billion in the Community Support Framework 2007-2013 and €336 billion for the programming period 2014-2020 (about 33% the overall EU budget).

These funds are designed to support the goal of convergence, benefiting mostly poorer states or regions. As an exception, a smaller proportion of the funds targets, among other things, projects focused on the goals of competitiveness and employment, regardless of the level of wealth of the beneficiary country. Finally, an even smaller proportion of funds is driven to cross-border strategies (Vesmas, 2009).

The role of structural funds is at the centre of the discussion on the effectiveness of the EU regional policy to attain the desired goals of growth, competitiveness, economic, social and (more recently) territorial cohesion. In

fact, structural funds are aimed at increasing the returns on investment so as to promote faster growth, especially in the periphery (Marzinotto, 2012). Nevertheless, the empirical results on this matter are far from being unanimous.[1]

There are numerous studies analysing the convergence phenomenon among European regions, following different samples, technical approaches and, for diverse temporal sets, leading to different conclusions (Quah, 1996). The quality of data, particularly the categories of funds under study or whether they correspond to just commitments or real payments, affects the comparison among studies and increases the complexity of the subject. In addition, spillover effects highlighted in the new economic geography theory are not always properly treated, leading to biased results (see e.g. Dall'erba, 2005; Dall'erba and Le Gallo, 2008; Fingleton and López-Bazo, 2006).

Our work contributes to the deepening of current knowledge on the impact of structural funds for regional convergence within the European Union. In particular, the article seeks to address three questions: (i) Is there evidence of spatial dependence across European regions? (ii) How do spatial spillovers work, i.e. what kind of impact does a region's income have on nearby locations? (iii) How do structural funds operate, i.e. do they directly or indirectly impact a region's income level? In the latter, this may take place either through spatial spillovers from the funds received by neighbours (weighted spatial average of the funds) or due to the fact that funds affect nearby locations which, in turn, impact the development of a given region (weighted spatial average of income). To this purpose, we use a long series of data covering the period between 1995 and 2009 with structural funds actually spent (not just commitments) for a sample of 96 European regions. As stated by Elhorst (2003), panel data provide more information, increase the degrees of freedom and improve the quality of the estimation results. Knowing that regions interact with each other according to their degree of geographical proximity, our approach uses the techniques of spatial econometrics to model the spillover effects, using the estimator for panel data proposed by Elhorst (2003) and also used in Mohl and Hagen (2010).

Data and analytical framework

For the convergence analysis we focus on variables with increasing returns properties (like human capital and technology) and on the role of the EU financial support. Our goal is to analyse the determinants of real per capita income growth. For that purpose, the following explanatory variables are considered (in logs): real per capita income, annual population growth rate, the investment share, innovation proxied by the number of patents per million inhabitants, human capital measured by the ratio of population aged 25-64 with tertiary education and (interpolated) real per capita structural funds.

The choice of control variables in regional convergence studies is highly conditioned by the availability of data. Dall'erba and Le Gallo (2008) use the labour share in the agricultural sector as a proxy for the industrial structure. The number of patents per million inhabitants is considered in many studies as a proxy for human capital. Fingleton and López-Bazo (2006) use transport costs and the average temperature to capture social and cultural effects. In our empirical estimation, we add the investment share, following Mohl and Hagen (2010). With the increasing mobility of labour, the endogeneity of the population variable may be an issue. However, European data point to a reduced population mobility. According to Dijkstra and Gakova (2008) and based on EU datasets, only 0.98% of the working population moved across regions to look for work in 2006.

Cross-section studies have been considered the most fruitful estimation procedure of regional convergence. However, those procedures ignore the fact that cross-regional data are normally affected by spatial dependence leading to potential multicollinearity, endogeneity and specification errors (Islam, 1998; Mankiw et al., 1992). We use the Moran's I index (Moran, 1950) to measure spatial autocorrelation, given by

$$I = \frac{n}{\sum_{i=1}^{n}\sum_{j=1}^{n} w_{i,j}} \frac{\sum_{i=1}^{n}\sum_{j=1}^{n} w_{i,j}\,(x_i - \bar{x})\,(x_j - \bar{x})}{\sum_{i=1}^{n}\sum_{j=1}^{n} x_{i,t}\,x_{j,t}} \qquad (1)$$

where n represents the number of observations, x_i is the value of the variable analysed in region i, $\bar{x}$ is the average value for the variable and $w_{i,j}$ is the proximity criterion between locations i and j. The set of weights, $w_{i,j}$ form the weight matrix W, which can be constructed with different proximity criteria. As a benchmark, we use the normalised first order contiguity spatial weights matrix. Formally, we define our weight matrix as follows:

$$W = \begin{cases} w_{i,j} = 0 \text{ if } i = j \\ w_{i,j} = 1 \text{ if } d_{i,j} = 0 \\ w_{i,j} = 0 \text{ if } d_{i,j} > 0 \end{cases}$$

1 See Mohl and Hagen (2010) for a comprehensive empirical literature review about the impact of structural funds on economic growth.

The Moran scatterplot is associated with Moran's I statistic in order to detect the existence of spatial clusters, outliers and non-stationarity. In general terms, a given *x*-variable is standardised and plotted on the horizontal axis and the weighted average of *x* for the neighbours is on the vertical axis. The scatterplot contains four quadrants: one represents clusters of high-high values (top-right quadrant); another shows low-low values (bottom-left); and the remaining illustrate low-high and high-low values (top-left and bottom-right, respectively; Florax and Nijkamp, 2003).

Note that the Moran's I index is a general index that determines the overall trend for similar units to aggregate or not with each other within a population. But it tells us nothing about the specific location and distribution of these potential clusters. To overcome this weakness, Anselin (1995) proposed a local version of Moran's I statistic, which takes, for each region *i*, the following expression:

$$I_i = \frac{x_i}{\sum_i x^2_i} \sum_j w_{i,j} x_j$$

The observations *x* are centred on the average. Positive (negative) values of I_i indicate a concentration of similar (dissimilar) regions. A randomisation approach is used to generate a spatially random reference distribution to assess statistical significance (we use 999 permutations). Combining the information contained in the Moran scatter plot with the levels of significance of the local Moran index, we obtain the Moran significance map or LISA (Local Indicator of Spatial Association) cluster map in which only regions with significant LISA appear, with a specific colour for each quadrant localisation (Anselin et al., 2006).

Concerning the econometric estimation, the presence of spatial dependence refutes the independence of observations. In this sense, the validity of OLS estimators is undermined. Treatment of spatial autocorrelation can be accomplished in two ways: with a spatial lag in the dependent or independent variables (spatial lag model) or through the inclusion of autocorrelation in the disturbance term in which the spatial dependence is captured in the error term due to omitted variables or deficient functional form (spatial error model).[2] A third model (Anselin, 1988) is known as the spatial Durbin model and includes a spatial lag of both the lagged dependent variable and the explanatory variables.

The panel data approach is more adequate than cross-sectional analyses, allowing for individual and time effects as a way to control for unobserved heterogeneities across regions. Additionally, it makes it possible to integrate the process of convergence occurring over several consecutive time intervals.[3] The extension of spatial analysis into a dynamic version of panel data occurred first in the early 2000s (Elhorst, 2003).

Table 1
Moran's I statistic, 1995-2009

Variables (in logs)	Moran's I	Marginal probability
Real per capita income	0.4880	0.0000
Investment share	0.8115	0.0000
Population growth	0.3270	0.0000
Human capital	0.0548	0.3590
Patents ratio	0.7870	0.0000
Real per capita funds	0.7192	0.0000

Sources: Authors' calculation.

Agglomeration measurements

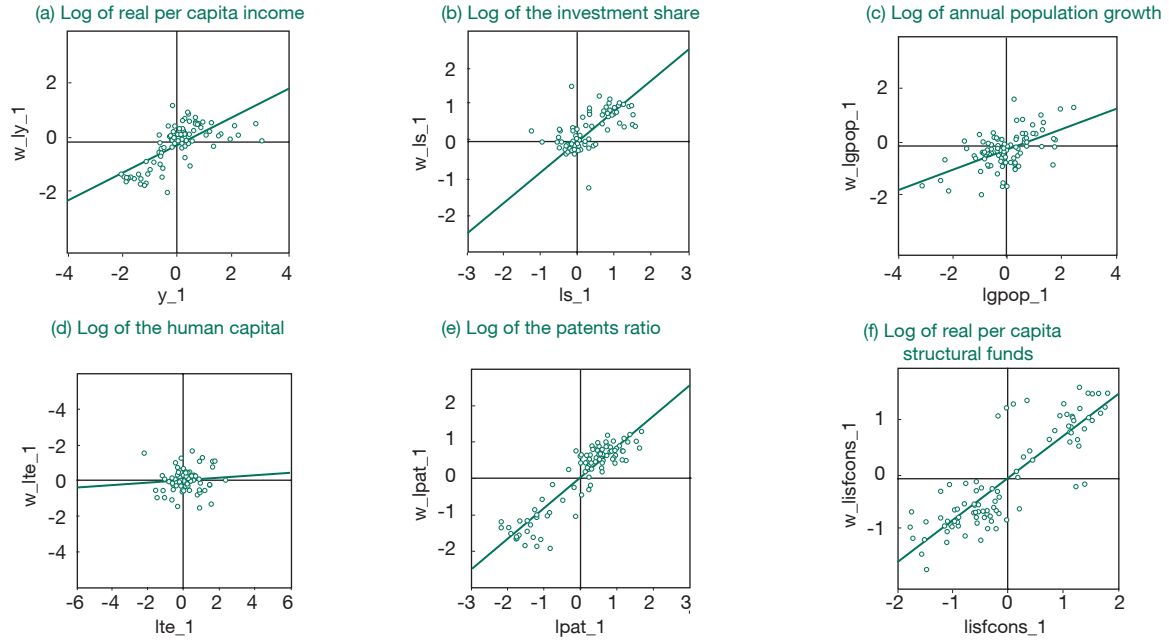
Table 1 displays the Moran's I statistic for the average values of our explanatory variables in the period 1995-2009. The Moran's I statistics for the main variables reveal positive and significant spatial correlation within the data except for the case of human capital. Figure 1 displays the Moran scatterplot for the average values of the variables. The predominance of regions in the top-right and bottom-left quadrants means positive spatial autocorrelation. With the exception of human capital (graph d), the Moran scatterplots confirm the pattern of positive autocorrelation for the remaining variables, with most regions falling between the high-high and low-low quadrants.

Figure 2 compares the quantile maps with the LISA cluster map for income per capita. Relative to per capita income, the quantile map clearly differentiates the north (richest regions) from the south (poorest regions). With the exception of the eastern regions of Germany, the decreasing gradient is clearly observed from east to west and from north to south. The LISA cluster map points to two large clumps of poor regions with strong spatial dependence, corresponding to the Iberian Peninsula (except the regions of Madrid, Catalonia and the Basque Country) and Greece. Interestingly, the high-high standard is not dominant, except for a few small spots in the UK and central Europe (East of England, Vlaams Gewest, Rheinland-Pfalz and Champagne-Ardenne).

2 For a comprehensive review about spatial econometrics, see for instance Anselin (1988), Le Gallo (2002) and LeSage (2008).

3 For the advantages of panel data methods over cross-section studies, see Billmeier and Nannicini (2007), Islam (2003), Mankiw et al. (1992), Temple (1999).

Figure 1
Moran scatterplots



Sources: Authors' illustration.

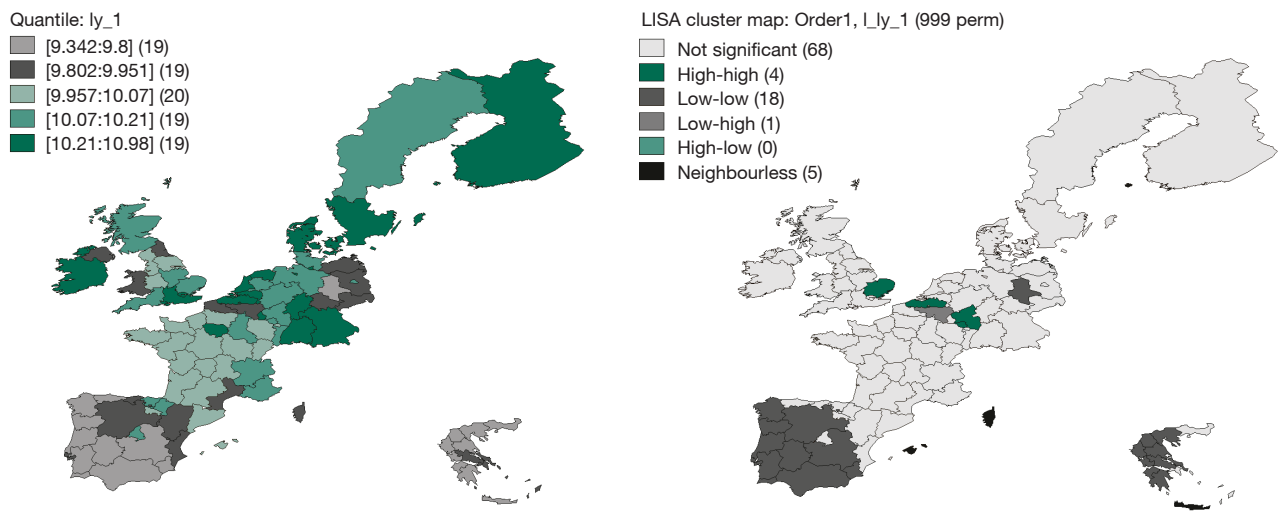
The exploratory spatial analysis with panel data

The present article estimates a model of conditional convergence at the regional level within 96 regions of the EU for the period 1995-2009. A non-spatial version of this model takes the following form:

$$gy_{i,t} = c_0 + c_1 \ln(y_{i,t-1}) + c_2 \ln(gpop_{i,t-1}) + c_3 \ln(s_{i,t-1}) + c_4 \ln(pat_{i,t-1}) + c_5 \ln(hc_{i,t-1}) + c_6 \ln(sf_{i,t-1}) + \alpha_i + \delta_t + u_{i,t} \quad (2)$$

The subscript *i* refers to the 96 regions (n observations) and *t* is the time index. Region and time specific fixed ef-

Figure 2
Quantile and LISA cluster maps for real per capita GDP (1995-2009 average)



Source: Authors' illustration.

fects are represented respectively by α_i and δ_t, and $u_{i,t}$ is the independent and identically distributed error term. The dependent variable is the growth of real per capita income, $gy_{i,t}$. The (lagged) right-hand side variables are the following: ($y_{i,t-1}$), real per capita income; ln($gpop_{i,t-1}$), annual population growth rate; ln($s_{i,t-1}$), the investment share; ln($pat_{i,t-1}$), innovation proxied by the number of patents per million inhabitants; ln($hs_{i,t-1}$), human capital measured by the ratio of population aged 25-64 with tertiary education; and ln($sf_{i,t-1}$), real per capita structural funds.[4] We opt for the fixed effects specification, based on the results from the Hausman's test (9863.98, p-value = 0.0000), indicating that the random effect model must be rejected in favour of the fixed effects model. Moreover, we follow Elhorst (2003), who considers the fixed effects model to be more appropriated with adjacent spatial units.

Table 2 confronts the pooled OLS estimation with the three versions of the fixed effects for the spatial model. We performed a likelihood ratio (LR) test in order to investigate successively the joint significance of spatial, time and both time and spatial fixed effects. Concerning the spatial fixed effects (model 2), we reject the null hypothesis of its non-significance (LR = 310.30 and p < 0.01). The same occurs with the joint significance of the temporal fixed effects (model 3: LR = 505.58 and p < 0.01). The joint significance of both time and fixed effects (model 4) cannot be rejected, either against the pooled OLS estimation or against the time fixed effects. As such, the extension of the model with spatial and time-period fixed effects is fully justified (model 4).

Table 2 reports the results of the Lagrange multiplier (LM) tests to determine the type of spatial dependence and the most appropriate model. We use both the classic LM tests (Anselin, 1988) and the robust LM tests described in Elhorst (2003). According to the former, and focusing our attention on the spatial and time period fixed effects model (model 4), both the null hypothesis of no spatially lagged dependent variable and no spatially autocorrelated error term are rejected. However, the robust LM test only rejects the null hypothesis of no spatially autocorrelated error term (p < 0.05), whereas the absence of a spatially lagged dependent variable cannot be rejected (p = 0.2290). Summing up, the outcomes point to the spatial error specification with spatial and time period fixed effects as the most appropriate model.

4 Since some values are null, to avoid losing observations we add 1 to the funds before computing the logarithm. Structural funds as a percentage of GDP was alternatively used and similar results were obtained.

Table 2
Estimation results and spatial dependence tests

	Pooled OLS	Spatial fixed effects	Time-period fixed effects	Spatial and time-period fixed effects
	(1)	(2)	(3)	(4)
Intercept	0.2845 (0.0001)			
ln($y_{i,t-1}$)	-0.0284 (0.0000)	-0.2108 (0.0000)	-0.0091 (0.0685)	- 0.1998 (0.0000)
ln($s_{i,t-1}$)	-0.0118 (0.0018)	-0.0070 (0.2228)	-0.0137 (0.0000)	-0.0204 (0.0000)
ln($gpop_{i,t-1}$)	-0.0151 (0.1661)	-0.0656 (0.0008)	0.0012 (0.8994)	-0.0521 (0.0021)
ln($pat_{i,t-1}$)	0.0002 (0.8932)	0.0160 (0.0000)	0.0010 (0.3700)	0.0060 (0.0106)
ln($hc_{i,t-1}$)	0.0035 (0.1983)	0.0113 (0.3968)	0.0039 (0.0875)	0.0529 (0.0000)
ln($sf_{i,t-1}$)	-0.0030 (0.0178)	0.0008 (0.5823)	0.0033 (0.0096)	0.0006 (0.6681)
LogL	2325.8	2481.0	2578.6	2710.7
LM spatial lag	718.93 (0.0000)	594.5758 (0.0000)	134.4963 (0.0000)	128.9277 (0.0000)
Robust LM spatial lag	70.4460 (0.0000)	9.7587 (0.0000)	3.2117 (0.0730)	1.4448 (0.2290)
LM spatial error	675.93 (0.0000)	611.0528 (0.0000)	131.7804 (0.0000)	133.3301 (0.0000)
Robust LM spatial error	274.415 (0.0000)	262.357 (0.0000)	0.4958 (0.4810)	5.8471 (0.0160)
R^2	0.0346	0.2108	0.0208	0.1556

Note: p-values in parentheses.

Source: Authors' estimation.

Regarding the fact that some explanatory variables are spatially autocorrelated, we must consider another extension of our model. A full model with space and temporal fixed effects, and interaction effects, known as the spatial Durbin model, takes the specific form as in equation (3):

$$gy_{i,t} = \rho W gy_{i,t} + c_1 \ln(y_{i,t-1}) + c_2 \ln(gpop_{i,t-1}) + c_3 ln(s_{i,t-1}) + c_4 \ln(pat_{i,t-1}) + c_5 \ln(hc_{i,t-1}) + c_6 \ln(sf_{i,t-1}) + \gamma_1 \mathrm{Wln}(y_{i,t-1}) + \gamma_2 \mathrm{Wln}(gpop_{i,t-1}) + \gamma_3 Wln(s_{i,t-1}) + \gamma_4 \mathrm{Wln}(pat_{i,t-1}) + \gamma_5 \mathrm{Wln}(hc_{i,t-1}) + \gamma_6 \mathrm{Wln}(sf_{i,t-1}) \alpha_i + \delta_t + \varepsilon_{i,t} \quad (3)$$

In order to control for the endogeneity problem created by the inclusion of the spatially lagged dependent variable, our results are based on a fixed effects spatial lag setup using the maximum likelihood (ML) estimator proposed by Elhorst (2014). The results of the spatial autoregressive and the Durbin model estimations are shown in

Table 3
Estimation results: Spatial error (1) and Durbin model (2)

	(1)	(2)			
		Coef-ficient	Direct effects	Indirect effects	Total effects
Wy		0.3943 (0.0000)			
$\ln(y_{i,t-1})$	-0.1943 (0.0000)	-0.1931 (0.0000)	-0.2013 (0.0000)	-0.1357 (0.0000)	-0.3370 (0.0000)
$\ln(s_{i,t-1})$	-0.0154 (0.0022)	-0.0153 (0.0022)	-0.0159 (0.0024)	-0.0107 (0.0049)	-0.0266 (0.0027)
$\ln(gpop_{i,t-1})$	-0.0790 (0.0000)	-0.0850 (0.0000)	-0.0899 (0.0000)	-0.0607 (0.0001)	-0.1507 (0.0000)
$\ln(pat_{i,t-1})$	0.0045 (0.0523)	0.0050 (0.0311)	0.0051 (0.0392)	0.0035 (0.0497)	0.0086 (0.0413)
$\ln(hc_{i,t-1})$	0.0516 (0.0000)	0.0518 (0.0000)	0.0534 (0.0000)	0.0360 (0.0006)	0.0894 (0.0001)
$\ln(sf_{i,t-1})$	0.0008 (0.6140)	0.0011 (0.4707)	0.0012 (0.4541)	0.0008 (0.4634)	0.0021 (0.4563)
W* $\ln(y_{i,t-1})$		0.0615 (0.0869)			
W*$\ln(s_{i,t-1})$		-0.0130 (0.1919)			
W*$\ln(gpop_{i,t-1})$		0.1391 (0.0000)			
W*$\ln(pat_{i,t-1})$		0.0068 (0.2194)			
W*$\ln(hc_{i,t-1})$		-0.0171 (0.5188)			
W*$\ln(sf_{i,t-1})$		0.0002 (0.9440)			
λ	0.4222 (0.0000)				
LogL	2768.0061	2776.96			
LR Test for Durbin model		24.92 (0.0003)			
R^2	0.1562	0.1790			

Note: p-values in parentheses.

Source: Authors' estimation.

Table 3.[5] In order to estimate the statistical contribution of the Durbin model, we proceeded with an LR test with the null hypothesis, H0, according to which the spatial Durbin model can be simplified to the spatial error model (Anselin, 1988). According to the result (p = 0.0065), we accept the Durbin against the spatial error model.

5 All calculations are based on Elhorst (2003). We use the author Toolbox functions (Matlab version) available at http://www.regroningen.nl/elhorst/software.shtml.

Many studies on regional convergence have neglected the effects of spillover and spatial correlation. Spatial correlation affects the independence of observations generating potential effects of bias in OLS estimators. The Durbin model, which proved to be the most appropriate, confirms the existence of spatial autocorrelation, with a highly significant coefficient of 0.39 in line with Mohl and Hagen (2010) and Dall'erba and Le Gallo (2008). Accordingly, the presence of significant spatial dependence reduces the coefficients compared to the OLS estimation. This means that an increase of 1% on the average per capita GDP of the neighbourhood of a given region will be reflected in an increase of 0.39% in the per capita GDP of this region.

The remaining variables, with the exception of the structural funds, show significant impacts with the expected sign, in line with most of the literature, thus confirming the presence of significant spatial effects (Dall'erba and Le Gallo, 2008; Mohl and Hagen, 2010). The negative sign of the lagged per capita GDP confirms the hypothesis of convergence of the poorest regions. The impact of population growth is also negative, reflecting the results generally found in the literature. The role of human capital and innovation is positive and statistically significant, though its value is reduced for the latter. The gross fixed capital formation impacts negatively on economic growth, although the effect is very small, a result also found in part by Mohl and Hagen (2010). This result confirms some crowding-out effects of public investment on private investment. Moreover, it also supports the new economic geography point of view, according to which the improvement of transport infrastructure in the poorest regions leads to an increased effect of agglomeration of economic activities in rich regions (Vickerman et al., 1999). Finally, the impact of structural funds is not significant. The absence of significant impacts of structural funds, confirmed by Dall'erba and Le Gallo (2008) and partly in Mohl and Hagen (2010), indicates their inability to counteract the agglomeration effects amplified by the decrease in transport costs.

Whereas the presence of spatial autocorrelation implies the existence of correlation between explanatory variables and the error term, thus producing inconsistent OLS estimators, we can analyse to what extent the estimated coefficients from the Durbin model confirm the bias effects. However, the comparison between the two models involves some caution in that the interpretation of the parameters in the Durbin model is more subtle, considering its direct and indirect effects (Anselin et al., 2006).

Contrary to spatial models, linear regression parameters have a direct interpretation as the partial derivative of the

dependent variable with respect to the explanatory variable. In models containing spatial correlation of the explanatory or dependent variables, the impact of a variable will not be equal among all regions.

Rewriting the Durbin model of equation (3) as

$$gy_{i,t} = (I - \rho W)^{-1} [c_1 \ln(y_{i,t-1}) + c_2 \ln(gpop_{i,t-1}) + c_3 ln(s_{i,t-1}) + c_4 \ln(pat_{i,t-1}) + c_5 \ln(hc_{i,t-1}) + c_6 \ln(sf_{i,t-1}) + \gamma_1 \mathrm{Wln}(gy_{i,t}) + \gamma_2 \mathrm{Wln}(gpop_{i,t-1}) + \gamma_3 Wln(s_{i,t-1}) + \gamma_4 \mathrm{Wln}(pat_{i,t-1}) + \gamma_5 \mathrm{Wln}(hc_{i,t-1}) + \gamma_6 \mathrm{Wln}(sf_{i,t-1})] + (I - \rho W)^{-1} [\alpha_i + \delta_t + \varepsilon_{i,t}] \quad (4)$$

LeSage and Pace (2008) suggest three measures of these impacts. The *total effect* sums the total impacts over the rows (or columns) of the matrix $(I - \rho W)^{-1}$, and then takes the average over all regions. The average of the diagonal elements of matrix $(I - \rho W)^{-1}$ provides the *direct effect*. Finally, the *indirect effect* is by definition the difference between the total effect and the direct effect. In short, the direct effect represents the impact of a change of the explanatory variable in region i on the dependent variable in the same region, including the corresponding feedback loops. According to LeSage and Pace (2008), the direct effect is similar in spirit to OLS coefficient interpretations. The indirect effect aggregates the impact of a change in the explanatory variable in all regions other than i in the dependent variable in region i.

As such, comparing the OLS model without spatial dependence with the direct effects of the spatial model, we found no significant differences regarding the effect of the lagged output and human capital. However, the OLS model overstates the negative impact of investment by more than 28% when compared to our spatial model. The same applies to the positive impact of innovation, overstated by nearly 18%. Finally, the negative impact of population growth is, instead, underestimated by 42%.

The estimated value for the lagged per capita GDP coefficient and its sign confirms the hypothesis of conditional beta convergence. The values are in line with those estimated in Mohl and Hagen (2010) and Dall'erba and Le Gallo (2008). With the estimated direct effects and assuming that all regions will converge at the same rate, we can calculate the convergence speed and half-life, respectively 22.48% and 3.1 years. However, it is important to relativise these results since there is, in the literature, still some ambiguity in terms of conclusive evidence regarding the notion of convergence in growth rates (see Nerlove (1997) for a comprehensive review).

Feedback effects of the Durbin model correspond to the difference between the direct effect and the value of the estimated parameters under study. In this case, we find that these feedback effects, arising from the spatial correlation, are very small. For example, since the direct effect regarding innovation is 0.0051 and the respective coefficient is 0.0050, the feedback effect of innovation is only 0.0001.

Unlike feedback effects, indirect effects, not captured by the OLS model, are strong and significant. Except for structural funds, all other variables, including income, gross fixed capital formation, population growth, human capital and innovation have highly statistically significant indirect effects. Furthermore, the magnitude of these effects is also strong and similar across all variables, accounting for about 67%-68% of the respective direct effects. This means that a change in any of these variables has an impact not only on the income of this region but also on the income of its neighbourhood.

Conclusion

This paper aims to test the impact of structural funds on regional growth and the level of regional convergence across the EU. In light of the neoclassical theory, these funds should contribute to improving the economic efficiency among the poorest regions promoting regional convergence. However, the new economic geography states that structural funds, promoting the reduction of transportation costs, may also induce a geographic concentration of economic activities, thus perpetuating regional imbalances.

Considering that spillover effects are crucial in this respect, the use of spatial econometrics is fully justified in order to capture the neighbourhood effects and correct the bias of the OLS estimators. Our results confirm the existence of spatial autocorrelation in per capita income and in most of the explanatory variables. Relative to income and the distribution of funds, the exploratory spatial analysis confirms the concentration of structural funds in the poorest regions of the EU, in two main areas corresponding to the Iberian Peninsula and Greece. The econometric results of the Durbin model confirm the presence of spatial autocorrelation in income. Spatial autocorrelation causes important indirect effects that, in many cases, represent more than half of the direct effects. According to our results, the poorest regions tend to grow faster relative to the richer regions, confirming the existence of conditional convergence. Innovation and human capital positively affect economic growth while the effect of population growth is negative, in line with the literature. The impact of investment is significantly negative, although with a reduced magnitude. Concerning structural funds, we have not detected any significant

effects, i.e. the multiplier effects resulting from the construction of infrastructures have been cancelled by the agglomeration dynamic caused by the communication and transport improvements.

These results, which confirm the importance of neighbourhood and spillover effects, enhance the need for more studies to deepen the mechanisms of inter-regional connections that support these phenomena of spatial dependence as well as the main factors that generate externalities that may boost convergence. Furthermore, the non-significance of the impact of structural funds should not lead us to conclude that they are useless. Not supporting the poorest regions would likely have been worse. Thus, it is important to evaluate the type of investment, inferring whether there are substitution or complementarity relationships between public and (not funded) private investment. Our results suggest a crowding-out effect of structural funds. Moreover, it is important to consider that the absence or lack of other ingredients may have hindered the full use of all the potential of structural funds. More specifically, policies oriented towards education level improvement and promotion (and protection) of the innovative activity should be combined and coordinated with EU regional policy, in order to guarantee that financial transfers are efficiently and successfully allocated.

Our outcomes highlight the need to design policies intended to promote education and innovation in order to promote endogenous development dynamics on a regional scale. This is key to ensuring the success of regional policy, as announced by the Regional Development and Cohesion Policy beyond 2020. According to the 'thematic concentration', i.e. the repartition of resources by policy objectives, 65% to 85% of European Regional Development Fund and Cohesion Fund investments should be spent to promote "a smarter Europe" and "a greener Europe". Moreover, the need for simpler and decentralised procedures, requiring the involvement of stakeholders at different geographical levels should remain a top priority for the European Commission.

References

Anselin, L. (1988), *Spatial econometrics: methods and models*, Volume 4, Springer, Science+Business Media.

Anselin, L. (1995), Local indicators of spatial association – LISA, *Geographical Analysis*, 27(2), 93-115.

Anselin, L., I. Syabri and Y. Kho (2006), GeoDa: an introduction to spatial data analysis, *Geographical Analysis*, 38(1), 5-22.

Billmeier, A. and T. Nannicini (2007), *Trade openness and growth: pursuing empirical glasnost*, International Monetary Fund.

Dall'erba, S. (2005), Productivity convergence and spatial dependence among Spanish regions, *Journal of Geographical Systems*, 7(2), 207-227.

Dall'erba, S. and J. Le Gallo (2008), Regional convergence and the impact of European structural funds over 1989-1999: A spatial econometric analysis, *Papers in Regional Science*, 87(2), 219-244.

Dijkstra, L. and Z. Gakova (2008), Labour mobility between the regions of the EU-27 and a comparison with the USA, European Commission, *Regional focus*, 02/2008.

Elhorst, J. P. (2003), Specification and estimation of spatial panel data models, *International Regional Science Review*, 26(3), 244-268.

Elhorst, J. P. (2014), *Spatial econometrics*, Springer.

Fingleton, B. and E. López-Bazo (2006), Empirical growth models with spatial effects, *Papers in Regional Science*, 85(2), 177-198.

Florax, R. J. G. M. and P. Nijkamp (2003), Misspecification in linear spatial regression models, *Tinbergen Institute Discussion Paper*.

Hooghe, L. (1996), *Cohesion policy and European integration: building multi-level governance*, Oxford University Press.

Islam, N. (1998), Growth Empirics: A Panel Data Approach: A Reply, *Quarterly Journal of Economics*, 325-329.

Islam, N. (2003), What have we learnt from the convergence debate?, *Journal of Economic Surveys*, 17(3), 309-362.

Le Gallo, J. (2002), Econométrie spatiale: l'autocorrélation spatiale dans les modèles de régression linéaire, *Economie & Prévision*, (4), 139-157.

Le Gallo, J., C. Ertur and C. Baumont (2003), A spatial econometric analysis of convergence across European regions, 1980-1995, in *European regional growth*, 99-129, Springer.

LeSage, J. P. (2008), An introduction to spatial econometrics, *Revue d'économie Industrielle*, (3), 19-44.

LeSage, J. and R. K. Pace (2008), *Introduction to spatial econometrics*, CRC press.

Mankiw, N. G., D. Romer and D. N. Weil (1992), A contribution to the empirics of economic growth, *The Quarterly Journal of Economics*, 107(2), 407-437.

Marzinotto, B. (2012), The growth effects of EU cohesion policy: a meta-analysis, *Bruegel Working Paper*, 2012/14.

Mohl, P. and T. Hagen (2010), Do EU structural funds promote regional growth? New evidence from various panel data approaches, *Regional Science and Urban Economics*, 40(5), 353-365.

Moran, P. A. P. (1950), Notes on continuous stochastic phenomena, *Biometrika*, 37(1-2), 17-23.

Nerlove, M. (1997), Properties of alternative estimators of dynamic panel models: an empirical analysis of cross-country data for the study of economic growth, *University of Maryland Working Paper Series*, 197852.

Quah, D. T. (1996), Empirics for economic growth and convergence, *European Economic Review*, 40(6), 1353-1375.

Temple, J. (1999), The new growth evidence, *Journal of Economic Literature*, 37, 112-156.

Vesmas, D. M. (2009), Fundamental Marks on the Regional Policy of the European Union, *Acta Universitatis Lucian Blaga*, 181.

Vickerman, R., K. Spiekermann and M. Wegener (1999), Accessibility and economic development in Europe, *Regional Studies*, 33(1), 1-15.

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Raffaele Fargnoli*

Adapting the EU Economic Governance to New Macroeconomic and Political Realities

There was a widespread consensus on the need to modify fiscal rules in the EU even before the COVID-19 crisis. The aim of this article is to reflect on the reform of fiscal rules from a broader perspective, looking at three different dimensions: the political economy of fiscal rules in the current political and economic environment, the renewed debate about fiscal policy roles and objectives, as well as the current incomplete nature of the European Monetary Union and the prospects for its completion. The main contribution of this paper is to analyse EMU fiscal policy and the related governance modes from a broader perspective. Furthermore, the article briefly discusses ideas for a new model of fiscal and economc surveillance based on a cooperative governance system in order to better fit with with current macroeconomic and political realities.

Even before the COVID-19 crisis, which has led to the suspension of the Stability and Growth Pact (SGP) through the activation of the general escape clause to be invoked in a severe economic downturn, there was a widespread consensus on the need to modify fiscal rules configuration. Current rules are criticised for complexity, procyclicality bias and scarce adaptability to macroeconomic circumstances not driven by very exceptional events. This article is based on Fargnoli (2020) and discusses the reform of fiscal rules across three different dimensions: i) the political economy of fiscal rules in the current political and economic environment; ii) the renewed debate about fiscal policy roles and objectives; iii) the current incomplete nature of the European Monetary Union (EMU) and the prospects for its completion. The reflection over the first two dimensions emphasises that fiscal policy prescriptions stemming from the SGP framework are now suffering from a gap of legitimacy both in terms of ownership (being capable of achieving a synthesis of bold and diverging national preferences) and regarding their output (capacity to deliver on multiple goals). The third dimension highlights the need to rethink the analytical relation between the incomplete nature of the EMU, which is likely to persist in the near future, and the implications for fiscal and economic policy coordination, in particular regarding the need to recover from the coronavirus crisis and to manage its long-term consequences.

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The political economy of fiscal rules

The literature on fiscal rules emphasises that their influence on national governments' behaviour stems from (formal enforcement aside) the reputational cost suffered by non-compliant governments. This assumption is based on the ability of external pressure groups – i.e. the public and the market – to offer national policymakers proper incentives (Schuknecht, 2004). In this respect, simpler fiscal rules increase the probability of compliance by facilitating their understanding and monitoring. However, if influential groups fail to exert genuine pressure on national authorities, both simple and better designed rules are just as likely to be neglected as more complex rules. Today, EU fiscal rules have to cope with increasing scepticism about the benefits of strict fiscal discipline as a key principle for sound policymaking. For instance, in some of the countries hardest hit by the pandemic, people have been strongly touched by the often evoked argument pointing to the link between the overwhelmed health care system and previous years' budgetary cuts. In this respect, it is likely that the unprecedented economic fallout triggered by COVID-19, coupled with the political and economic costs inherited from the last financial and sovereign debt crisis, will cement negative feelings towards fiscal consolidation for a long time.

The Great Recession also showed that the market's ability to correctly price the risks related to national economy fundamentals suffers from several flaws. To this extent, the public's confidence in market assessment is also eroding. Thus, sudden increases in sovereign spreads, among other effects, are also likely to cause frustration in relation to the

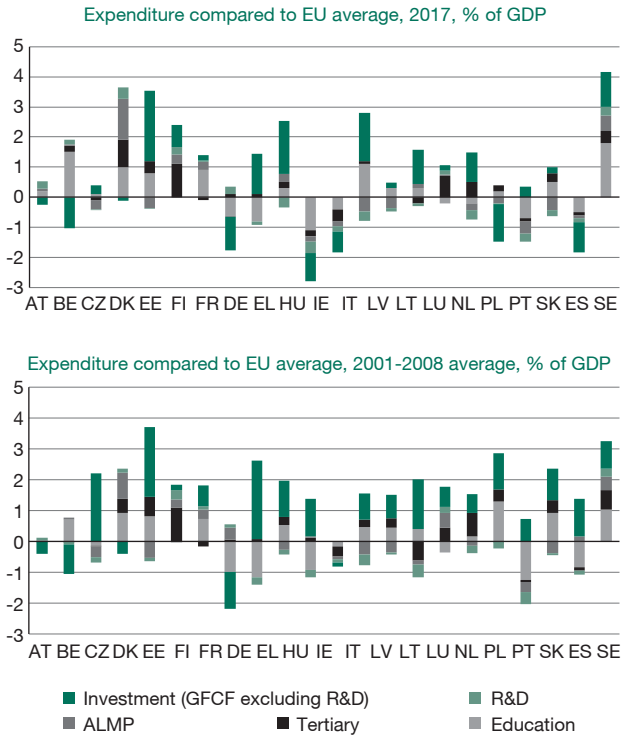
rising demand for balancing fiscal discipline with other policy goals, in particular supporting growth and economic recovery, increasing public investment and reducing unemployment and inequalities. In high-debt countries, because of subdued growth and inflation, the permanent increase in the primary surplus needed to put the evolution of the debt-to-GDP ratio on a convergence path towards the 60% SGP target, ranged, before COVID-19, from 1% of GDP in Belgium and Portugal to 2-3% of GDP in Italy, Spain and France. While the huge stress to which public finances are currently subject will increase these requirements, greater fiscal corrections risk being politically unattainable in the future. Indeed, the social and political backlash, partly triggered by the Great Recession and its policy response, coupled with more recent protests related to relatively modest tax hikes, e.g. by the *gilets jaunes* movement in France, suggest that in a number of countries, the political limits for fiscal consolidation have already been reached.

The return of fiscal policy

The so-called period of great moderation, characterised by inflation under control, decreasing unemployment and lower output volatility, cemented a widely accepted consensus over fiscal policy functions. Most economists used to agree that fiscal policy should focus mainly on the long-term sustainability of public finances, while leaving stabilisation goals to the mere functioning of automatic stabilisers. This consensus was the basis for the design of the SGP. The limits of monetary policy effectiveness in an environment characterised by interest rates at the zero lower bound hit this conventional wisdom. A general shift in thinking advocates a more active role for discretionary fiscal policy for different purposes such as: i) to cope with present and future stabilisation needs, especially in the presence of hysteresis implying lasting lower output levels (Draghi, 2019); ii) to address deflationary tendencies and the persistent gap in aggregate demand (Rachel and Summers, 2019); iii) to stimulate long-term output through growth-enhancing expenditure (Deleidi and Mazzucato, 2019).

If the persistent 'liquidity trap' started to erode the old consensus, COVID-19 is fully abating it, leading to a profound revolution with regard to the set of macroeconomic tools to be used in this new environment. First of all, there is an almost unanimous agreement on the fact that massive public intervention is needed to cope with the mix of strong supply and demand shocks caused by the pandemic in order to keep the economy afloat. Income support for households, extended unemployment benefits, tax reliefs, government capital injections and guarantees for firms besides health-related costs to contain the pandemic will lead to skyrocketing budget deficits. The difficult challenge of managing the resulting high levels of government debt is also affecting the almost sacred prohibition of monetary financing. Some economists are suggesting radical solutions, such as direct central bank money injections into the economy through so-called helicopter money (Gali, 2020). Without going so far, proposals like perpetual bond issuances with central bank backstops (Tabellini and Giavazzi, 2020) or massive asset purchases undertaken in particular by the Federal Reserve blur the lines between unconventional monetary policy and monetary financing.

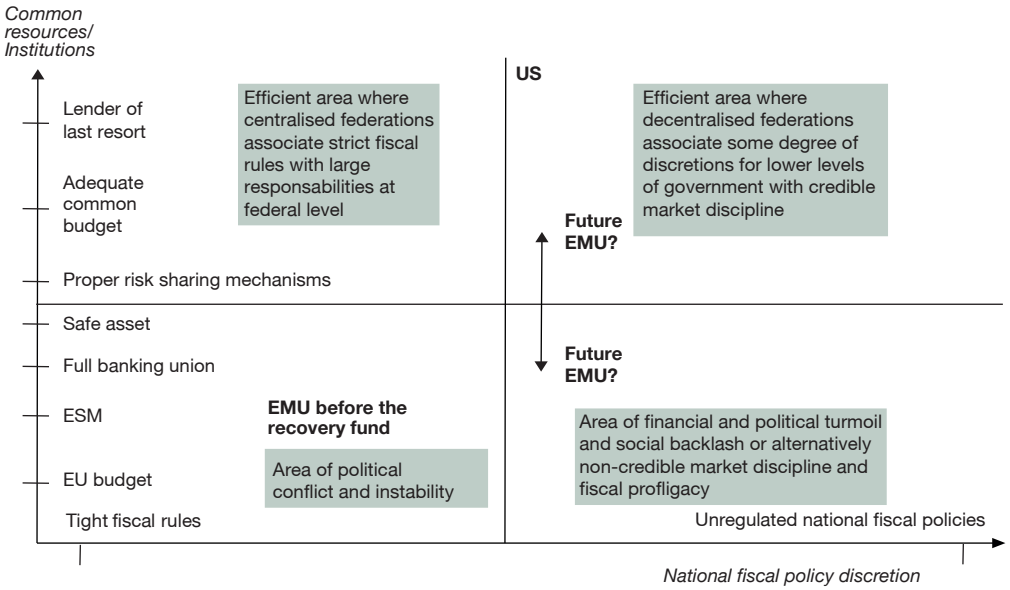
Figure 1
Expenditure composition across EU member states



Sources: Eurostat, OECD and author's calculation.

In any case, once the pandemic is finally under control, fiscal policy should be loosened futher to support economic recovery. Before COVID-19, many prominent voices called for profiting from the low interest rate environment to prioritise, over other policy objectives, a powerful investment policy to spur GDP growth both in the short and in the long term (Blanchard, 2019). This debate, reinvigorated proponents of some sort of golden rule to be included in the EU governance framework. However, given the heterogeneity of spending programmes with positive economic returns, ranging from expenditure in education, training, human capital investment, health, climate mitigation, infrastructure and the broad set of innovation policies, it is difficult to conceive an investment clause capable of covering all these items effectively and without creating distortions in the allocation of public expenditure. Figure 1 shows that a number of countries present a suboptimal expenditure composition. Countries with low potential growth rates such as Italy and Spain have expenditures below the EU average in all the growth-enhancing items displayed in the figure, with a

Figure 2
Institutions, rules and market discipline: The future of the EMU architecture



Source: Author's compilation.

gap accounting for almost 2% of GDP. The figure also shows that the expenditure gap widened in recent years, in particular in those countries hit hardest by the sovereign debt crisis.

Decisions on the size and the time extension of counter-cyclical measures as well as the more structural increase in investment will face the limit imposed by debt sustainability concerns. However, since much higher debt levels will become permanent in the future, the debate on how to manage such a high debt burden will intensify. The views will likely diverge between those asking for achieving a larger primary surplus for a long period of time in order to seek reducing the debt ratio and those calling for a strategy aimed at keeping the debt under control in the short term while undertaking well-designed growth-enhancing spending programmes to strengthen the recovery and raise potential growth. In the future passive debt deleveraging based on higher nominal growth and prudent fiscal policy in good times could result in a more substantial and politically sustainable debt reduction (Rawdanowicz, 2013). At the same time, the inherent vulnerability of high-debt countries will raise the question of whether short-term financial market turmoil, causing dangerous increases in sovereign borrowing costs, can be managed by the European Stability Mechanism (ESM) or if, alternatively, either a more active central bank intervention or some form of debt restructuring will become inevitable. Against this backdrop, the debate on fiscal policy choices and debt management interacts with the political economy issues discussed above. Indeed, irrespective of the merit of the different views, this fragile environment will widen the existing divergences about the optimal conduct of fiscal policy, making the current architecture of the European economic governance, in particular the current rules-based fiscal framework, rather unsuitable to the post-pandemic world.

Fiscal relations and common instruments in an incomplete EMU

Figure 2 displays the main trade-off characterising the prospects for the future evolution in the EMU institutional architecture. On the vertical axes, there are types of common institutions and resources that are typically found in fully fledged monetary unions (federations and confederations). On the horizontal axes, fiscal policy moves from tight fiscal controls exerted by the federal government to larger discretion for lower levels of government. The EMU is now situated in the bottom left quadrant where political tensions and the risk of financial instability are not excluded. This is true despite the creation of the ESM and the fact that the possible completion of the banking union could allow for the reduction of the most extreme consequences of a financial crisis. The EMU, at present, shares some features of centralised models of federations based on the relatively strict fiscal rules often associated with administrative sanctions and mild market discipline since member state bailout is de facto no longer excluded.

However, the EMU lacks the central instruments needed to make this model fully sustainable and resilient. Common schemes to address a common real economy shock are absent. National governments remain reluctant to move towards a minimal fiscal union with stronger spending responsibilities and coercive powers at the EMU level (moving to the upper left quadrant). The resources that will be mobilised at the EU

level through the Next Generation EU instrument could push the EMU (EU) towards the upper quadrants, especially if new EU own budget sources are to be set up and at least part of the common debt is rolled over, to attain a permanent increase in the size of the EU budget. Against this background, it is crucial to highlight a basic principle emerging from present macroeconomic realities and the EMU experience: The larger the common countercyclical and investment instruments permanently available, the stricter the oversight and the constraints on national public finances, also by means of stringent fiscal rules. However, although the agreement on the recovery facility represents a polar step in the right direction by providing crucial support to national budgets, they will continue to play a key role in order to achieve the goals of attaining full recovery and ensuring a proper level of growth-enhancing spending. The temporary nature of the recovery instrument will also require, in the future, that national budgets are able to keep ensuring the financing of some of the main long-term investment programmes activated today by common borrowing. All these considerations support the case for conceiving the future economic governance in a way that guarantees greater room for manoeuvres at the national level, while promoting high quality policymaking and preserving debt sustainability.

Against this background, it has been argued that the peculiar features of the EMU would fit better with a decentralised system based on larger discretion and more cooperation on setting fiscal targets (Wyplosz, 2013). In fact, despite difficulties in the optimal design of fiscal rules and limited transfers flowing from the EU level, full sovereignty on taxation remains a prerogative of member states, who are also likely to retain significant divergences in fiscal policy preferences.

Moving towards a decentralised model would also reinforce market discipline to avoid the risk of fiscal profligacy. These considerations contributed, before COVID-19, to a debate on the opportunity to strengthen the no-bailout rule found in Article 125 of the Treaty on the Functioning of the European Union in order to: i) provide better incentives for sound policymaking and reduce moral hazard risks; ii) scale down the current rules-based system, providing space for tailoring fiscal policy to national preferences within the limits set by market assessments; iii) overcome political resistance towards building up needed common instruments, such as a European Deposit Insurance Scheme.

However, this bright theoretical environment conflicts with reality. Indeed, market assessment is characterised by several flaws, well observed during the Great Recession. Markets' perceptions are pro-cyclically biased as they tend to overlook risks in good times and be inclined to panic in bad times. By overreacting during a crisis period, markets can trigger a vicious circle of continuous increases in interest rates and deterioration of sovereign debt solvency, generating self-fulfilling prophecies, thus turning simple liquidity crises into solvency crises. This can occur more easily in a monetary union due to credit market integration and the free movement of capital across borders which increase the risk of sudden-stop crises, like that experienced by the EMU in 2011-13. Furthermore, the probability of ending in a bad equilibrium scenario will be bigger in the future, as it increases with a larger stock of existing debt.

Indeed, the post-pandemic world, characterised by the strong vulnerability of those EMU countries with a high debt burden, will make the full enforcement of strong market discipline particularly risky. First, the prerequisite to minimise the impact of a sovereign debt default on the real economy and the financial sector have not been created. In the US, the federal budget, besides dealing with stabilisation needs, accounts for key expenditure functions (investment, innovation, top-up of unemployment expenditure, social insurance). This will reduce the real economy cost of an eventual bail-in of a US state, thus increasing the political acceptance of the no-bailout rule and strengthening perceptions about its concrete application (Kirkegaard, 2017). Financial spillovers are also circumscribed by the fact that state government debt is about 13% of GDP and the share of state securities in the portfolio of US banks is low. Despite all of this, the high costs associated with any sort of subnational government default explain why federal governments (in the US and in other federations) often prefer some form of bailout of subnational entities (Cordes et al., 2015).

Furthermore, in the current context, in the EMU, the political impact of debt restructuring risks being even more destructive than its economic costs. The pandemic has amplified the request for recognising mutual interest and mutual support among EU countries. Another reason why a debt restructuring will hardly be accepted is that it will be associated with the last episode of rising public debt, namely the COVID-19 crisis, regarded as an exogenous shock with no government responsibilities involved. Lastly, it should be considered that the downturn induced by a debt restructuring would represent the significant third economic shock in only a few years, after the Great Recession and the current crisis. Against this background, it is likely that strong market discipline will lack credibility in the EMU due to the large economic and political consequences it involves. Alternatively, in case it would entail sovereign debt restructuring, the risk of a political and social backlash triggered by the size of economic disorder that it would generate could jeopardise the EU integration process as a whole.

Towards a cooperative and robust governance system

These considerations suggest that neither a reform of fiscal rules nor pure fiscal policy decentralisation at the member state level (associated with strong market discipline) are mod-

els capable of promoting high-quality fiscal policy and strong political ownership and legitimacy, while also minimising risks of political turmoil and financial instability. In this respect, while these goals could be achieved by building up meaningful and permanent risk-sharing instruments at the EU level, supported by some embryonic form of political union, this scenario does not seem politically attainable for the time being.

An alternative model of fiscal governance could be designed by reducing the role of quantitative fiscal rules and moving towards a cooperative system where fiscal targets and the medium-term macroeconomic strategy are periodically negotiated by a competent EU authority and the national government. The base for negotiations would be represented by a multi-annual plan submitted by the national government at the beginning of its mandate, setting a medium-term debt target and other concrete objectives in terms of fiscal variables and policies. A qualitative analysis of the plan should go hand in hand with the quantitative assessment of government targets. Cooperation and negotiations would serve the purpose of increasing the focus on qualitative variables, e.g. the quality of public expenditure, while also taking into account national views and other policy objectives following an outcome-based assessment. This would increase national authorities' accountability and responsibility, besides providing a high degree of adaptability to macroeconomic circumstances.

This cooperative governance principle could also fit with the underlying governance framework of the Next Generation EU. The narrative and the concrete application of the monitoring system should aim at building up effective cooperation between national governments and EU institutions. For instance, the policy dialogue on the National Reform Programme could serve to: i) identify national policy priorities in need of support; ii) adopt high-quality practices for the design of the spending programmes; iii) monitor implementation and results.

Leaving aside the specific framework underlying the recovery instrument in exchange for more room to manoeuvre with regards to national fiscal policy conduct, a gradual and semi-automatic enforcement system should be put in place to avoid moral hazard. It would range from small penalties in case of simple divergences between EU recommended policies and the national policy strategy, to more serious deterrents for reiteration of ineffective policies and clear-cut gross policy errors. The enforcement tools could include a quasi-automatic contribution to a future stabilisation fund to be regarded as an insurance premium to (partly) cover the risk that the national policy strategy could weaken domestic and EMU resilience.

Finally, in the post-COVID-19 world, a proper management of high levels of public debt will be crucial to safeguard financial stability. In this regard, one could question whether the current Outright Monetary Transactions (OMT) framework would remain fully credible to address sovereign market volatility, in light of the conditionalities attached to the instrument, in particular adhering to an ESM programme (Cohen-Setton and Vallee, 2018). Thus, a broader scope for ECB involvement might be needed in the future. In this respect, avoiding gross policy errors in national budgetary plans could provide the basis for a form of softer conditionality, opening the way to more ordinary ECB intervention, outside a formal OMT programme, to reduce short-term market tensions causing dangerous increases in sovereign borrowing costs.

In general, this cooperative system of governance should be underpinned by an open and inclusive policy dialogue between the EU and national stakeholders. Mutual respect and recognition of a larger range of preferences, views and objectives are the basis for high quality policies to increase input and output legitimacy of EU governance and to underpin trust and support in EU integration. This model could also be used to create an environment where the conditions for moving towards a more efficient fiscal, financial, economic and political union could flourish because it would seed a culture of conflict resolution and would connect national spheres by channelling and mediating different policy conceptions. As John Stuart Mill (1859) asserted in its masterpiece *On Liberty*: "It is only by the collision of adverse opinions that the remainder of the truth has any chance of being supplied" (95).

References

Blanchard, O. (2019, 10 June), Europe must fix its fiscal rules, *Project Syndicate*.

Cohen-Setton, J. and S. Vallee (2018), Euro area reform cannot ignore the monetary realm, *Voxeu*.

Cordes T., M. Guerguil, L. Jaramillo, M. Moreno-Badia and S. Ylaoutinen (2015), Subnational fiscal crises, in C. Cottarelli and M. Guerguil, *Designing a European fiscal union*, 198-223.

Dawson, M. and F. de Witte (2016), From Balance to Conflict: A new constitution for the EU, *European Law Journal*, 22(2), 204-224.

Deleidi, M. and M. Mazzuccato (2019), Putting Austerity to Bed: Technical progress, aggregate demand and the supermultiplier, *Review of Political Economy*, 31(3), 315-335.

Draghi, M. (2019), Farewell remarks, Frankfurt am Main, 28 October 2019.

Fargnoli, R. (2020), Adapting the EU fiscal framework to new macroeconomics and political realities, *EUI Working Paper*, RSCAS 2020/03.

Gali, J. (2020), Helicopter money: The time is now, in R. Baldwin and B. Weder di Mauro (eds.), *Mitigating the COVID Economic Crisis: Act Fast and Do Whatever It Takes*, CEPR Press.

Kirkegaard, J. F. (2018), A More Perfect (Fiscal) Union: US Experience in Establishing Continent-Sized Fiscal Union and Its Key Elements Most Relevant to the Euro Area, in J. F. Kirkegaard and A. S. Posen (eds.), *Lessons for EU integration from US history,* PIIE, 16-58.

Mill, J. S. (1859), *On Liberty*, Second Edition, John W. Parker and Son.

Rachel, L. and L. H. Summers (2019), On falling neutral real rates, fiscal policy, and the risk of secular stagnation, *Brooking Papers on Economic Activity*.

Rawdanowicz, L. (2014), Choosing the pace of fiscal consolidation, *OECD Journal: Economic Studies*, 2013(1), 91-119.

Schuknecht, L. (2004), EU Fiscal Rules, Issues and Lessons from Political Economy, *ECB Working Paper Series*, No. 421.

Tabellini, G. and F. Giavazzi (2020, 24 March), Covid Perpetual Eurobonds: Jointly guaranteed and supported by the ECB, *VOX CEPR Policy Portal*.

Wyplosz, C. (2013), Europe's Quest for Fiscal Discipline, European Economy, *Economic Papers*, No. 498, European Commission Publications.

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Oliver Picek

Spillover Effects From Next Generation EU

In July 2020, the European Commission announced its €750 billion package to revive the post-pandemic European economy, Next Generation EU. The programme comprises a number of loans and grants that will be funded by taking out European debt. Although the rules on liability sharing for Next Generation EU prevent a significant mutualisation of the debt, European leaders have taken the long-recognised significant first step towards European financial and political unification that stands in stark contrast to the misguided austerity programmes during the European sovereign debt crisis.

Next Generation EU is the European Commission's €750 billion package to revive the European economy after COVID-19 that is funded by taking out European debt. In haggling over payments from the European Union, member states like to count and negotiate their net payments – the difference between what is paid into common budgets and received from them. This chauvinistic view leaves out the additional induced growth effects triggered by the package both at home (domestic multipliers) and abroad (spillover effects to other EU countries). By capturing a share of economic output from Southern and Eastern European member states that receive more grants, the economies of Northern and Western Europe grow by more than the respective portion of their contributions would suggest. The coordinated fiscal impulse ensures that every country receives a sizeable boost in economic output.

Next Generation EU

The European Commission's Next Generation EU package includes €750 billion. Although rightly criticised as not large enough to address the gravity of the economic consequences of the virus, the instrument is nevertheless the first time in recent history that the EU will directly issue a significant form of mutual debt to redistribute and stabilise the economy. In order to finance the package, the European Commission will take out loans during the budget period 2021-2027 – in addition to the regular EU budget – and repay them with member states' contributions to low interest payments (from 2021 onwards) and sizeable principal amounts (not before the next budget period starting in 2028, and no later than 2058). Some commentators have even called this Europe's "Hamiltonian moment" reminiscent of the federalisation of American states' debt in the 18th century.

The largest and most economically significant part of the Next Generation EU package (€312.5 billion) will be paid out as grants to member states by the new European Recovery and Resilience Facility (RRF), a post-COVID-19 EU reconstruction programme. A smaller portion of the grants (€71.9 billion) will be allocated and implemented through existing EU programmes outside of the new RRF, as shown in Figure 1. Around €360 billion in loans are foreseen, which will yield useful interest rate savings on loans for member states that refinance themselves above the predicted EU bond interest rates. A small sum of guarantees completes the package.[1] A time horizon of the payments can be found in Figure 2. The largest portion of the actual payments will presumably be disbursed too late to fight the acute crisis, as around three-quarters of the RRF payouts become effective in 2023 or later (see Figure 2). Signed commitments of future payments in the RRF as well as the other grants (non-RRF, e.g. REACT-EU) are envisaged to take place from 2021 onwards in order to frontload as much as possible.

The final form of Next Generation EU, however, is not yet enacted into law. The Council will have to get approval for its proposal from the European Parliament. While the total sum of the package and the grants and loans shares are unlikely to change much, the shares for individual facilities and programmes for common European goals may increase. In any case, the plan foresees loans provided by the European Union only for Southern and Eastern EU countries, as others are assumed to be able to finance themselves at a lower or equal rate than European institutions would receive in financial markets. All countries receive grants financed by a loan

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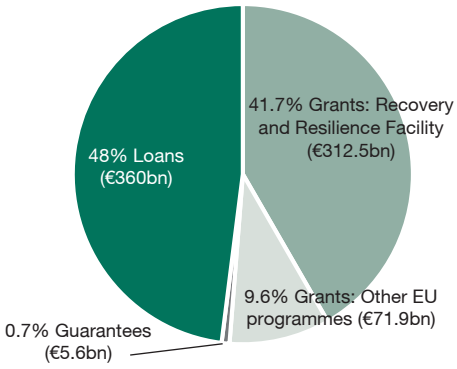
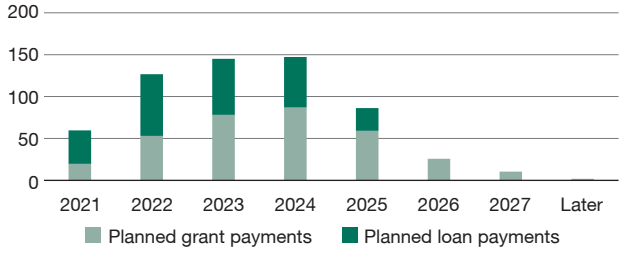
1 In particular, the European Council slashed expenses that were planned for European tasks (Just Transition Fund, InvestEU).

Figure 1
Breakdown of Next Generation EU (€750 billion)
2021-2027, at 2018 prices



Sources: European Commission (2020a,b,c,d), Darvas (2020d), author's representation.

Figure 2
Time horizon of Next Generation EU payments
in billions of euros, current prices



Source: European Commission (2020d), author's representation.

that is supposed to be repaid starting in 2028 and ending in 2058. As a result, the distribution of the funds cannot be considered a zero-sum game because economic stimuli can boost growth and employment for all member states while repayment occurs at a much later stage and over a longer time period.

Distribution by country

Media, policy analysts, and informally the European Commission have provided a quite detailed preview of the distribution of the funds by country for the original proposal from May 2020 (e.g. Kafsack, 2020; Darvas 2020a,b,c), which was adjusted by the European Council (2020) on 21 July.[2] Using a set of assumptions on the eventual allocation rules per country by the Council, Darvas (2020d) has divided up the grants by amounts for individual member states, but not updated the loan amounts per country. The precise suggested distribution of the grant amounts is shown in Figure 3.[3] Loans are shown in a brighter shade above the darker grant amounts in percent of local GDP.[4]

Loans have been criticised for not being an effective way to add expenditure to the economy as they merely refinance national expenditure that would have taken place anyway – given the accommodating reaction of the European Central Bank to the crisis (Darvas, 2020c). In any case, the expected effect of loans and guarantees is unclear and difficult to estimate at this point. For the purpose of this paper, we therefore adopt the view that only grants will provide *additional* future expenditures that increase demand in the crisis-struck economies of the block. After deducting loans and guarantees from the total package sum of €750 billion, approximately €384.4 billion in grants remain. For the European Union as a whole, 3.1% of (the crisis-reduced) expected GDP in 2020 is disbursed via grants and 1.9% via loans over a six-year period.

The plan provides for a clear division of countries into those that have been hit hard by the crisis and are economically weaker (Southern and Eastern Europe), and those that can easily afford the costs of the crisis due to the unequal flow of capital within the single market, as their safe haven status allows them to draw in funds from other EU and euro area countries (Northern and Western Europe).

The bulk of spending in grants occurs only after 2022. Formulae for splitting the funds among countries include, among others, GDP per capita, the economic impact of COVID-19 (fall in GDP in 2020) and unemployment rates. They differ depending on the source of funds and concrete programmes.[5]

The economic effects of Next Generation EU

Although a final agreement on the plan as well as some details are still missing, it is a huge political step towards sensible and joint European economic policymaking. The long-recognised need for a common fiscal response to economic crises had been acknowledged in academic and policymaking circles for a long time and became mainstream after the austerity disaster starting in 2010. This more than warrants a first analysis despite the need for a few crude assumptions.

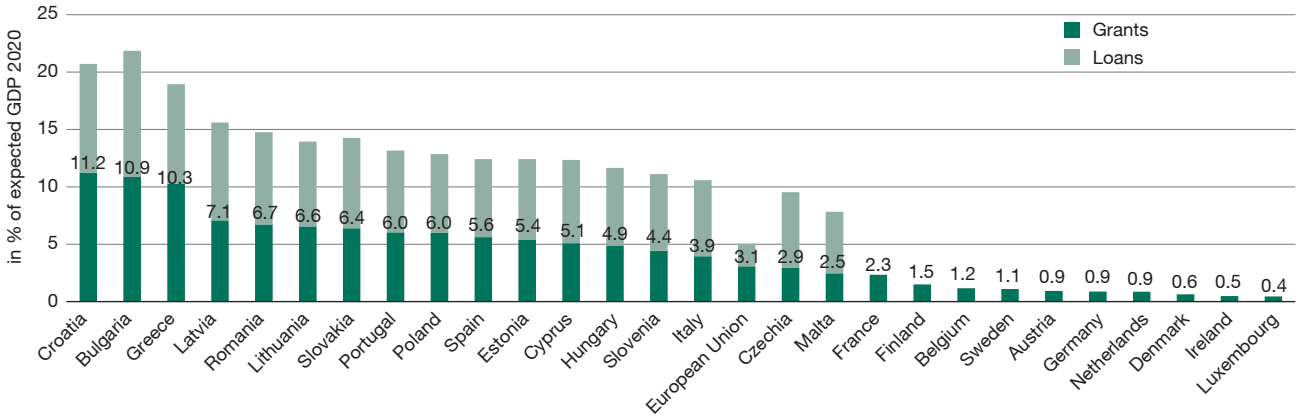
2 Initially, the data by country was restricted to internal European Commission and member state documents, but leaked to the Frankfurter Allgemeine Zeitung (Kafsack, 2020) and later recalculated by Darvas (2020a,b,c).

3 It is presented here in percent of expected GDP for 2020 (AMECO, 15 June 2020). The amounts are converted from 2018 constant prices to 2020 constant prices.

4 For lack of a better estimate, their value is calculated indirectly by taking the total values per country of the original Commission May 2020 proposal and deducting the grant amounts of the Council July 21 proposal.

5 The implicit geographical distribution as well as the eventual share of grants, loans and guarantees is still subject to an agreement in the European Council and the European Parliament in autumn 2020.

Figure 3
European Commission Plan: Distribution of total spending



Sources: Kafsack (2020), Darvas (2020b), author's calculations.

In particular, we focus on two aspects: First, what is the increase in GDP per country due to the plan? Second, how do economic structures of member states allow them to take part in the positive effects of the plan through spillover effects from others?

Method and data

A simple static multi-regional input-output model is employed. The analysis follows Picek and Schröder (2018, 2017), who use the World-Input Output Database (WIOD) to calculate spillover effects with an impact analysis framework (Timmer et al., 2015; Miller and Blair, 2009).[6] The cumulative future grant receipts of member states are used as a positive expenditure shock to estimate the cumulative increase of GDP. To this end, it is assumed that one-third of the EU funds will be used as government expenditure and two-thirds as investment expenditure (public and private). This is an arbitrary, yet inevitable assumption because the distribution of funds per demand category and economic sector is currently unknown. Sector allocations may be at best inferred for some parts of individual smaller programmes, but an accurate global allocation is impossible at this stage. Therefore, a second crucial assumption is made by allowing the shock to increase spending proportionally according to the current industry structure – in other words, we split each additional euro of spending (as part of the initial shock) along the industry lines that prevail according to the latest industrial (input-output) structure of the economy. The third assumption is that grants and loans have an additional effect in the sense that the expenditure would otherwise not have taken place and does not crowd out other expenditure. Fourth, there is uncertainty around the precise amount that will be spent. Implicitly, a 100% take-up rate of potential Next Generation EU funds is assumed. This may not be the case if the absorption rate of EU Structural and Cohesion funds provides any indication – the median among the member states lingers around 88% (see Figure 3 in Ionescu and Dietrich, 2015). Also, we assume that we know the precise amount that €750 billion (in 2018 constant prices) will be able to buy in the future – in other words, we assume a certain trajectory for the inflation rate and a fixed disbursement schedule over time.[7] Naturally, these assumptions introduce an unavoidable amount of uncertainty that may make the input to the simulation (the shock) slightly imprecise (Matthews, 2020). However, the qualitative results should hold provided an absence of large cross-country differences among the factors in the assumptions.

Models of spillover effects

Three models are calculated with different multipliers to distinguish between the first-round effects arising directly from the shock and induced effects that result indirectly from increased economic activity. The direct effect of the initial expenditures plus the required intermediate input increases are depicted in the baseline model only. A Keynesian consumption multiplier based on wage income is added in the second model to arrive at an estimation of the economic effects of induced consumption. Finally, a channel that links (induced) investment spending to profits is added. Spillover effects across borders occur in all three models.

6 Building on Picek and Schröder (2018), this article uses the second version of the WIOD with the latest input-output table from 2014 and extends the analysis further.

7 According to the rules of the Multiannual Financial Framework, a 2% inflation rate for each year must be assumed to convert from constant to current prices. With the European Central Bank unable to bring inflation to 2%, however, the real value of the planned spending in current prices could be higher when inflation remains below the benchmark. Furthermore, delays or unplanned frontloading of the disbursements of funds also influence their real value.

Naturally, a note of caution is required at this point. Model uncertainty is always present and arises in input-output models mainly due to the linearity and simplicity of the model.[8] In order to make useful predictions, a crucial prerequisite for input-output models is that the economy must not be constrained by the ability of firms to supply goods and services at the prevailing prices. Therefore, the results hold less if disrupted supply lines are present in 2021 and later. On the one hand, several typical major supply restrictions such as high energy prices, hawkish central bank interest policy and shortage of labour do not constrain the economy during the current recession. On the other hand, impaired equity values in many firms may lead to a lower propensity to invest than in normal times. More important, however, is the fact that the aftermath of COVID-19 or a second outbreak thereof may significantly alter the observed consumption and investment behaviour based on historic data embedded in the model – both at the aggregate and sectoral levels. When propensities to consume and invest falter in 2020 and fail to recover entirely in 2021 and subsequent years, the multiplier implied in the model does not hold up. The growth and employment effect of the programme could then be muted to a certain extent.

Readers who are inclined to believe that the economic aftermath of COVID-19 will leave permanent marks could therefore primarily look at the results of the model with direct effects (and intermediate inputs) only, and if they do not want to rely on historic (but uncertain) consumption and investment – multipliers for the next years. Readers who believe investment will be impaired for a longer time due to the balance sheet problems of many firms, but consumption will not be (thanks to e.g. short-term work schemes), should focus on the results of the direct plus consumption-induced model. The total values for each country from the third model including direct, consumption-induced and investment-induced effects probably tell the story of an optimistic future and strong investment dynamics within a powerful rebound and upswing after the coronavirus has been safely contained.

Main results

A note on the interpretation of the results is in order. The initial stimulus takes the form of a grant payment that takes place once between 2021 and 2027 and is not renewed or repeated. The following Figures therefore show the cumulative effect of a cumulative shock that is nonetheless a one-time event. For each country, the results are in percent of their respective GDP in 2020. However, it does not mean that real GDP will be higher by this amount at the end of a specific year or at the end of the programme period. Instead, it means that over the 2021-2027 period, the differences between a higher GDP (because of Next Generation EU) and the baseline GDP add up to the amounts shown in the graph. To receive precise yearly numbers, one would have to divide the results by the number of years under consideration weighted by a presumed disbursement schedule. The maximum effect of the programme can be expected in 2023 and 2024, when over 70% of the Resilience and Recovery Facility grants, the main part of Next Generation EU, are scheduled to be paid out. For simplicity, a division of the cumulative sum by seven (number of years from 2021 to 2027) can provide a quick estimate of the average yearly effect (in terms of GDP in 2020). Another, hypothetical, way to think about the results is the following: if all planned additional expenditures were theoretically spent in 2020 (in a non-COVID-19 economy), by how much would GDP increase in 2020? Naturally, as the one-time impulse is withdrawn in 2021 and later years, this opens up room for a subsequent (partial) fall in economic activity unless the additional income stream in 2020 has laid roots for a self-contained private sector upswing in the years following the impulse.

The main result of the present paper is shown in Figure 4 (cumulative) and Figure 5 (yearly average). The cumulative increase in real GDP over the period 2021-2027 as a result of the additional investment and government spending is presented for all EU countries in Figure 4. During the programme period, additional Greek GDP through Next Generation EU accumulates to 22.5% of GDP 2020 in the best case. And dividing over seven years, this amounts to an average yearly increase of 3.2% (in terms of 2020 constant prices as shown in Figure 5).[9] In the worst case scenario (only direct effects), without significant consumption and investment multipliers, a meagre cumulative increase of 7.7% of expected 2020 Greek GDP is recorded – or 1.1% per year. Roughly, but not precisely in line with diminishing domestic grant expenditure, the economic effect decreases successively, iterating through each Southern European country and the Central and Eastern European accession countries. The South-Eastern block is followed by France and Malta, before Germany and Austria begin to lead the geographic and political North-West flank of the Union with smaller grant amounts (and no loans), ending with Denmark. The latter face less than a 1% higher level of real GDP over the time horizon.

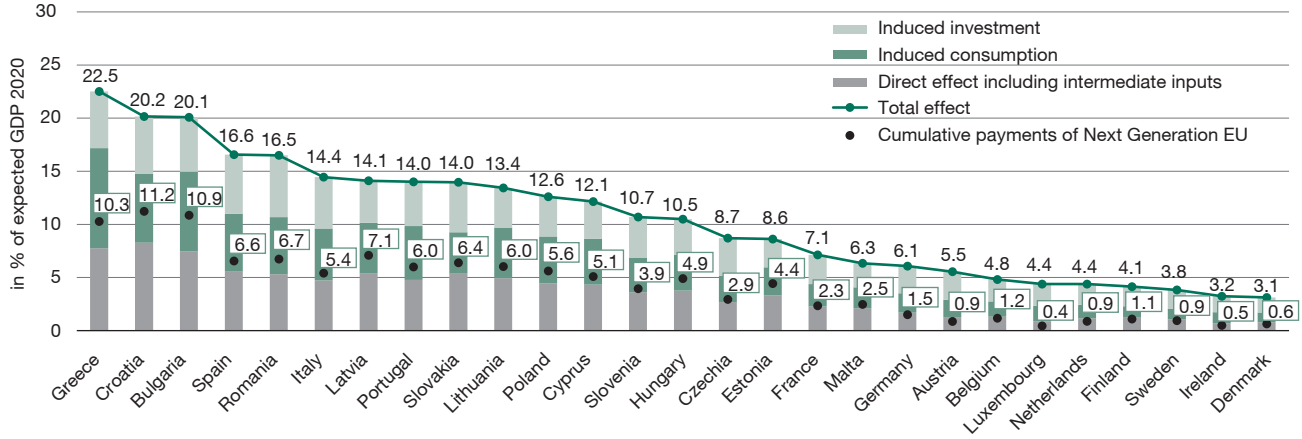
How do these results compare with those of other models, in particular DSGE models? European Commission staff has simulated the impact of Next Generation EU in a stylised version of their QUEST III model (see Verwey et al., 2020). While

8 Compared to DSGE or more modern macro models, however, overfitting of parameters is impossible, leaving the researcher less choice regarding the parameter input values and the subsequent results. For a discussion with more details, see Picek and Schröder (2018).

9 In the years after 2020, this increase becomes slightly smaller than 3.2% because the denominator (real GDP in future years) increases.

Figure 4

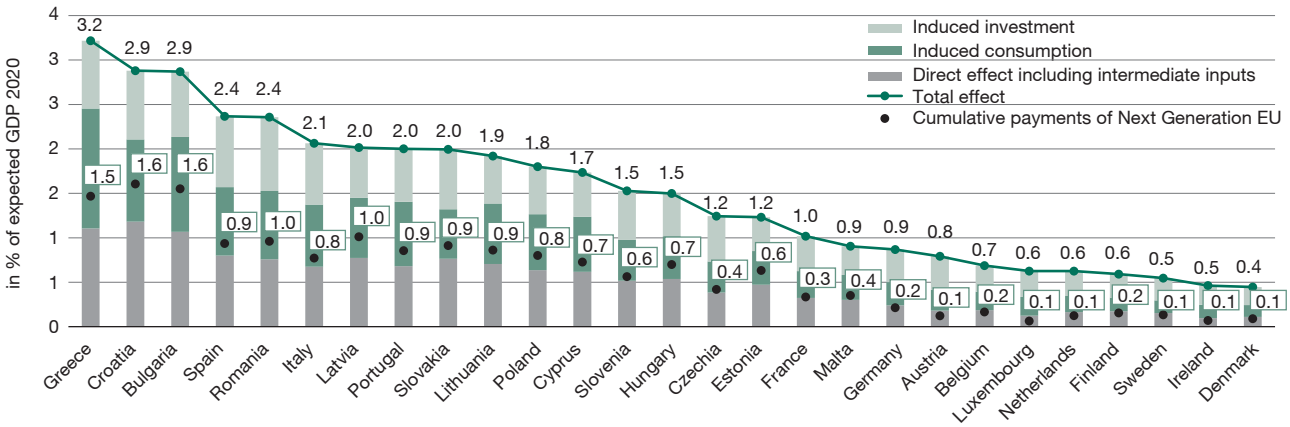
Next Generation EU grants: Cumulative increase in real GDP 2021-2027 including spillover effects



Source: WIOD, Picek and Schröder (2018), author's calculations.

Figure 5

Next Generation EU grants: Average yearly increase in real GDP 2021-2027



Source: WIOD, Picek and Schröder (2018), author's calculations.

not providing a detailed analysis, the article reveals that real GDP levels are 2% higher in 2024 and remain elevated by 1% until 2030 compared to a baseline scenario. Even higher income member states (in Northern and Western Europe) will experience an increase in real GDP levels of 1% in 2024. Not knowing the precise specifications of their model makes it difficult to make a sound comparison. Notwithstanding slight differences, the results of the Commission model appear nonetheless comparable in magnitude to the results presented in this paper. Among the four big euro area economies, Spain and Italy each sustain an average yearly real GDP level of over 2% above the baseline if investment and consumption follow historic trends. France sustains a yearly GDP level increase of 1% above baseline and Germany of 0.9% in the period from 2021 to 2027.

In most countries, economic effects are larger than the initial shock plus direct intermediate inputs (the first model with the smallest multipliers). However, this only applies because the simultaneous expansion in all member states 'returns' spillover effects to each country. For instance, if Austria alone were to undertake a national expenditure programme equal in magnitude to the Austrian share of Next Generation EU (0.9% of Austrian GDP in 2020), the direct effect (including intermediate inputs of the initial shock) within Austria would only yield a 0.6% increase in domestic GDP. A large part of the economic benefit dissipates – from the domestic point of view – towards foreign countries. But due to the coordinated expansion through Next Generation EU, other countries 'return the favour' and Austria manages to capture its share of their spending for an additional 1.3% of Austrian GDP – even in the

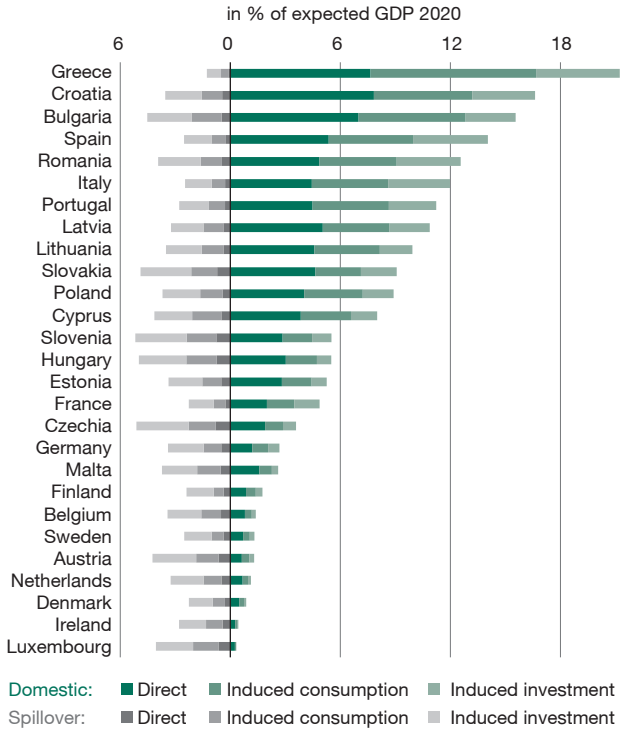
most restricted model.[10] In Figure 6, the total economic effect of the plan per country is decomposed into a domestic part (green shades) and a spillover part from other countries (grey shades). The shading reflects the three models.[11] The (green) domestic part is defined as the GDP growth that results from each country running its own stimulus programme while no other country runs theirs simultaneously. This stand-alone programme is otherwise identical to the level and composition of Next Generation EU as scheduled for that country. The foreign part for each country is then simply the difference between Next Generation EU and the stand-alone expansion for that country. This spillover can be interpreted as the price each country would pay for having to go it alone when all neighbours decide to remain uncooperative and not stimulate their own economy as planned for Next Generation EU.

Despite the clear value added for all countries that a cooperative fiscal stimulus entails, significant differences prevail across member states. Taking the model with the largest effect (including consumption and investment multipliers), Greece, Croatia, Italy, Spain and Portugal rely on a domestic effect that accounts for more than 80% of the total GDP increase of the programme, owing to the fact that their domestic stimulus is large compared to other countries. On the contrary, Luxembourg, Ireland, Denmark, the Netherlands, Austria and Belgium receive more than 70% of the total effect from foreign-induced demand.

Of course, any Keynesian multiplier effect – either through consumption or investment – increases the economic benefit of the plan massively for each country. Then, even the domestic effect only leads to a higher GDP increase than the original outlays. For several countries with large initial domestic spending (South and East), the greater part of the output increase stems from domestic spending and the own multiplier effect thereof. In particular, Southern European countries – being rather closed economies in comparison – exhibit high own domestic multipliers (Picek and Schröder, 2019).

For Northern and Western countries in general, most of the total effect originates from outside the country because parts of

Figure 6
Decomposition of cumulative GDP increases into a domestic (green) and spillover (grey) effect



Note: The spillover effect is not negative. Both effects are positive and contribute to the total effect.

Source: Author's calculations.

the increased economic activity in foreign countries spill over. Their domestic firms and households can secure a disproportionately high share of the induced investment activity and the (resulting) consumption triggered by it. Somewhat smaller than in the investment-induced model, the induced consumption effect of grants and loans (second-round effects) increases Northern and Western EU GDPs by sizeable amounts. Of all spillover effects, the ones from the direct effect of the shocks are generally the least important for these European states.[12]

The comparatively open economies of Northern and Western Europe manage to obtain a large share of the positive economic effects of the reconstruction plan not only through the 'normal outflows' from Southern and Eastern Europe via their trade relations, but also through their favourable

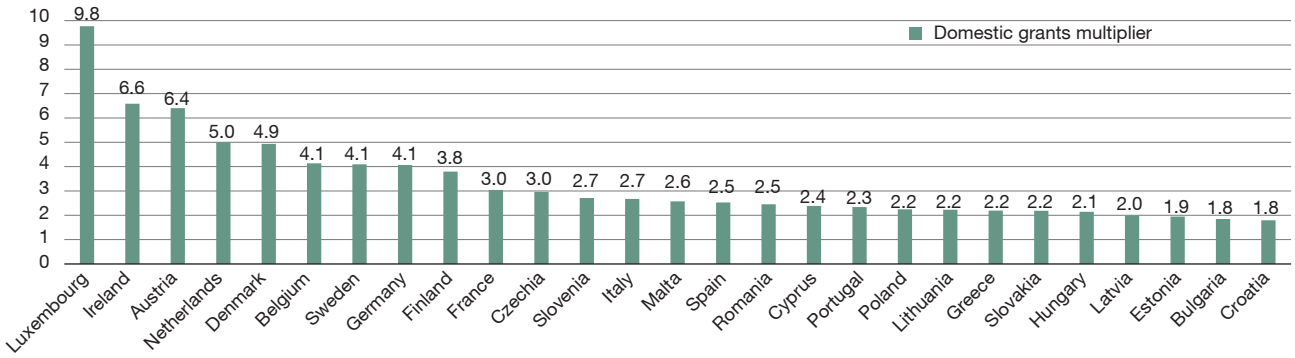
10 Austria is an interesting case because it has closer geographic and economic ties to the countries of Southern and Eastern Europe than other countries from Northern and Western Europe. Before the European Council changes to Next Generation EU, made in July 2020, that gave additional grants to Germany and France, Austria was set to become the biggest beneficiary among the Northern and Western European countries, for which the plan provides only grants but no loans (right-hand section, Figure 4). There is also a political dimension: Austria nets by far the largest gain among the 'frugal four' (Denmark, Sweden, the Netherlands and Austria), making its adherence to the group relatively more costly in economic terms (Picek, 2020).

11 The three models are: direct effect, direct plus induced consumption, direct plus induced consumption and induced investment. In Figure 6, the partial effects of the three models (direct, induced consumption and induced investment) are shown just as in Figures 4 and 5.

12 To give an example using again the case of Austria: At the end of the term 2021-2027, Austria's economic output could be up to 8.8% higher than it would have been without the Next Generation EU package. Around 1.5 percentage points result from the domestic shock, while 7.3 percentage points arise from spillovers. Of the latter, 2.2 percentage points come from induced consumption and 4.1 percentage points are from induced investment (and the additional induced consumption thereof).

Figure 7

Next Generation EU spillovers: Multiplier of the total effect relative to domestic grants



Source: WIOD, Picek and Schröder (2018), author's calculations.

industrial structure that allows them to capture demand for investment goods. This is shown in Figure 7 by relating the funds dispensed in the home country (in the form of grants) to the overall initial plus triggered GDP effects (of the whole programme). This multiplier highlights spillover effects from a clearer angle. Even disregarding the inflated value of Luxembourg due to its small size and location right between the European economic powers, Northern and Western countries (from Ireland to France) all have a much higher spillover multiplier than the Southern and Eastern countries (Czechia to Croatia).

Conclusion

An analysis of the economic effects of the reconstruction plan shows above all the importance of a coordinated fiscal policy response to the economic consequences of the coronavirus pandemic. If only one country takes measures to stimulate the economy, part of the effect is 'lost' from a domestic perspective because this part helps foreign economies. If, however, all EU member states take measures to stimulate the economy at the same time, only a very small part is lost to other European countries outside the European Union, while the rest benefits other member states within the single market. Despite their fairly small domestic grants, even the Northern and Western European countries can thus benefit from the Next Generation EU package to a sizeable extent.

References

Creel, J., M. Holzner, F. Saraceno, A. Watt and J. Wittwer (2020), How to Spend it: A Proposal for a European Covid-19 Recovery Programme, *WIIW Policy Notes and Reports,* 38.

Darvas, Z. (2020a, 29 May), An uncompromising budget, *Bruegel Blog*, https://www.bruegel.org/2020/05/new-eu-budget-proposal-the-uncompromised-compromise/ (11 September 2020).

Darvas, Z. (2020b, 10 June), Next Generation EU: 75% of grants will have to wait until 2023, *Bruegel Blog*, https://www.bruegel.org/2020/06/three-quarters-of-next-generation-eu-payments-will-have-to-wait-until-2023/ (11 September 2020).

Darvas, Z. (2020c, 17 June), The EU's recovery fund proposals: crisis relief with massive redistribution, *Bruegel Blog*, https://www.bruegel.org/2020/06/the-eus-recovery-fund-proposals-crisis-relief-with-massive-redistribution/ (11 September 2020).

Darvas, Z. (2020d, 23 July), Having the cake, but slicing it differently: how is the grand EU recovery fund allocated?, *Bruegel Blog*, https://www.bruegel.org/2020/07/having-the-cake-how-eu-recovery-fund/ (10 September 2020).

European Commission (2020a), Recovery plan for Europe, https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response/recovery-plan-europe_de (3 June 2020).

European Commission (2020b), Proposal for a Council Regulation establishing a European Union Recovery Instrument to support the recovery in the aftermath of the COVID-19 pandemic, COM/2020/441 final/2.

European Commission (2020c), Proposal for a Regulation of the European Parliament and of the Council establishing a Recovery and Resilience Facility, COM/2020/408 final.

European Commission (2020d), EU long-term budget 2021-2027: Commission Proposal May 2020, https://ec.europa.eu/info/strategy/eu-budget/eu-long-term-budget/2021-2027_en#documents (10 September 2020).

European Council (2020), Council Conclusions, EUCO 10/20, CO EUR 8 CONCL 4, https://www.consilium.europa.eu/media/45109/210720-euco-final-conclusions-en.pdf (10 September 2020).

Kafsack, H. (2020, 27 May), So viel Geld erhalten die einzelnen Staaten, *Frankfurter Allgemeine Zeitung*, https://www.faz.net/aktuell/wirtschaft/750-milliarden-euro-der-eu-so-viel-erhalten-die-einzelnen-staaten-16788431.html (3 June 2020).

Ionescu, S. and C. Dietrich (2015, 2 September), Cohesion policy implementation in the EU28, *European Parliamentary Research Service Blog*, https://epthinktank.eu/2015/09/02/cohesion-policy-implementation-in-the-eu28/ (14 September 2020).

Matthews, A. (2020, 3 June), Commission proposes increased agricultural spending in reinforced MFF, *CAP Reform blog*, http://capreform.eu/commission-proposes-increased-agricultural-spending-in-reinforced-mff/ (14 September 2020).

Miller, R. E. and P. D. Blair (2009), *Input-output analysis: foundations and extensions*, 2nd edition, Cambridge University Press.

Picek, O. (2020), Koordinierte europäische Fiskalpolitik bringt Wachstumsschub auch für Österreich, *Momentum Institut Policy Brief*, 9/2020.

Picek, O. and E. Schröder (2018), Spillover Effects of Germany's Final Demand on Southern Europe, *World Economy*, 41(8), 2216-2242.

Picek, O. and E. Schröder (2017), Euro Area Imbalances: How Much Could an Expansion in the North Help the South?, *IMK Working Paper*, 180.

Timmer, M., E. Dietzenbacher, B. Los, R. Stehrer and G. J. Vries (2015), An Illustrated User Guide to the World Input-Output Database: the Case of Global Automotive Production, *Review of International Economics*, 23(3), 575-605.

Verwey, M., S. Langedijk and R. Kuenzel (2020, 9 June), Next Generation EU: A recovery plan for Europe, *VoxEU*, https://voxeu.org/article/next-generation-eu-recovery-plan-europe (10 September 2020).

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Twin Deficits: Evidence From Portugal, Italy, Spain and Greece

Since the mid-2000s, internal and external imbalances have increased in many EU countries. This contributed to the debate over whether government budget deficits affect current account deficits, known as twin deficits hypothesis. It implies that public debt is actually a burden for future taxpayers and thus a dangerous way for budget financing. Therefore, the fiscal measures implemented by policymakers may also affect the current account. This article tests the twin deficits hypothesis for Portugal, Italy, Spain and Greece for the period 1999-2017. The empirical analysis presented in the article finds evidence that strongly supports this hypothesis only for Italy and Greece. For Portugal and Spain, however, the evidence is quite weak.

Since the 1980s, a debate has ensued over whether government budget deficits affect the current account deficits. This debate, known as the twin deficits hypothesis (TDH), is supported by Keynesian economists and implies that an increase in a government's budget deficit (BD) will increase the current account deficit (CAD). On the other hand, the Ricardian Equivalence Hypothesis (REH), first introduced by Barro (1974), postulates that BD and CAD are not related: a BD will be totally offset by changes in savings and thus will not affect the current account. According to REH, the increase in government spending leads to more debt and therefore households increase their savings as they expect higher future taxes for offsetting this debt. However, empirical studies regarding REH provide mixed results.

The relationship between BD and CAD is crucial as internal and external imbalances in many EU countries are increasing. If the TDH holds for a country, it implies that the REH is not valid and the public debt is actually a burden for future taxpayers. Consequently, it poses a problem for budget financing and may even lead to a future fiscal crisis. This is, of course, quite crucial for policymakers, as the fiscal measures they implement for reducing BD may also affect the current account.

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This paper first provides an extensive literature review regarding the validity of the TDH, focusing on Portugal, Italy, Greece and Spain. Subsequently, the basic theoretical framework of the TDH and REH is presented, followed by the econometric methodology and the empirical results.

There is no strong evidence to support the TDH for Portugal, which implies that an increase in BD will be totally offset by changes in private savings and, thus, there will be no impact on CAD. In contrast, there is evidence in favour of the TDH for Italy, which implies that the policy measures for improving current accounts could improve public finances. For Greece, a BD increase is partly offset by an increase in private savings and thus the CAD is widening. The results support the TDH partially and imply the necessity for implementing alternative policies, such as promoting investments in new technology, innovations in exporting sectors and tax cuts on selected industries. Finally, for Spain, there is no evidence that the CAD and the BD are moving together in the long run.

Literature review

The alleged link between the budget balance and the current account balance caused an intense debate among economists, especially in the 1980s and 1990s. The empirical results regarding the validity of the TDH are mixed and depend on the macroeconomic conditions of the countries under consideration. Barro (1974) claimed that there is no correlation between BD and CAD and argued that present borrowing would be matched by increased bequest to future generations in order to pay higher future

taxes for servicing the debt. This was in direct response to Blinder and Solow (1973), who imply that the long-term implications of government borrowing would be compensated by the wealth effect.

Most empirical studies have been focused on the US, but the literature is quite extensive and includes research on several developed and developing countries. Among others, Bernheim (1987) analysed the relationship between changes in consumption and changes in deficits in the US and concluded that consumers' behaviour is more aligned with REH. Kearney and Monadjemi (1990) found evidence of a temporary twin deficits realtionship between fiscal policy and performance on the current account. Their evidence also implied that fiscal expansions improve current accounts as the economy adjusts towards its long-run equilibrium, while the twin deficits realtionship depends on the government's financing decision. Enders and Lee (1990) identified some patterns in the recent US data that appear to be inconsistent with the REH, and Abell (1990) showed that BD affects CAD through the transmission mechanisms of interest rates and exchange rates. Similar results were obtained from Bachman (1992), whose evidence supported the validity of the TDH. However, Feldstein (1992) argued that it is wrong to generalise from the US experience to conclude that BD and CAD are two sides of the same coin because the division between them depends mainly on the external economic environment.

Normandin (1999) analysed the responses of CAD to an increase of BD for Canada and the US and showed that the stochastic properties of the BD are crucial for testing the TDH. Khalid and Guan (1999) used a sample of developing and developed countries and found evidence that supports the TDH only for the developing countries. The findings of Piersanti (2000) strongly supported the view that CADs have been associated with large expected future BDs for most industrial countries, whereas Chinn and Prasad (2000) showed that government budget balances are positively correlated with current account balances and with initial stocks of net foreign assets. Leachman and Francis (2002) explored the TDH for the US and found no evidence of short-run correlations between government deficits and external deficits, while Gale and Orszag (2003) showed that long-term BDs reduce national savings and impose substantial long-run costs on the economy. If an increase in the BD is not fully offset by an increase in private savings, it will lead to some combination of reduced domestic investments and an expanded CAD.

Kouassi et al. (2004) analysed a sample of twenty developed and developing countries and found evidence that supports the TDH only for some developing countries. Reitschuler and Crespo Cuaresma (2004) tested the REH for 26 OECD countries and found that it cannot be rejected for ten countries, of which nine are European. Cavallo (2005) identified that an increase in government expenditure on final goods produces a sizeable deterioration in the current account balance, while Erceg et al. (2005) showed that changes in fiscal policy have fairly small effects on the US trade balance, irrespective of whether the source is a spending increase or a tax cut. The results of Bartolini and Lahiri (2006) supported the TDH, and Mukhtar et al. (2007) found evidence of a long-run bi-directional relationship between the two deficits in Pakistan. Kim and Roubini (2008) suggested that an expansionary fiscal policy shock improved the current account and depreciated the real exchange rate in the US. Afonso (2008) tested the debt neutrality hypothesis for the EU countries and showed that after the 1990s, the REH could not be rejected.

Nickel and Vansteenkiste (2008) showed that for countries with debt-to-GDP ratios up to 90%, the relationship between the government budget balance and the current account is positive, while for countries with high debt this relationship becomes negative. In other words, countries with high-debt households tend to become Ricardian. Kosteletou (2013) confirmed the TDH for the countries of the southern eurozone. She also found that fiscal policies of the eurozone countries with surpluses have a positive influence on the current account of southern eurozone countries. Finally, Forte and Magazzino (2013) analysed 33 European countries and showed that a long-lasting and robust BD generates a CAD.

The cases of Portugal, Italy, Greece and Spain

Greece, Italy, Portugal and Spain suffer from long-lasting CADs, whereas BDs became a problem only after the 2009 crisis. For Greece and Portugal, insolvency is the problem: their economies suffer from low national savings and depend on high capital inflows. For Spain, illiquidity is the problem: national savings are high and the crisis was due to financial activity expansion. In Italy, the problem is different: its economy deals with high savings, small foreign imbalances and a conservative financial sector.

Cardoso and Doménech (2011) studied Spain and found that the negative correlation between the government budget balance and the current account, or twin divergence, cannot be explained by the large fiscal stimulus implemented during the crisis. This evidence is mainly attributed to output loss, deleveraging and uncertainty. Magazzino (2012) analysed the linkages between CAD and BD in Italy and showed that CAD affects BD only in the short run. His results also imply that by correcting external imbalances, the Italian government could improve public finances. Akdoğan and Geldi (2013) investigated

the current account in seven selected EU members, including Greece, Italy, Portugal and Spain. They found a long-run relationship between the current account and its determinants such as the real exchange rate, interest rate and the budget deficit, but their evidence in favour of TDH was weak. Also, Deltoro and Carmarero (2015) found evidence that validated the REH for Greece and Portugal, and supported the TDH for Italy and Spain, in which BDs cause CADs.

For Greece, its increasing debt was primarily the result of the growing BD triggered by the euro appreciation and the subsequent loss of competitiveness, as well as the extensive tax evasion. This loss of external competitiveness also led to a persistent CAD. As a result, economic activity slowed and tax revenues declined. On the other hand, the government increased public expenditures to offset the decline in demand. Thus, the BD increased and so did public debt. The increased demand for funds from the public sector led to an increase in interest rates, which depressed economic activity again. Since 2007, public expenditure and thus BD continued to increase.

Vamvoukas (1999) empirically tested the validity of TDH and REH in the case of Greece and showed that BD has short- and long-run positive causal effects on CAD. Thus, policy measures that are able to reduce BD may also contribute to the reduction of CAD. Also, Bitzis et al. (2008) showed that the BD does not seem to have had a strong impact on the CAD. Antzoulatos (2011) provided empirical evidence for the assessment that the root cause of the Greek crisis is the loss of competitiveness, as manifested by the increasing CAD, and not the BD. In fact, the empirical evidence indicates that current account deterioration is followed by budget deterioration. Kalou and Paleologou (2012) showed that the two deficits were positively linked and the causality was running from CAD to BD. Their findings also imply that domestic developments are dictated by the foreign balance only to a certain extent. It is more likely that these are also caused by the existence of a large parallel economic sector. Thus, tax reforms for reducing tax evasion and structural reforms in the labour and capital markets are imperative.

To summarise, the REH argues that BD and CAD are not correlated, whereas the Keynesian proposition confirms the existence of a positive relationship between them, where BD causes CAD. However, the empirical literature presented above is inconclusive. In several cases it supports the conventional Keynesian proposition that BD causes CAD, while in other cases there is evidence of reverse causality or bi-directional causality. Moreover, a few studies provide evidence that support the REH and imply that BD and CAD are uncorrelated.

Theory and econometric methodology

Twin deficits hypothesis

The TDH states that an increase in BD will cause an increase in CAD. The current account (CA) records the transactions of a country with the rest of the world. A current account deficit ($CA < 0$) implies that a country is a net importer. Recall that the gross national income (Y) is given by:

$$Y = C + I + G + CA, \tag{1}$$

where C is private consumption, I stands for investment, and G is government consumption. To evaluate the TDH, we decompose total national savings (S) into public savings (S_G)

$$S_G = T - G, \tag{2}$$

where T represents taxes, and private savings (S_P)

$$S_P = Y - T - C. \tag{3}$$

Therefore:

$$Y = C + I + G + CA \Leftrightarrow CA = Y - C - G - I \Leftrightarrow CA = (Y - T - C) + (T - G) - I \Leftrightarrow$$

$$CA = S_p + S_g - I \Leftrightarrow CA = S - I. \tag{4}$$

CAD is therefore equal to the excess of domestic investment over savings: when a country's investment exceeds its savings the difference must be financed from abroad. In principle, less developed countries that are catching up will generally feature CADs, while advanced economies will have surpluses. From equation (4) we get:

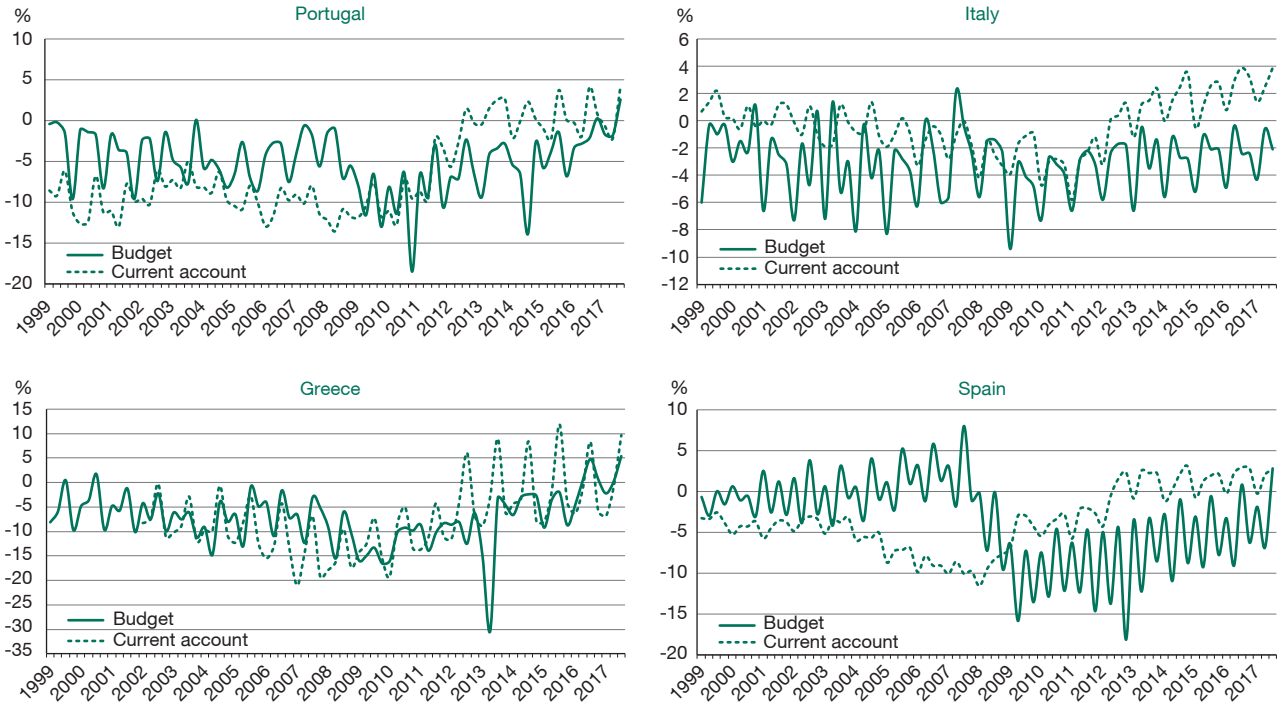
$$CA = S_p + S_g - I \Leftrightarrow CA = (S_p - I) + (T - G). \tag{5}$$

Equation (5) implies that if domestic investment is entirely financed by private savings ($S_P \approx I$), then the current account and government balance must move together (i.e. they are "twins"). However, in most cases, the public sector is financed partly by domestic and partly by international financial markets. Thus, an increase in BD will cause an increase in CAD.

Ricardian equivalence hypothesis

The REH was firstly introduced by Barro (1974) and its main assumption is that under specific conditions, changes in taxes would have no effect on consumer spending. A tax decrease will lead to an identical increase in savings. Also, the REH indicates that the time path of taxes has no

Figure 1
Current account deficit and budget deficit as percentage of GDP in selected countries



Source: Authors' own elaboration based on Eurostat data.

effect on the households' budget constraint as long as the present value of taxes remains unchanged. Government financing decisions may influence private savings, private investment and current account. As government increases spending, it also increases public debt. Thus, households increase their savings as they expect higher future taxes for offsetting this debt. It follows that if the REH is valid, countries with high levels of debt should also have comparatively higher levels of household savings. However, the REH assumes the existence of perfect capital markets and the ability for individuals to borrow and save whenever they want. But in real world, households may not be able to borrow against future income because of imperfections in financial markets. Additionally, the REH assumes that individuals are willing to save for a future tax increase. But people do not live forever and do not care about taxes levied after their death. It should be noticed that REH does not mean that any countercyclical efforts will fail, but outlines the necessary conditions for that failure and, subsequently, for their success at the same time.

Unit roots, cointegration and Granger causality

Firstly, we examine the time series for unit roots. This is important because it helps us to understand whether several shocks have permanent or transitory effects. For example, for a country's intertemporal solvency condition to hold, the change in the country's obligations to the rest of the world (i.e. its CAD) must be stationary. Economic time series can be categorised according to their type of trend: (a) stationary processes with deterministic (linear or quadratic) trends, in which shocks have transitory effects, and (b) processes with stochastic trends (or unit roots), in which shocks have permanent effects.

The present analysis employs two standard tests for unit roots. The first one is the augmented Dickey–Fuller (ADF) test, which removes all the structural effects from the time series and then tests the null hypothesis of a unit root. The ADF regression may include deterministic components, such as a constant or a linear trend. The second test is the Kwiatkowski–Phillips–Schmidt–Shin (KPSS) test, which tests the null hypothesis of stationarity. In this test, the absence of a unit root implies trend stationarity. This means that the shock is transitory and the time series will converge again towards the growing mean, which is not affected by the shock. On the other hand, a unit root process has a permanent impact on the mean. This implies that there is no convergence over time.

Moving to cointegration, theory often suggests that certain pairs of economic variables should be linked by a long-run economic relationship. For example, two or more individual

Table 1
ADF unit root test results

Country	Variable	Model	*p*-value
Portugal	CAD	Constant, no trend	0.6356
		Constant and trend	0.6261
		No constant, no trend	0.0867
	BD	Constant, no trend	0.5724
		Constant and trend	0.9066
		No constant, no trend	0.3114
Italy	CAD	Constant, no trend	0.6432
		Constant and trend	0.7943
		No constant, no trend	0.1715
	BD	Constant, no trend	0.1602
		Constant and trend	0.4451
		No constant, no trend	0.5038
Greece	CAD	Constant, no trend	0.9113
		Constant and trend	0.7576
		No constant, no trend	0.3637
	BD	Constant, no trend	0.6832
		Constant and trend	0.9180
		No constant, no trend	0.2937
Spain	CAD	Constant, no trend	0.7311
		Constant and trend	0.7244
		No constant, no trend	0.1967
	BD	Constant, no trend	0.4288
		Constant and trend	0.7631
		No constant, no trend	0.2030

Notes: The unit root hypothesis cannot be rejected in any case at the 5% level of significance.

Source: Authors' own estimations.

Table 2
KPSS unit root test results

Country	Variable	Model	LM-stat.
Portugal	CAD	Constant, no trend	0.7869*
		Constant and trend	0.2134*
	BD	Constant, no trend	0.2105
		Constant and trend	0.1839*
Italy	CAD	Constant, no trend	0.3165
		Constant and trend	0.2619*
	BD	Constant, no trend	0.5000*
		Constant and trend	0.5000*
Greece	CAD	Constant, no trend	0.6357*
		Constant and trend	0.3562*
	BD	Constant, no trend	0.2297
		Constant and trend	0.2309*
Spain	CAD	Constant, no trend	0.6175*
		Constant and trend	0.2449*
	BD	Constant, no trend	0.5575*
		Constant and trend	0.1470*

Notes: * denotes rejection of the stationarity hypothesis at the 5% level of significance.

Source: Authors' own estimations.

series may have unit roots (i.e. they are first-order integrated or *I*(1)), but a vector of coefficients exists and forms a stationary linear combination of them. More formally, time series x_t and y_t are said to be cointegrated if there exists a parameter a such that $u_t = y_t - ax_t$ is a stationary process. In the following analysis, three cointegration tests are employed. The first one is the Engle–Granger test, which is a residual-based test and runs a static regression (after first having verified that y_t and x_t are both *I*(1)) $y_t = \theta' x_t + e_t$. The second test is the Phillips–Ouliaris test, which is also a residual-based test and an improvement of the Engle–Granger test. The third test is the Johansen test, which has the advantage of allowing to test for cointegration without choosing the dependent variable on the test regression.

Finally and regarding causality, the Granger causality test determines whether one time series is useful in forecasting another and finds patterns of correlation. However, correlation does not necessarily imply causation. Assuming there are two variables x and y, the approach to the question of whether x causes y is to determine how much of the current y can be explained by past values of y, and then to investigate whether adding lagged values of x can improve the explanation. The variable y is said to be Granger-caused by x if x helps in the prediction of y, or equivalently, if the coefficients on the lagged values of x are statistically significant. The null hypothesis for this test is that the lagged values of x do not explain the variation in y.

Data and econometric results

This article uses data for Portugal, Italy, Greece and Spain from 1999Q1 until 2017Q3, obtained from the Eurostat database. Figure 1 reports BD and CAD as a percentage of GDP for these countries. Table 1 reports the ADF test results and shows that the unit root hypothesis cannot be rejected for both variables at the 5% significance level. Similar results are obtained from the KPSS test (see Table 2). The stationarity hypothesis is rejected for both variables in almost all cases. Based on the above, there is clear evidence of non-stationarity for both BD and CAD for all four countries.

Table 3
Engle–Granger and Philips–Ouliaris cointegration test results

Country	Dependent variable	Engle–Granger test		Philips–Ouliaris test	
		p-value	Conclusion	*p*-value	Conclusion
Portugal	BD	0.0079*	Cointegration	0.0000*	Cointegration
	CAD	0.9083	No cointegration	0.7850	No cointegration
Italy	BD	0.1729	No cointegration	0.0000*	Cointegration
	CAD	0.8562	No cointegration	0.0204*	Cointegration
Greece	BD	0.0002*	Cointegration	0.0001*	Cointegration
	CAD	0.8855	No cointegration	0.0006*	Cointegration
Spain	BD	0.6623	No cointegration	0.0000*	Cointegration
	CAD	0.9572	No cointegration	0.8949	No cointegration

Notes: The regression model does not include any deterministic terms. The *p*-values are based on the Engle–Granger *t*-statistic. * denotes rejection of the null hypothesis of no cointegration at the 5% level of significance.

Source: Authors' own estimations.

Table 4
Johansen cointegration test results

Country	Model	Trace	Maximum eigenvalue	Conclusion
Portugal	Intercept (no trend) in CE – no intercept in VAR	0.5118	0.5495	No cointegration
	Intercept (no trend) in CE and test VAR	0.2974	0.5504	No cointegration
Italy	Intercept (no trend) in CE – no intercept in VAR	0.5683	0.4086	No cointegration
	Intercept (no trend) in CE and test VAR	0.2676	0.2796	No cointegration
Greece	Intercept (no trend) in CE – no intercept in VAR	0.1218	0.0459*	Cointegration
	Intercept (no trend) in CE and test VAR	0.0363*	0.0314*	Cointegration
Spain	Intercept (no trend) in CE – no intercept in VAR	0.2898	0.2605	No cointegration
	Intercept (no trend) in CE and test VAR	0.1049	0.1733	No cointegration

Notes: The trace statistic test tests the null hypothesis of no cointegration (H_0: $r=0$) against the alternative hypothesis of cointegration (H_1: $r>0$). The maximum eigenvalue statistic test tests null hypothesis that there are r cointegrating relations against the alternative hypothesis that there are $r+1$ cointegrating relations. The numbers reported are *p*-values. * denotes rejection of the null hypothesis of no cointegration at the 5% level of significance.

Source: Authors' own estimations.

Moving to cointegration test results, Table 3 reports the results of the Engle–Granger and Philips–Ouliaris tests, and Table 4 presents the results of the Johansen test. The results of these two tables are mixed. However, it seems that there is evidence of cointegration between BD and CAD for Greece and Italy but not for Portugal and Spain. Regarding Granger causality, the test results are reported in Table 5. There is evidence of bi-directional Granger causality between CAD and BD for Italy and Spain. For Greece, CAD Granger causes BD, while the opposite does not hold. Finally, there is no evidence of Granger causality for Portugal.

Discussion and policy implications

Relating the results of the above analysis to policymaking, we can split the sample countries into two groups. The first group consists of Portugal and Spain, showing weak evidence that CAD and BD are cointegrated in the long run. An increase in BD will be totally offset by changes in private savings and, thus, there will be no impact on CAD, validating the REH for these two countries. This implies that consumers in Portugal and Spain are forward-looking in their expenditure decisions. Tax cuts imply a delayed pressure to raise taxes as governments will need to fill the budget gap due to the initial tax cuts. So, rational consumers will put the additional disposable income into savings, and consumption will not rise.

This has a direct impact on the way that policymakers implement economic measures. Especially during the last decade when both countries were harmed by the global financial crisis, there was a political consensus on structural reforms of the labour and product markets, the public sector, the tax and pension systems, and the financial sector. These reforms helped Portugal and Spain to regain access to capital markets and deal with their debt issues quite easily, as their bond yields decreased.

The second group consists of Italy and Greece, for which there is stronger evidence in favour of the TDH: policy measures taken in order to reduce CAD could partially improve public finances. However, as these two countries face very high debt-to-GDP ratios, structural reforms in the public administration, the labour and capital markets,

Table 5
Granger causality test results

Country	Null hypothesis (H0)	Lags	*p*-value
Portugal	CAD does not Granger cause BD	5	0.1100
	BD does not Granger cause CAD	5	0.4224
Italy	CAD does not Granger cause BD	6	0.0440*
	BD does not Granger cause CAD	6	0.0000*
Greece	CAD does not Granger cause BD	4	0.0016*
	BD does not Granger cause CAD	4	0.0916
Spain	CAD does not Granger cause BD	6	0.0092*
	BD does not Granger cause CAD	6	0.0002*

Notes: The number of lags was selected using the Akaike information criterion. * denotes rejection of the null hypothesis of no cointegration at the 5% level of significance.

Source: Authors' own estimations.

and the tax and insurance systems are necessary in order to improve their competitiveness, current account and thus, their budget balance. Investments in new technology, innovations in exporting sectors and tax cuts on selected industries will also help. Unfortunately, there was no political consensus during the crisis regarding the promotion of these reforms. Due to political costs, policymakers dealt with issues only partially, leading to a delayed access to capital markets and to higher bond yields than those of Portugal and Spain. Especially the Greek current account is slightly deteriorating, confirming the above arguments.

References

Abell, J. D. (1990), Twin deficits during the 1980's: an empirical investigation, *Journal of Macroeconomics*, 12, 81-96.

Afonso, A. (2008), Euler testing Ricardo and Barro in the EU, *Economics Bulletin*, 5, 1-14.

Akdogan, I. U. and H. K. Geldi (2013), Revisiting the twin deficit hypothesis for the economies of Europe, *Journal of European Theoretical and Applied Studies*, 1, 53-65.

Antzoulatos, A. A. (2011), Greece in 2010: a tragedy without(?) catharsis, *International Advances in Economic Research*, 17, 241-257.

Bachman, D. D. (1992), Why is the US current account deficit so large: evidence from vector auto regressions, *Southern Economic Journal*, 59, 232-240.

Barro, R. (1974), Are government bonds net wealth?, *Journal of Political Economy*, 82, 1095-1117.

Bartolini, L. and A. Labiri (2006), Twin deficits, twenty years later, *Current Issues in Economics and Finance*, 12(7), 1-7.

Bernheim, B. (1987), Ricardian equivalence: an evaluation of theory and evidence, *NBER Macroeconomics Annual*, 263-304.

Bitzis, G., J. M. Paleologos and C. Papazoglou (2008), The determinants of the Greek current account deficit: the EMU experience, *Journal of International and Global Economic Studies*, 1(1), 105-122.

Blinder, A. S. and R. M. Solow (1973), Does fiscal policy matter?, *Journal of Public Economics*, 2, 319-337.

Cardoso, M. and R. Doménech (2011), On Ricardian Equivalence and Twin Divergence, in J. E. Boscá, R. Doménech, J. Ferri and J. Varela (eds.), *The Spanish Economy*, Palgrave Macmillan.

Cavallo, M. (2005), Government consumption expenditures and the current account, *Federal Reserve Bank of San Francisco Working Paper*, 2005-03.

Chinn, M. and E. S. Prasad (2000), Medium-term determinants of current accounts in industrial and developing countries: an empirical exploration, *Journal of International Economics*, 59, 47-76.

Deltoro, S. L. and M. Camarero (2015), *Twin deficits hypothesis for European countries*, University of Jaume I.

Enders, W. and B. S. Lee (1990), Current account and budget deficits: twins or distant cousins?, *Review of Economics and Statistics*, 72, 373-381.

Erceg, C., L. Guerrieri and C. Gust (2005), Expansionary fiscal shocks and the trade deficit, Board of Governors of the Federal Reserve System, *International Finance Discussion Papers*, 825.

Feldstein, M. (1992), The budget and trade deficits aren't really twins, *NBER Working Papers*, 3966.

Forte, F. and C. Magazzino (2013), Twin deficits in European countries, *International Atlantic Economic Society*, 19, 289-310.

Gale, W. G. and P. R. Orszag (2003), Economic effects of sustained budget deficits, *National Tax Journal*, 56, 463-485.

Kalou, S. and S.-M. Paleologou (2012), The twin deficits hypothesis: revisiting an EMU country, *Journal of Policy Modeling*, 34, 230-241.

Kearney, C. and M. Monadjemi (1990), Fiscal policy and current account performance: international evidence on the twin deficits, *Journal of Macroeconomics*, 12, 197-219.

Khalid, A. M. and T. W. Guan (1999), Causality tests of budget and current account deficits: cross-country comparisons, *Empirical Economics*, 24, 389-402.

Kim, S. and N. Roubini (2008), Twin deficit or twin divergence? Fiscal policy, current account, and real exchange rate in the U.S., *Journal of International Economics*, 74, 362-383.

Kosteletou, N. E. (2013), Financial integration, euro and the twin deficits of southern eurozone countries, *Panoeconomicus*, 60, 161-178.

Kouassi, E., M. Mougoué and K. O. Kymn (2004), Causality tests of the relationship between the twin deficits, *Empirical Economics*, 29, 503-525.

Leachman, L. and B. Francis (2002), Twin deficits: apparition or reality?, *Applied Economics*, 34, 1121-1132.

Magazzino, C. (2012), The twin deficits phenomenon: evidence from Italy, *Journal of Economic Cooperation and Development*, 33, 65-80.

Mukhtar, T., M. Zakaria and M. Ahmed (2007), An empirical investigation for the twin deficits in Pakistan, *Journal of Economic Cooperation*, 28, 63-80.

Nickel, C. and I. Vansteenkiste (2008), Fiscal policies, the current account and Ricardian equivalence, *European Central Bank Working Paper*, 935.

Normandin, M. (1999), Budget deficit persistence and the twin deficits hypothesis, *Journal of International Economics*, 49, 171-193.

Piersanti, G. (2000), Current account dynamics and expected future budget deficits: some international evidence, *Journal of International Money and Finance*, 19, 255-271.

Reitschuler, G. and J. Crespo Cuaresma (2004), Ricardian equivalence revisited: evidence from OECD countries, *Economics Bulletin*, 5, 1-10.

Vamvoukas, G. (1999), The twin deficits phenomenon: evidence from Greece, *Applied Economics*, 31, 1093-1100.

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A Vote for the Economy? A Vote Against Democracy

When the text books are written, 2020 will go down in the annals of American history as exceptional for a number of reasons. This presidential election year has seen the first global pandemic in a hundred years, unemployment rates dip toward Great Depression-era levels, police violence spurred by systemic racism that has incited civic unrest reminiscent of the 1968 race riots and private citizens arming themselves to the teeth in order to take their security into their own hands amidst fears of "defunding the police." It has endured wildfires burning up and down the entire west coast of the US that have killed dozens of people and displaced thousands more, and an ongoing tropical storm season. It has borne questions of possible electoral interference including threats of shuttering the federal postal service, intelligence reports of foreign interference and claims from the sitting US President that if he does not win re-election, it is most certainly due to voter fraud. In a year like this, it is utterly unthinkable that a first-term president would have a snowball's chance in hell at winning re-election.

And yet, poll after poll shows President Donald Trump is either tied with or is only narrowly trailing his challenger, former Vice President Joe Biden. The most recent Pew Research poll has Biden ahead with 53% to Trump's 45%. Top pollsters FiveThirtyEight, however, found that in conducting over 40,000 electoral simulations, their model gave Biden a 77% chance of winning to Trump's 23%.

But winning what? In 2016, Hillary Clinton was ahead of Trump in the national polls by a similarly substantial margin. Most polls predicted her win was imminent by at least 80%. And perhaps the polls were correct – Clinton did beat Trump by almost three million votes. But the popular vote does not determine the electoral outcome in the US. In the electoral college system the US uses to elect its president, each state is given a number of votes based on how many representatives it sends to Congress – the House and the Senate. The number of House Representatives is determined by the state's population whereas the number of Senate seats allotted each state is the same – two – creating a rural skew. To win the presidency, a successful candidate needs to secure 270 of the possible 538 electoral college votes – not the popular vote. Indeed, polling experts say that Biden could win the popular vote by 4.5 million votes and still only have a 75% chance of winning the electoral college.

Despite the odds, obstacles and oddities, Trump's support base remains fervent. The President has famously said he could walk down New York City's 5th Avenue and shoot someone and would not lose a single supporter. What was once hyperbole appears to be inching closer to the truth. Trump's supporters forgive every transgression, deny every accusation, reinterpret every misspoken utterance and blame the "fake news" for every mischaracterization. This ardent and unwavering support that may carry Trump to a second term is based on a mixture of what his supporters consider his accomplishments and his characteristics: his appointment of conservative judges, his hard line on immigration, his attempt to dismantle the Affordable Care Act, his lack of adherence to norms of political correctness, his pro-life stance, his unwillingness to take down or rename memorials honoring former confederate war heroes, his defence of civilian militia and known white supremacists, to name just a few.

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But the most oft-cited reason, according to numerous polls, for the stark support Trump enjoys is the economy. This seems counterintuitive as the US and much of the world stares down a pandemic-induced recession – restaurants have shuttered, airlines are struggling to stay aloft, parents are juggling work, school and childcare. Regardless, this perception, and whether Biden can shake it or not in the next 40 days, are crucial to the outcome in swing states in the midwestern Rust Belt and the southwestern Sun Belt where the election may be decided. Many of these states have struggled this summer with rising coronavirus infection and death rates as well as rising unemployment and financial insecurity.

And still, many Americans, notably many more Republicans, feel that they are 'better off' today than they were four years ago, a measuring standard introduced by Ronald Reagan during the 1980 campaign against incumbent Jimmy Carter. The economy is indeed a crucial litmus test for a president's re-election prospects.

While unemployment rates are still higher than any other time during the post-World War II era, they have fallen since the onset of the pandemic, the stock market is up and there are signs that the GDP is growing rapidly. The unemployment rate according to the latest figures from the US Bureau of Labor stood at 8.4% for the month of August, although economists argue that the true rate may be understated and is higher than 11% when taking various factors into account.

The latest Financial Times-Peterson Foundation survey, conducted between September 9 and 14, found that 35% of likely voters believe they are better off financially than they were before Trump took office, while 31% say they are worse off. Breaking down the figures, it becomes clear that perception is strongly dictated by party affiliation. The poll shows 51% of Democrats believe they are worse off since Trump became president compared to 7% of Republicans. A recent Gallop poll indicated a 51-percentage-point gap in Republicans' and Democrats' ratings of the current economy as excellent or good, and a staggering 66-point partisan gap in the percentages of those who find the economy is improving. The extreme polarization means that party identity plays a more defining roll in voters' economic evaluations than quantitative measures.

This polarization has led voters to see two completely different realties. President Trump, through reality television and personal marketing, has built an enduring brand with conservative voters, in particular, who point to his successful business ventures and deal-making skills as proof that he is the right person to guide the US economy through the pandemic.

Trump's supporters accept the gradual erosion of America's democracy in exchange for what they believe he can do for the economy. Trump's opponents, however, see a president who bends the institutions of government at his will to his own personal benefit; who rewards loyalty and obedience over competence as seen in the Justice Department, the intelligence community and in the Center for Disease Control; who prioritizes the economy over 200,000 American lives and counting. He recently even went as far as to refuse to commit to a peaceful transfer of power.

Just a few days ago, America lost Ruth Bader Ginsburg, an icon and trailblazing Supreme Court Justice, whose dying wish was to not be replaced before a new president was in office. Trump and Senate Majority leader Mitch McConnell, in defiance of Ginsburg's wish, vowed that Trump's nominee will get a vote on the Senate floor before November 3. With the Supreme Court tilting even further to the right, the likelihood that a contested election will be decided in Trump's favor becomes even more plausible.

America is at a crossroads: Trump supporters may have their say – and their way – on the economy, but they are sacrificing their democracy in the process.