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Pandemic pushes polarisation: The Corona crisis and macroeconomic divergence in the Eurozone

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Pandemic pushes polarisation: The Corona crisis and macroeconomic divergence in the Eurozone

**Claudius Gräbner, Philipp Heimberger
and Jakob Kapeller**

Pandemic pushes polarisation: The Corona crisis and macroeconomic divergence in the Eurozone*

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Abstract

This paper discusses the uneven consequences of the macroeconomic fallout from the coronavirus and related economic policy responses against the background of an analysis of longer-term macroeconomic divergence in the Eurozone. We show that the macroeconomic impact of the Corona crisis is estimated to be more severe in Southern Eurozone countries than in Northern Eurozone countries, which further reinforces the tendency of an increasing economic polarisation. This polarisation process can be traced back to existing differences in production structures and uneven vulnerabilities of the underlying growth models. As a consequence, any policy response to the Corona crisis that does not take the deeper problems of structural polarisation into account will suffer from limited impact in the medium to long run.

Keywords: Polarisation, Coronavirus, Eurozone.

JEL classification code: E6, F4, O3.

Conflict of interest: The authors have no conflicts of interest to declare.

* Supported by funds of the Oesterreichische Nationalbank (Austrian Central Bank, Anniversary Fund, project number: 18144). Data and code to replicate the findings of the paper are available via Github (<https://github.com/graebnerc/structural-corona-crisis>) and published as Gräbner et al. (2020a).

1. Introduction

The Coronavirus and the resulting lockdowns and economic restrictions are severely testing the structural resilience of European economies. On the domestic level, the imposed restrictions tend to hit economically weaker households and firms harder causing large-scale economic hardship, which might fuel public resistance against economic restrictions based on public health concerns. Hence, social divisions may undermine the resilience of European societies in terms of public health on the level of domestic economies. Likewise, preliminary evidence on the European level suggests that economically weaker nations within the Eurozone are hit harder by the Corona crisis, which may have severe repercussions for the Eurozone as a whole. While this article focuses on the latter aspect – by asking how the Corona crisis may contribute to the amplification of economic polarisation within the Eurozone –, a common observation worth spelling out in both the domestic as well as in the European context is that existing social divisions limit the collective resilience of societies in public health terms. In both contexts, weaker actors are not only hit harder, but have also fewer resources and leeway to cope with the immediate consequences of the crisis.

For the case of the Eurozone, the present article points out that because of the polarisation processes that started well *before* the Corona pandemic both the extent of existing vulnerabilities as well as the policy space to counter the crisis differ considerably across Eurozone member countries. As a consequence, the economic impacts are likely to be asymmetric and will, in the absence of coordinated policy responses, accelerate existing polarisation processes between an economically more well-off Northern and a struggling Southern Eurozone.¹

The enormous challenge of economic recovery after the Corona health crisis will be most pressing in the Southern parts of the Eurozone, which consists of Greece, Italy, Portugal and Spain. In these Southern countries, the crisis is forecast to lead to even lower GDP growth rates than in the Northern Eurozone countries comprising Austria, Belgium, Finland, Germany and the Netherlands (see panel A of Figure 1; since France often takes an intermediate position it is reported separately). Furthermore, unemployment rates in Southern countries have not only reached much higher levels in pre-Corona times as

¹ Our focus in this paper is on Northern and Southern countries. However, Gräßner *et al.* (2019a) show that looking at all EU countries suggests a taxonomy of four groups, which also accounts for countries serving as financial hubs (where the financial sector plays an outstanding role) and Eastern European countries, that partially experience catching-up dynamics. All figures in the paper are also provided with this more complete country grouping in the appendix. While this modification does not affect the core message of our article, it indicates that the polarisation problem in Europe goes beyond a simple North-South division.

compared to the Northern Eurozone, they also seem to be more strongly affected by the advent of the Corona crisis: according to the most recent macroeconomic forecasts² Southern countries will suffer a relatively more pronounced increase in unemployment due to the economic downturn, aggravating the already existing differences in the Eurozone (see panel B of Figure 1). At the same time, Southern Eurozone countries – above all Italy and Greece – have entered into the Corona crisis with high levels of public debt; recent forecasts suggest increases in fiscal deficits as well as public-debt-to-GDP ratios to be particularly severe in these countries (see panels C and D of Figure 1).

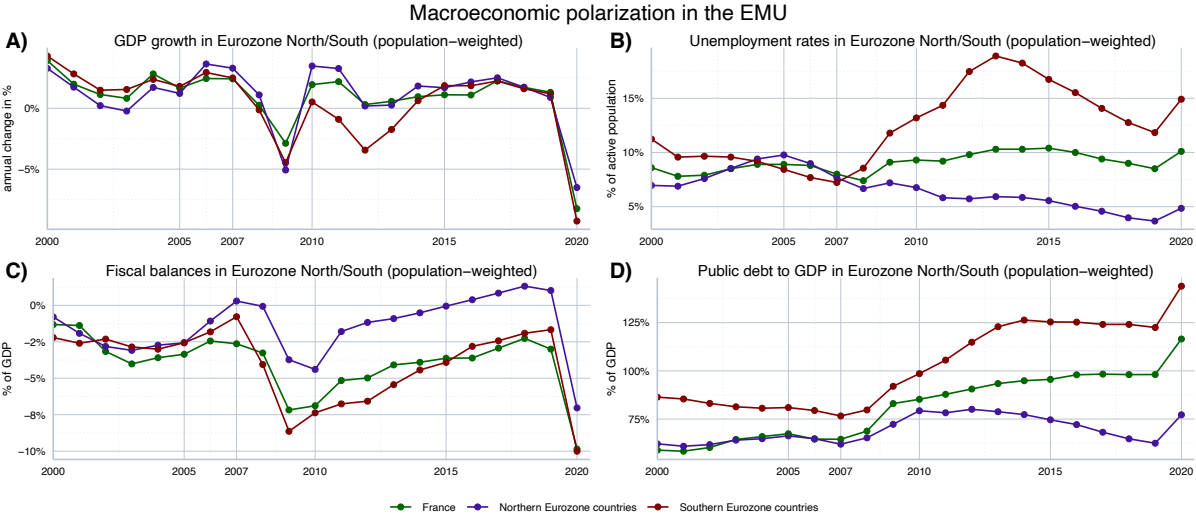
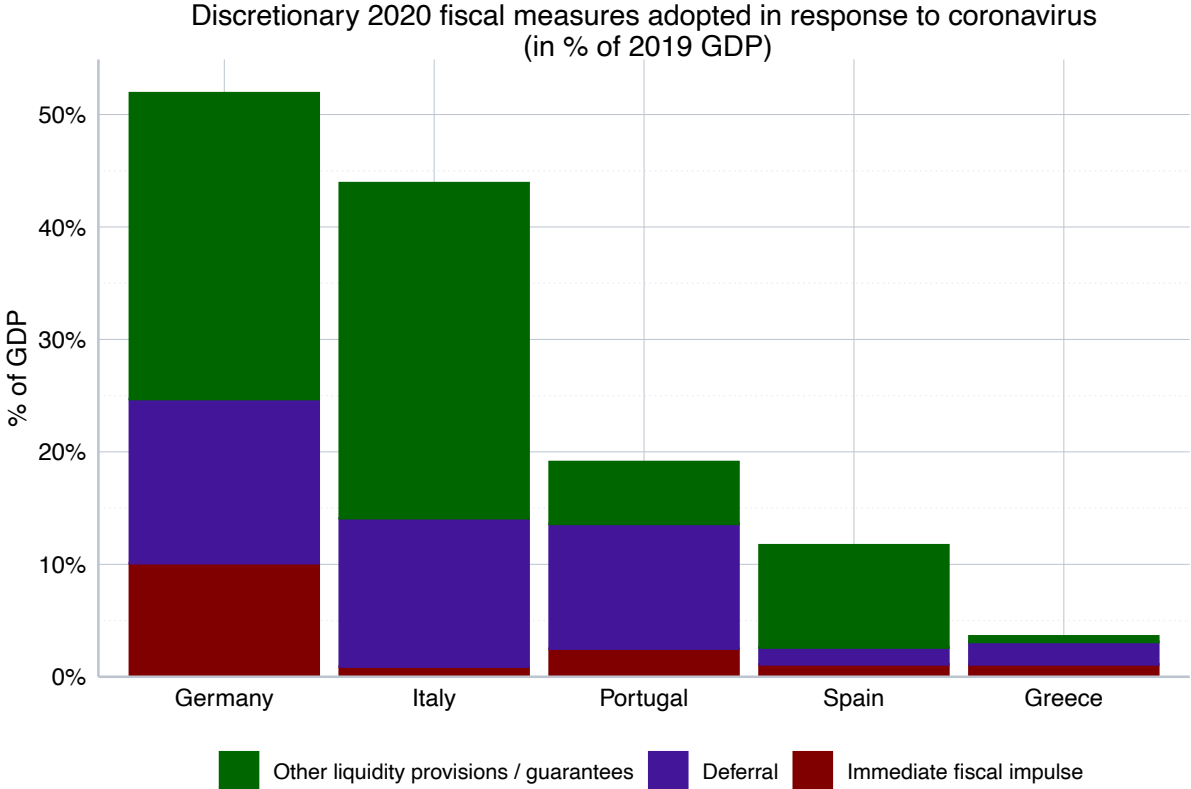


Figure 1: Macroeconomic polarisation in the Eurozone. Northern Eurozone (population-weighted average): Austria, Belgium, Finland, Germany, Netherlands. Southern Eurozone (population-weighted average): Greece, Italy, Portugal, Spain.

Against this background, there is a risk that Italy and other Southern Eurozone countries will be able to finance only the most urgent measures, while Northern Eurozone countries with a better starting position – especially Germany, Austria or the Netherlands – have more fiscal space to support a rapid recovery once the economy is jump-started. Available data already point to such asymmetric fiscal responses at the national level: in particular, the immediate increase in fiscal spending in Germany (in the form of additional government spending on medical equipment, short-time work, subsidies for small and medium-sized enterprises etc.) amounts to around 10% of economic output in 2020, compared with only 0.9% for Italy, 1.1% in Spain, 2.5% in Portugal and 1.1% in Greece. But also the indirect fiscal response – the deferral of taxes and social security contributions as

² All the macroeconomic forecast data used in this paper are characterized by higher uncertainty than usual, because the COVID-19 pandemic also pushes economic forecasters into uncharted waters, and they may turn out to be too optimistic.

well as other liquidity provisions and loan guarantees – in Southern countries lags behind Germany (see Figure 2, based on Anderson et al. 2020). This observation suggests that existing differentials in economic performance are indeed aggravated through the Corona pandemic and that the competitiveness as well as the standard of living in the Southern countries is likely to deteriorate further relative to other parts of the Eurozone.



Data source: Anderson et al. (2020, last update on May 6 2020); own calculations.

Figure 2: The fiscal response to the economic fallout from coronavirus: Germany vs. Southern Eurozone countries. Immediate fiscal impulse: additional government spending (such as medical resources, short-term work, subsidies for companies, public investment). Deferral: tax and social security contributions deferral. Other liquidity provisions and guarantees: Export guarantees, liquidity assistance, credit lines through national development banks.

This article discusses these uneven macroeconomic consequences and economic policy responses against the background of an analysis of longer-term macroeconomic divergence in the Eurozone. Past research has shown that the underlying processes are path-dependent and relate not only to the divergence of major macroeconomic indicators, but also to the polarisation of production structures between Eurozone member countries and the associated development of divergent export-led and private-debt-led growth models (Simonazzi et al. 2013; Botta 2014; Storm and Naastepad 2015; Celi et al. 2018; Gräbner et al. 2020b). The present paper also highlights that increased macroeconomic polarisation in pre-Corona years has fuelled political polarisation, which has become visible in recent

Corona policy debates concerning the appropriate response to the macroeconomic consequences of the COVID-19 pandemic: countries such as Italy and Spain have immediately pushed for a stronger common European fiscal response, only to find their more ambitious proposals about European burden-sharing of the crisis costs turned down by Northern Eurozone countries. A more nuanced discussion about the potential for a pan-European recovery initiative only started with a considerably time lag, promoted by a change in the political stance of the German government. It will be argued below, however, that – in the absence of coordinated policy interventions – the process of economic divergence occurring in the EMU must be expected to accelerate further after the lockdown. Such a process would put the Eurozone as a whole at risk. To avoid this outcome, some elements of coordinated fiscal and industrial policy action that could contribute to countering economic polarisation in the context of the Corona crisis will be discussed below. Such policies could also be designed in a way that is consistent with a longer-term orientation towards achieving social and environmental sustainability.

2. Structural polarisation and growth models before and after Corona

This section analyses structural polarisation and macroeconomic divergence in the Eurozone in conjunction with different growth models. It begins with an analysis of structural polarisation processes in pre-Corona years and continues with an analysis of the impact of the pandemic.

2.1. Structural polarisation before Corona

The gap in per capita incomes between Northern and Southern Eurozone countries has widened considerably since the birth of the Euro about twenty years ago (see panel A in Figure 3). Particularly the ten years before the Corona crisis have been characterised by a persistent divergence in terms of living standards of large parts of the Eurozone, which can be traced back to the co-existence of distinct *growth models* within the EMU: the Southern European countries followed *debt-led* growth models, which came with increasing private-sector indebtedness, linked to the accumulation of current account deficits (e.g. Storm and Naastepad 2016). At the same time, Northern countries mainly followed *export-led* growth models, which came with current account surpluses and a stronger reliance on foreign trade.

When the financial crisis and the subsequent Euro crisis hit, the fragility of these imbalances built up in pre-crisis times laid bare the underlying reality of macroeconomic divergence (Gräbner et al. 2020b).

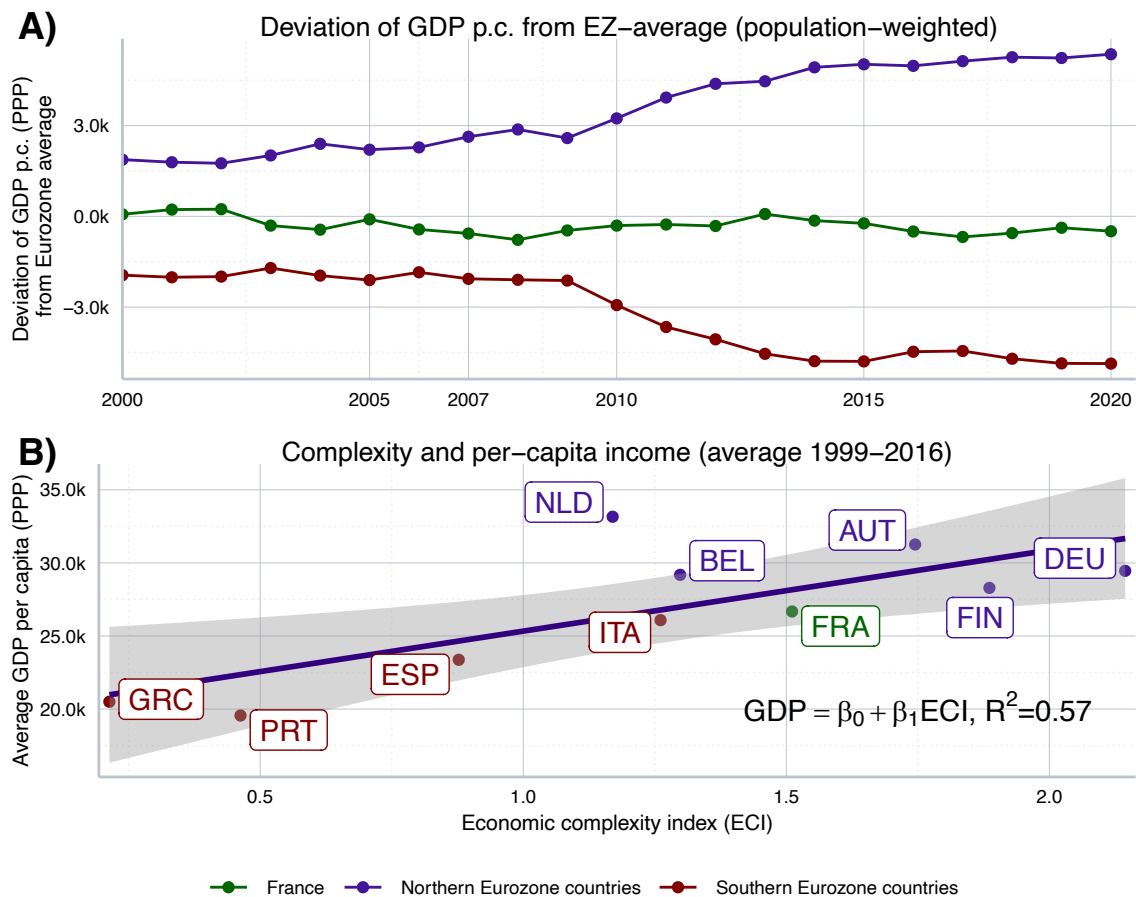
Essential factors for explaining the long-term divergence of EU countries are to be found in the unequal regulatory conditions in the context of the European ‘race for the best location’ (for example, in the areas of the labour market, tax and corporate law, or financial market regulation, see Gräbner et al. 2019b) as well as in the different technological capabilities across EU countries (Gräbner et al. 2019a, 2020b). Technological capabilities serve as an important driver of long-term economic development and there exists a strong positive relationship between the level of economic complexity (used a proxy for technological capabilities; see Hidalgo and Hausman 2009) and GDP per capita levels (see panel B of Figure 3). The problem in the previous decades has been that the accumulation of these technological capabilities is a highly path-dependent process: in the absence of coordinated policy measures existing differentials in technological capabilities will be self-reinforcing over time, particularly within the EMU, where traditional compensation mechanisms for individual member countries are either not available (currency devaluations) or severely restricted (fiscal and monetary policy) due to existing institutional arrangements.

Technological capabilities are also relevant to explain the emergence of the unsustainable co-existence of export-driven and debt-driven growth models in the EMU: countries in the North were better equipped to follow an export-led growth model precisely because their economies have accumulated a sufficient amount of the technological capabilities necessary to compete successfully on those international markets, where technological sophistication is more important than price competitiveness (Storm and Naastepad 2015; Dosi et al. 2015; Gräbner et al. 2020b). Furthermore, Northern euro countries – most of all, Germany – were able to thrive over recent decades not despite, but also because of the rise of Asian economies such as China: for firms that have focused on the production of technologically complex products, the rise of Asian countries came with additional export opportunities to Asian partners, who were keen to acquire more complex products and capital goods. Their technological sophistication represented a unique competitive advantage in the global economy that remains relevant until today.

The emergence of these different growth models also had a feedback effect on the further development of production structures: while Germany and other Northern countries have expanded their cumulative advantage in high-tech manufacturing over the past two decades,

Southern European countries have increasingly been locked into lower-tech and non-tradable activities (e.g. Simonazzi et al. 2013; Botta 2014). As a consequence, Northern firms often do not directly compete with Spanish, Portuguese, Greek or even most Italian firms; instead, they are price-setters due to their strong market standing, which is generated by a high degree of technological sophistication. In contrast, firms located on the Southern periphery (e.g. Greece and Portugal) are more often confined to the role of price-takers, as they compete with low-cost Asian producers (Straca 2013). As a consequence, they were much less able to base their competitiveness on technological capabilities, while competing in terms of low wages (or reduced environmental or labour protections) would also be infeasible given the current levels of wages and regulations in Europe.

In summary, most European firms with a strong technological position typically operate from their home base in Northern countries, such as Germany and Austria. Despite important exceptions, particularly in the industrial North of Italy and Spain, many firms in the Southern Eurozone are relative technological laggards and the overall international competitiveness of Southern economies has deteriorated. Due to the cumulative nature of the underlying processes the differences in technological capabilities are to be seen as both, driving factor as well as major outcome, of long-term divergence within the Eurozone (Gräbner et al. 2020b), which is reflected in increasing macroeconomic polarisation as captured by figure 3.



Source: AMECO (Spring 2020), The Atlas of Economic Complexity; authors' calculations.

Figure 3: GDP per capita and economic complexity. Northern Eurozone (population-weighted average): Austria, Belgium, Finland, Germany, Netherlands. Southern Eurozone (population-weighted average): Greece, Italy, Portugal, Spain.

2.2 The asymmetric impact of the Corona Crisis

The macroeconomic impact of the Corona crisis on Northern and Southern Eurozone countries will be asymmetric due to existing differences in production structures and because of the vulnerabilities of the different growth models described above. The most recent macroeconomic forecasts suggest that domestic demand will take a bigger hit in the Southern Eurozone than in Northern Eurozone countries (see Figure 4). Given their relatively strong reliance on domestic demand as compared to exports, this implies a particular challenge for these economies. However, also Germany and other Northern Eurozone countries will not be able to rely on export-driven growth to the same extent as in the years 2010-2019 since China and other emerging Asian economies also suffer greater economic losses, which sharply decreases their demand for imports. Moreover, the global economy as a whole has been hit hard by the repercussions of the coronavirus (International Monetary Fund 2020), and the partial disruption of global value chains will make an export-based

recovery strategy more difficult to implement in the medium term as well. However, the data in Figure 4 suggest that the overall challenge is considerably more difficult for countries in the South, as domestic demand takes a bigger hit and exports decline more strongly.

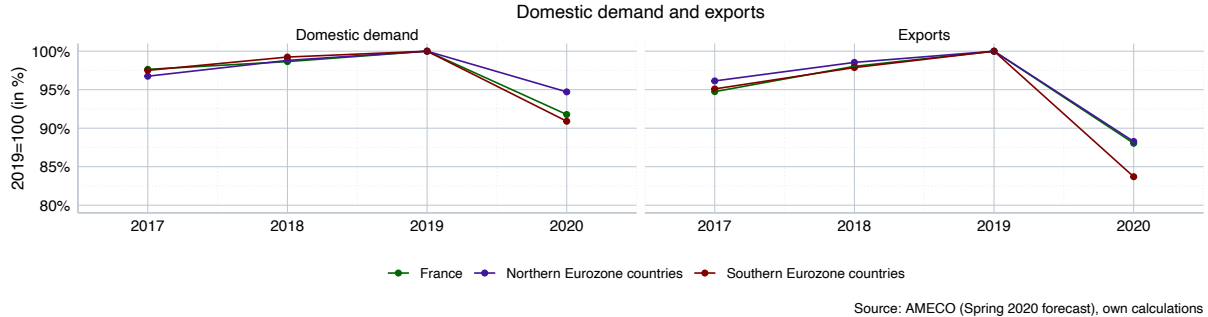


Figure 4: Domestic demand and exports after Corona. Northern Eurozone (population-weighted average): Austria, Belgium, Finland, Germany, Netherlands. Southern Eurozone (population-weighted average): Greece, Italy, Portugal, Spain.

Figure 5 provides a breakdown of declining exports in terms of exports of goods and exports of services, respectively. Thereby it points to yet another way in which structural polarisation patterns from the pre-Corona years provide the conditions for an asymmetric effect of the Corona shock: while exports of goods are set to decline to a similar extent in Northern and Southern countries, the much stronger drop in exports of services in the South exposes another vulnerability. The prospects for booming global markets for export goods have deteriorated, but the prospects for exports of services – in particular, concerning the tourism-related sectors – may be even gloomier because of shifting preferences for tourist destinations and the restrictions imposed on international travel. Prolonged restrictions will have disproportionately strong negative effects on the regions in Southern Europe, which clearly raises the prospect of accelerating macroeconomic divergence (Odendahl and Springford 2020). Moreover, while at least some of the goods that have been produced for export but have not been sold yet can be put in storage and still represent an increase in value-added in the future, services that have not been demanded in the present tend to be lost forever. This suggests that the recovery process for Southern countries will be more difficult than in Northern countries.



Source: AMECO (Spring 2020 forecast), own calculations

Figure 5: Exports of goods and services after Corona. Northern Eurozone (population-weighted average): Austria, Belgium, Finland, Germany, Netherlands. Southern Eurozone (population-weighted average): Greece, Italy, Portugal, Spain.

3. Policy options and conclusions

The analysis above suggests that – in the absence of adequate coordinated European policy interventions – the Corona crisis will contribute to a further deepening of macroeconomic divergence and structural polarisation between Northern and Southern Eurozone countries. As economic polarisation fuels political polarisation, this process puts the survival of the Eurozone as a whole at risk. In what follows, we briefly evaluate European economic policy initiatives in response to the Corona shock. In this context, we do not only inspect short-run issues but also explore whether and to what extent current policy measures are suitable for addressing the root causes of economic polarisation within the Eurozone by drawing on a holistic analysis of policy-challenges induced or aggravated by this polarisation – as developed by Gräbner et al. (2019b) and summarized in Table 1 below.

The first immediate European policy responses to the Coronavirus came from the ECB, which started to buy up government bonds on a large scale: the PEPP programme ("Pandemic Emergency Purchase Programme") was put in place to prevent rising interest rate spreads and to "ensure the smooth transmission of monetary policy to the economy" (Lane 2020). It serves to ensure that governments in the Southern Eurozone can continue to refinance at low interest rates during the Corona crisis. However, as indicated by our analysis above, Southern Eurozone countries such as Italy and Spain will not be able to get the economy back on track after the Corona lockdown with the simple provision of cheap credit. The EU's fiscal rules have been temporarily suspended, but Southern countries are still suffering from legacy debt and problems related to structural polarisation, which will become even more apparent when the fiscal rules suspension is lifted to further reduce their fiscal space. In sum, the ECB is, as in past crises, again acting as a lender of last resort to

hold the Eurozone together. However, existing institutional arrangements still pose constraints on the actions of the ECB. Therefore, the Corona crisis opens up a window for discussing a modified mandate for the ECB, which widens it from a primary focus on price stability to also include a commitment to maximum employment and environmental sustainability. However, such discussions currently remain subordinated to the question about the short to medium run effects of the German Constitutional Court's recent ruling that the ECB has failed to adequately justify its Quantitative Easing Program (Tooze 2020).

In addition to the ECB's actions, European leaders have decided on a package of loan assistance amounting to 540 billion euros. A new ESM credit line has been established (up to 240 billion euros), which – although only subject to minor conditionality – will be limited to covering "direct and indirect" health costs. However, government spending on healthcare costs will not play a major role in the bigger picture of the costs of the crisis. Furthermore, it is doubtful whether a country like Italy would ever use such a credit line, because the ESM is seen to be "politically toxic" due to memories going back to the Euro Crisis. In addition, there is a new EU programme to grant member states cheap loans without conditions to support short-time work, which is called SURE (Support to Mitigate Unemployment Risks in an Emergency). This will enable the EU to borrow on financial markets and to pass on the funds to the member states. Furthermore, the package consists of loan guarantees from the European Investment Bank for companies.

Even if European loans come with cheap conditions and light or no conditionality, they will nevertheless further increase public debt levels in Southern euro countries hit hard by the pandemic. Much of the discussion concerning longer-term questions of European burden sharing has, therefore, revolved around the establishment of a so-called "recovery fund" and the possibility of grants. However, even if we assume that a sizeable recovery fund including a component of grants for the regions and sectors hit hardest by the pandemic is implemented over the horizon of the next two or three years, such a short-run policy instrument would still prove insufficient if the goal is to reverse the underlying path-dependent process of polarisation between North and South. Without addressing the deeper problems of structural polarisation analysed in this paper, any policy response to the Corona crisis will suffer from limited impact in the long run. To this end, Table 1 lists the policy suggestions for addressing polarisation as discussed in Gräbner (2019b) and compares them with actual Corona-related policy measures and discussions.

Policy area	Policy suggestions	Relation to actual policies induced by the Corona crisis
Strengthen European Values	Reduce competition and increase cooperation between EU member states	Not yet, but potentially lurking in the background of current discussions.
	Base trade policies on human rights considerations ("civilised trade")	None.
	Achieve greater equality in earned incomes	Partly visible efforts on domestic level (increased unemployment benefits, suspension of dividends).
Thinking the Eurozone through	Common monetary and fiscal policy	Creation of new credit lines in ESM, discussion of joint financing procedures.
	Reorient monetary policy towards greater prosperity	Failure to do so significantly limits instruments and impact of the ECB
	Reregulating financial markets	None.
Ending the European race for the best location	Promoting sustainable industries & regional development by industrial policies	Unspecific references to green and digital transitions and building "European industrial champions"
	Coordinate tax policy & combat tax avoidance	None.
	Avoiding permanent current account imbalances	None.
Rethinking the Economy	Progress vs. GDP: New concepts of prosperity	None.
	Actively govern future socio-economic challenges (climate, ecology, automatisisation etc.)	Unspecific references to green and digital transitions.
	Explore the trade-off between welfare in time and welfare in goods to foster a sustainable transformation	None.

Table 1: The role of Corona-related policy practices/suggestions in combatting economic polarisation in the Eurozone based on Gräbner et al. (2019b).

Comparing the policy measures currently undertaken or planned with the long-term challenges arising from economic polarisation in the Eurozone reveals that the current policy focus is mostly on short-run measures to keep the economy going and/or to jumpstart economic activities after lockdowns and other restrictions have been sufficiently released. More long- or medium-term considerations currently play a minor role, although crises like the current one always carry the potential to induce greater reflexion among policy-makers and social elites of all kind. What seems most urgent given the current focus on organizing the means for significant public investment in economic recovery is to tie these funds to important medium-term concerns, such as the reorganisation of global value chains, the expansion of industrial policies to combat technological divergence on the regional and national level or, probably most importantly, recasting European economies in way that is compatible with planetary boundaries in the context of climate change. If such links between

pressing immediate demands and medium-term strategic challenges can indeed be established, then the hopefully occurring recovery from the Corona-crisis could have positive spill-over effects that will be of great merit for confronting the socio-economic challenges around the 'Corona-corner'.

References

- Anderson, J., Bergamini, E., Brekelmans, S., Cameron, A., Darvas, Z., Dominguez Jimenez, M., Midoes, C. (2020): The fiscal response to the economic fallout from the coronavirus, Bruegel dataset (last update on May 6th 2020), <https://www.bruegel.org/publications/datasets/covid-national-dataset/> [last access on May 14th 2020].
- Botta, A. (2014): Structural asymmetries at the roots of the Eurozone crisis: what's new for industrial policy in the EU?, *PSL Quarterly Review*, 67(269), 169-216.
- Celi, G., Ginzburg, A., Guarascio, D., Simonazzi, A. (2018): Crisis in the European Monetary Union. A core-periphery perspective, London: Routledge.
- Dosi, G., Grazzi, M. Moschella, D. (2015): Technology and costs in international competitiveness: From countries and sectors to firms, *Research Policy*, 44, 1795-1814.
- Gräbner, C.; Heimberger, P.; Kapeller, J.; Schütz, B. 2019a. Structural change in times of increasing openness: assessing path dependency in European integration, *Journal of Evolutionary Economics*, forthcoming, doi: <https://doi.org/10.1007/s00191-019-00639-6>
- Gräbner, C.; Heimberger, P.; Kapeller, J. (2019b): Economic polarisation in Europe: Causes and policy options, wiiw Research Report No. 440.
- Gräbner, C., Heimberger, P., Kapeller, J., Schütz, B. (2020a): Replication data for: Pandemic pushes polarisation: The Corona crisis and macroeconomic divergence in the Eurozone, *Harvard Dataverse*, <https://doi.org/10.7910/DVN/G2VMKH>
- Gräbner, C., Heimberger, P., Kapeller, J., Schütz, B. (2020b): Is the Eurozone disintegrating? Macroeconomic divergence, structural polarisation, trade and fragility, *Cambridge Journal of Economics*, 44(3), 647-669.
- Hidalgo, C., Hausmann, R. (2009): The building blocks of economic complexity. *Proceedings of the National Academy of Sciences*, 106(26), 10570–10575.
- International Monetary Fund (2020): The Great Lockdown, World Economic Outlook, April 2020.
- Lane, P. (2020): Pandemic central banking: the monetary stance, market stabilisation and liquidity, Remarks by Philip R. Lane, member of the Executive Board of the ECB (May 19th 2020), <https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp200519~e5203d3520.en.html> [last download on May 22nd 2020].
- Odendahl, C., Springford, J. (2020): Three ways COVID-19 will cause economic divergence in Europe, CER Policy Paper No. 2020.
- Simonazzi, A. (2013): Economic relations between Germany and southern Europe, *Cambridge Journal of Economics*, 37(3), 653-675.

- Storm, S., Naastepad, C. (2015): Europe's hunger games: income distribution, cost competitiveness and crisis, *Cambridge Journal of Economics*, 39(3), 959-986.
- Storm, S., Naastepad C. (2016): Myths, Mix-ups and Mishandlings: Understanding the Eurozone Crisis, *International Journal of Political Economy*, 45(1), 46–71.
- Straca, L. (2013): The rise of China and India: Blessing or curse for the advanced countries?, ECB Working Paper No. 1620.
- The Atlas of Economic Complexity, *Center for International Development at Harvard University*, <http://www.atlas.cid.harvard.edu> (accessed May 2019).
- Tooze, A. (2020): The Death of the Central Bank Myth, Foreign Policy (March 13th 2020), <https://foreignpolicy.com/2020/05/13/european-central-bank-myth-monetary-policy-german-court-ruling/> [last download on May 25th 2020].

Pandemic pushes polarisation: The Corona crisis and macroeconomic divergence in the Eurozone*

Supplementary material

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Content

Here we provide all the figures of the main paper using data for the EU27 countries by using the country classification as introduced in Gräbner et al. (2019). While this modification does not affect the core message of our article, it indicates that the polarisation problem in Europe goes beyond a simple North-South division. Information about the country selection and country groups used in the main paper as well as in the supplementary material are provided in Table 1 and Table 2.

Country group	Countries
Northern Eurozone countries	Austria, Belgium, Finland, Germany and the Netherlands
Southern Eurozone countries	Greece, Italy, Portugal and Spain

Table 1 The country classification as used in the main text. Since France often takes an intermediate position it is reported separately.

* Supported by funds of the Oesterreichische Nationalbank (Austrian Central Bank, Anniversary Fund, project number: 18144). Data and code to replicate the findings of the paper are available via Github ([gruebnerc/structural-corona-crisis](https://github.com/gruebnerc/structural-corona-crisis)) and published as Gräbner et al. (2020).

Country group	Countries
Core countries	Austria, Belgium, Denmark, Finland, Germany, and Sweden
Periphery countries	Cyprus, France, Greece, Italy, Portugal, and Spain
Catch-up countries	Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia
Financial hubs	Ireland, Luxembourg, Malta, and the Netherlands

Table 2 The country classification as used in the supplementary material. This classification has been derived and further explained in Gräbner et al. (2019).

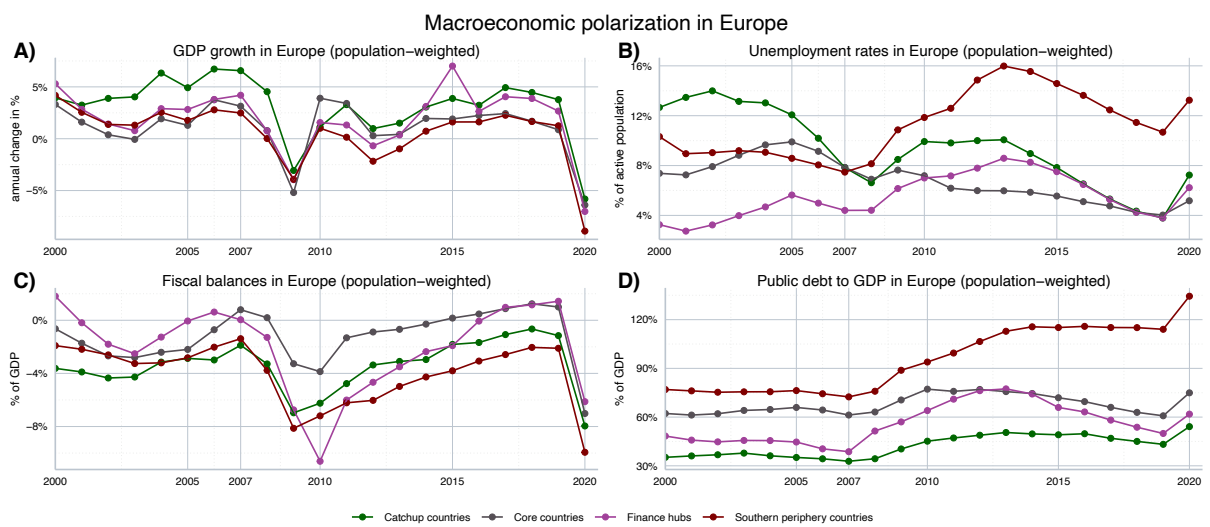


Figure 1 Macroeconomic polarization in Europe. Corresponds to figure 1 in the main paper.

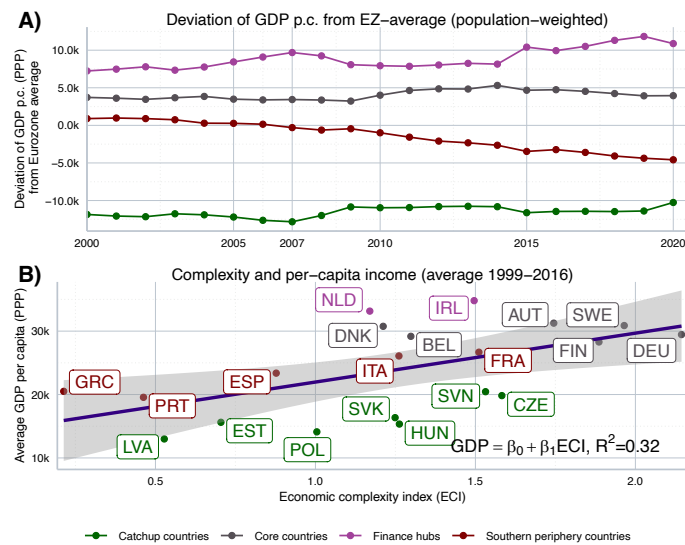


Figure 2 GDP per capita and economic complexity. Corresponds to figure 3 in the main paper.

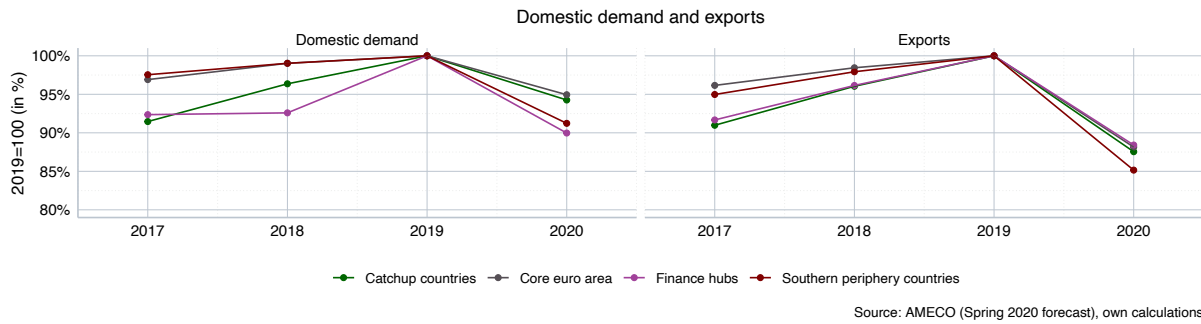


Figure 3 Domestic demand and exports after Corona. Corresponds to figure 4 in the main paper.



Figure 4 Exports of goods and services after Corona. Corresponds to figure 5 in the main paper.

References

- Gräbner, C.; Heimberger, P.; Kapeller, J.; Schütz, B. 2019. Structural change in times of increasing openness: assessing path dependency in European integration, *Journal of Evolutionary Economics*, forthcoming, doi: <https://doi.org/10.1007/s00191-019-00639-6>
- Gräbner, C., Heimberger, P., Kapeller, J., Schütz, B. (2020): Pandemic pushes polarisation: The Corona crisis and macroeconomic divergence in the Eurozone, *Harvard Dataverse*, doi: [10.7910/DVN/G2VMKH](https://doi.org/10.7910/DVN/G2VMKH)