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Next Generation EU: A Large Common Response to the COVID-19 Crisis

In July 2020, the European Council agreed upon the Next Generation EU (NGEU) plan to support member states hardest hit by the COVID-19 crisis with a €750 billion fund to be financed by new EU debt and to be added to the budget of the EU.

According to the Council conclusions, €672.5 billion (of the €750 billion total plan) will constitute the Recovery and Resilience Fund, which is to be disbursed as grants (€312.5 billion) and loans (€360 billion). The rest of the plan will be devoted to flexible cohesion policy grants to respond to the coronavirus crisis and support the green transition to a climate-neutral economy.

For a long time, a recurring criticism of the euro area has been the lack of a common central budget like that of mature federations. Has the COVID-19 crisis worked as a trigger for the creation of a new instrument that could be of strategic importance to the long-term stability of the euro area and more generally of the EU?

Two aspects are key to understanding whether this will be the case: the size and the allocation criteria, which define its purpose. Therefore, the first issue is whether this package is large enough to be considered a sensible common response to the current crisis. To answer, it is revealing to compare it with the national fiscal response of EU member states. According to the Spring Commission Forecast, the EU27 average (cyclically adjusted) deficit will be equal to about 4% of GDP in 2020. This is equivalent to about €550 billion, which is lower than the amount in the Recovery and Resilience Fund. If one adds the deficit forecasted for 2021, about €260 billion, given that fiscal measures will continue into next year, the total fiscal effort (the net of the automatic stabilisers) of member states will amount to about €800 billion. This is just above the Next Generation EU figure, suggesting that the EU contribution to the fiscal crisis measures is of a comparable size to those of member states. In addition, the SURE programme to support employment in member states with an envelope of €100 billion, is already in the implementation phase.

It should be recognised that national budgetary efforts also include large liquidity measures (tax deferrals, equity injections, early tax refunds, etc.) and credit guarantees which might become fiscal measures. But even on this account, the European contribution might be of a similar order of magnitude if one considers that the ECB has injected hundreds of billions of euros into the banking system to stabilise financial markets and ease credit conditions.

Moreover, per euro engaged, the economic impact of EU measures will be larger than that of national ones. In a number of EU member states, public debt is already at high levels. It is therefore possible that the expectation that deficits will lead to even higher debt levels, and thus increase taxes, will make consumers more prudent, leading them to save a large part of the income they are receiving now. This effect, the so-called Ricardian equivalence, should be less relevant for EU-financed expenditure, which does not lead to an outright increase in (national) public debt. So from a size perspective, one can say that the Next Generation EU is a suitable instrument for crisis response.

The main purpose of the Next Generation EU is multifaceted and defined as “[t]o ensure the recovery is sustainable, even, inclusive and fair for all Member States”. According to the Council conclu-

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sions, €47.5 billion will be allocated based on the severity of the socio-economic impacts of the crisis under the REACT-EU programme. The resources, presented as a top-up to current cohesion policy programmes but without co-funding, are expected to be disbursed between now and 2022 based on GDP losses as well as the level of youth unemployment and the relative prosperity of member states. REACT-EU, while limited in size, is a true fiscal measure to mitigate the impact of the COVID-19 shock.

By contrast, the Recovery and Resilience Facility, the largest part of Next Generation EU, offers financial support to member states for investments and reforms in relation to the green and digital transitions and to augment the resilience of national economies. This means that the use of the funds is only partially linked to the impact of the crisis, and rather attached to the achievement of wider objectives.

Seen from this perspective, the bulk of Next Generation EU is not expected to have a shock-absorbing function, which is typical of central fiscal capacity in federations. Its purpose resembles the traditional EU budget where common financial resources are pre-allocated at the beginning of programming period, should be used to achieve EU objectives and are conditional upon strengthening national economies.

One drawback of such duality of the NGEU between the overarching idea of a plan to respond to the COVID-19 crisis and the actual approach to link funds to the EU objectives of resilience, sustainability and fairness is that it made it more complex to define the allocation of funding.

In practice, it will be more difficult to make sure *ex ante* that the countries hardest hit will also receive more resources. In the end, the allocation formula will be based on the Commission forecasts and linked to past unemployment rates, as well as population, inverse GDP per capita and youth unemployment, similar to the EU criteria for the allocation of cohesion funds. For 2023, unemployment criterion is replaced by the loss in real GDP observed in previous years. Introducing the idea that the NGEU funds should be pre-allocated weakened the idea that it could serve as a shock absorber, and emerged as a double-edged sword: a way to strike a compromise but at risk of poisoning the negotiations.

With pre-allocation, member states feel justified to follow the principle of ‘juste retour’, trying to maximise how much they can obtain in terms of grants or loans, reducing the share of grants and adding conditionality. Shock absorption does not entail any form of conditionality or earmarking system. Both are determined by the shock itself. It was expected even before the Council that some member states would not be ready for such a step.

Indeed, negotiations were long and tough. Strong political divisions within the Council – between the “frugal four” countries (Austria, Denmark, the Netherlands and Sweden) and those hardest hit by the crisis (Italy, France and Spain) – emerged. Conditionality to ensure that the money is not regarded as wasted gained currency among the frugal countries who pledged fewer grants and more loans, compared to the original Commission proposal, but also a more complex procedure¹ to approve the allocation of funds *ex ante* and for the EU Council to maintain the power over resources even in the implementation phase.

This approach makes it difficult to consider NGEU as a genuine fiscal capacity to mitigate the impact of the COVID-19 shock. In the end, however, an agreement was reached that is a combination of shock absorption and an extension of the EU budget. It reflects a politically acceptable compromise to put in place the first large EU common crisis response.

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¹ This would include submitting detailed national “recovery and resilience plans” on the basis of country-specific recommendations made by the Commission in the context of the European Semester.

Reconstructing the EU After COVID-19

On 21 July 2020, EU leaders announced a ground-breaking and highly anticipated plan, the 'Next Generation EU', to jointly borrow €750 billion to respond to the coronavirus pandemic. The EU's new recovery plan, which will be composed of grants and loans attached to the new Multiannual Financial Framework, is the culmination of what many consider a painfully slow and uncoordinated European response to the COVID-19 crisis and the far-reaching effects it has had on the European economy. While a crisis of this magnitude could threaten the EU's very existence, deepening divides and sewing the seeds of anti-European sentiment, it may conversely also be an opportunity for the EU to address some of the fundamental flaws that exist in the euro area architecture. The pandemic response is a chance for Europe to reboot by focusing on a number of mechanisms at hand, including state aid, taxation and labour reallocation, among others. The EU should not lose sight of broader societal goals such as climate neutrality and digitisation but rather prioritise them. Ultimately, if handled correctly, the coronavirus pandemic has the potential to bring the EU together like no other event since its foundation.

European Pandemic Recovery: An Opportunity to Reboot

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A Framework for a European Economic Recovery After COVID-19

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Common Fiscal Capacity Is Needed to Strengthen Risk Sharing

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State Aid Policies in Response to the COVID-19 Shock: Observations and Guiding Principles

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European Pandemic Recovery: An Opportunity to Reboot

After a period of hesitation, national governments in Europe have reacted forcefully to the pandemic through various strategies combining social distancing, testing, quarantining and lockdowns. Although doing nothing was not an option and would itself have disrupted economic activity, several weeks of strict lockdown have triggered an economic crisis of at least twice the size of that of 2009. Furthermore, the recovery is likely to be slow due to depressed consumption and investment, and it will require fast reallocations in both the labour market and the capital market.

Europe's failure to manage a bold, common response would further increase divergence, strengthen anti-European forces and fuel populism. The debate about the financing of the euro safety net (e.g. coronabonds versus the European Monetary Mechanism, ESM) has already been very bruising and has created the impression of disregarding European solidarity. The German Constitutional Court ruling on the ECB's past policy may also contribute to further polarisation. This is not the time to play with matches.

The shock being both exogenous and dramatic, one could have expected European politicians to temporarily set their disagreements aside. Before the crisis, they were discussing whether the next Multiannual Financial Framework (MFF – the seven-year budget of the European Union) would be set at 1.02%, 1.07% or 1.11% of gross national income. Just a few months later, we are talking about thousands of lives, millions of unemployed,

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* This article is based on Bénassy-Quéré and Weder di Mauro (2020).

and government deficits in the order of 10% of GDP or more. To restate the obvious, during a pandemic, coordination is key as the virus disregards national borders and is powerful enough to disrupt cross-border supply chains. However, even under such obvious circumstances, European coordination has proved as painful as ever. Accordingly, pre-COVID-19 weaknesses in the governance of the euro area have quickly come back to the forefront.

Fundamental flaws of the euro area architecture

The fault lines of the Maastricht architecture are now widely recognised (e.g. Bénassy-Quéré and Giavazzi, 2017). During and after the sovereign debt crises of the 2010s, several major reforms were carried out: introduction of an emergency assistance scheme (ESM), extension of the ECB's toolkit with Outright Monetary Transactions (OMTs), negative interest rates and quantitative easing, reinforcement of fiscal and macroeconomic surveillance and a banking union.

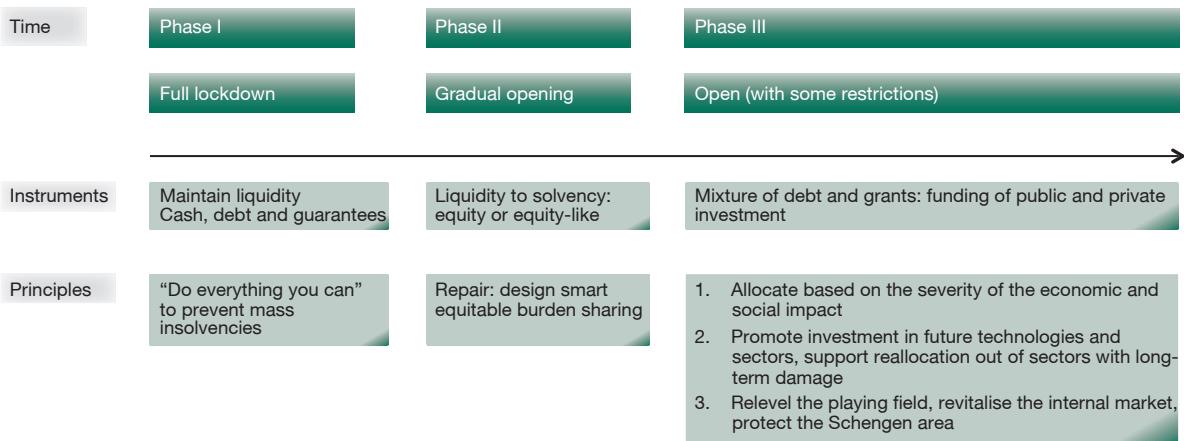
Although these reforms were far-reaching, they were still unfinished. As argued notably by the "7+7 report" (Bénassy-Quéré et al., 2018), financial markets were still fragmented within the euro area, the 'doom loop' (close relationship between banking risk and sovereign risk) was alive and well, macroeconomic convergence was a work in progress, inflation was too low despite the fact that monetary policy had not yet been normalised, fiscal policy had little room for manoeuvre in various countries and was nonexistent at the federal level. In brief, despite its stronger banking system, the euro area was not ready for the next crisis.

Even more worrisome, the fundamental flaw of the euro area architecture was not addressed before the COVID-19 crisis. Given that both monetary financing of government deficits and fiscal bailouts are prohibited by the treaty, a country with plunging nominal GDP and skyrocketing government debt will likely need some form of debt relief. But debt restructuring is extremely difficult given the concentration of government debt in the balance sheets of the resident banks. Some banks may see their capital wiped out. They may also fall short of liquidity since government bonds are routinely used to get liquidity on the repo market and from the central bank.

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Figure 1
Phases of the coronavirus crisis



Source: Authors' elaboration based on Anderson, J., S. Tagliapietra and G. Wolff (2020), *Rebooting Europe: a framework for post-Covid-19 economic recovery*, Bruegel Policy Brief, 2020/1.

Before the COVID-19 crisis, the euro area debate was evolving along three main lines:

- How to stabilise the financial sector through a smooth transition towards more diversified balance sheets, together with the introduction of deposit reinsurance as a 'safe asset' (Schnabel and Véron, 2018);
- How to restore the fire power of macroeconomic policies, notably through a reshuffling of fiscal rules and the introduction of a European 'fiscal capacity' (7+7 report, 2018; European Fiscal Board, 2018, 2019);
- How to avoid a deflationary bias related to the asymmetric adjustment burden between surplus and deficit countries (Bénassy-Quéré, 2017).

As the crisis unfolds, the consequences of this unfinished work will progressively appear.

Repair, reboot, recover

Figure 1 illustrates the progression of the crisis over three phases. The first was the acute phase of the medical emergency with the economy in lockdown. In this phase, the first priority of government was to avoid unnecessary suffering, closure of firms and loss of jobs. Governments' and central banks' actions were all about providing enough liquidity to households, firms and banks, and the guiding principle was "act fast and do whatever it takes" (see Baldwin and Weder di Mauro,

2020). In the acute emergency, governments have provided cash, loans and guarantees to compensate as much as possible the losses incurred because of the lockdown. Considerations about firms' future repayment ability (due to possible long-term changes in demand patterns or because they may already have been unviable before this crisis) had to take a back seat. Similarly, questions about the long-run debt sustainability of firms and sovereigns were pushed into the future.

In the second phase, the gradual reopening of the economy starts. In this phase, demand is still sluggish since people are cautious and chose to decrease their mobility. Social distancing and other regulations mean that some businesses and sectors will not recover quickly. They also have to pass on to the consumer the cost of the new distancing regulations, which contributes to depressing the demand in some sectors. Uncertainty about longer-run prospects remains high and the wait-and-see attitude towards private investment continues. This is also the time when some of the more long-term damages of this crisis start to become more visible. Some firms are unable to repay the loans they received and insolvencies increase. Industrial restructuring plans are announced.

The defining principle during this phase should be to repair corporate balance sheets in order to avoid the problems of a debt overhang, disincentives to invest and mass insolvencies. This suggests a different package of measures.

Cleaning corporate balance sheets

Since the outbreak of the pandemic, national governments have been at the frontline. They have been backed by European action on mainly three economic axes: (1) monetary and banking, (2) state aid and fiscal rules, and more recently, (3) loans. As the crisis unfolds, though, a comprehensive fiscal strategy will be warranted. Concerning support to the corporate sector, the strategy will involve moving from debt to equity or equity-like instruments. For the small and medium-sized enterprises (SMEs), equity-like instruments would serve this purpose (see Boot et al., 2020a, 2020b). A European equity fund should serve to level the playing field across countries (compensating for unequal capacities at the national level to provide generous funding). It could also top-up national schemes, with the national government taking the ‘first loss piece’. However, a number of principles should be observed.

Simple, transparent rules should apply to SMEs. Given the number of firms in the European Union, and given that they mainly finance themselves through the banking sector (rather than directly on the market), it is advisable to channel government and EU interventions through the banks and via national development agencies (such as *Cassa depositi e prestiti* in Italy). However, it will be necessary to make sure that banks incorporate the social cost of bankruptcies in their decision-making. As suggested by Blanchard, Philippon and Pisani-Ferry (2020), public creditors could accept higher haircuts than private ones in case the debts of a viable firm are restructured. A standard scheme needs to be proposed in order to avoid lengthy negotiations and above all bottlenecks in commercial courts. In case of equity-like investment, it will be necessary to impose constraints on executive pay in order to circumvent the porosity between profit and labour income in small firms.

For large firms, simple rules will not work. Given the large externalities for the single market (competition, value chains), the Commission should take the lead to organise the restructuring in the most affected sectors (e.g. airlines). In case of temporary nationalisation, contingency plans should be made for subsequent privatisation. Given the level of uncertainty and the necessity to recoup at least part of public investments, it will be difficult to set a precise time line.¹ The Commission should make sure that conflicts of interests are avoided. For instance, governments should not act as active shareholders and active regulators at the same time.

¹ ABN AMRO, which was nationalised and restructured in 2009, was still 80% owned by the Dutch government ten years later.

The (temporary) rise in households’ savings rates should be relied on. Although risk aversion will likely be on the rise, share prices will be low, offering good opportunities for capital gains. Since sovereign rates will likely remain very low for a long time, it would be advisable to review existing financial regulations in the perspective of encouraging the development of diversified private equity products. This could be part of an effort to ‘humanise’ finance through regionalised and/or ‘green’ savings products. However, the bulk of equity will have to fall on the balance sheet of institutions with long horizons. It would be advisable to adapt the regulation of insurance companies and to accelerate the capital market union project (Demertzis, 2020).

Encouraging labour reallocations

Jordà, Singh and Taylor (2020) find that historically, pandemics have been followed by increases in real wages and falls in real interest rates. This result can be interpreted as the outcome of a lower labour force (due to the death toll and/or reduced participation rate), while capital is basically unaffected. During the recovery phase, demand will stay depressed in some sectors like restaurants, whereas it may recover relatively quickly in some others like construction. We cannot exclude labour shortages in some sectors or sub-sectors, whereas unemployment would stay high in others. Today, it is impossible to assert whether these effects would be transitory or permanent. Hence we should perhaps think in terms of short-term flexibility and in terms of option value:

- Short-term flexibility: local arrangements where some workers are ‘lent’ by a firm to another firm for a limited period of time could be encouraged. For instance, from restaurants to grocery stores, or from airport security to shopping mall security.
- Re-training: there is an option value of training the unemployed for new jobs, even if at the end they can recover a job in their initial occupation. Learning a second profession could also be welfare enhancing for the workers, for instance if this allows them to move to another, preferred location.
- Training: a new generation of youth will arrive in the labour market in September 2020, some of them with limited skills. It is essential to incentivise companies in relatively booming sectors to hire low-skilled young workers. Existing programmes such as the European youth guarantee or apprenticeship programmes need to be scaled up and adapted to the new context.

On the whole, the Support to mitigate Unemployment Risks in an Emergency (SURE) initiative will shortly have to reinvent itself by moving from compensating short-term work to encouraging flexible labour arrangements and onsite training programmes. It will become all the more necessary that the recovery plan will increase demand in some sectors such as housing renovation or IT services. Failure to build sufficiently skilled capacity quickly in order to serve the demand would lead only to increased prices, with little gain in terms of production and employment.

The second and third phases of the crisis will likely overlap. The third phase, however, will be characterised by return to a ‘new normal’, in which social distancing and other restrictions still remain in place until a vaccination has been developed and is available. This may be a long phase of recovery, in which the EU kick starts its Green Deal and digitalisation strategies, while at the same time still supporting some injured sectors of the economy. During this phase, a few guiding principles on EU-level spending should apply. First, it should be directed towards the most severely impacted regions and individuals. Second, it should promote the growth of future technologies and sectors (e.g. green, health and digital) while supporting the reallocation of people out of sectors where the recovery chances are slim. Third, it should serve to relevel the playing field, revitalise the internal market and protect the Schengen area.

The pandemic may well have a long-lasting impact on the distribution of demand between consumption and investment. To the extent that collective preferences have shifted in favour of preserving the environment and investing in health protection, the new growth regime will rely on more public and private investment and less consumption. The recovery plan should accompany this structural shift through facilitating factor reallocations, supporting public investment, incentivising private investment and mobilising households’ savings.

Priorities going forward

Going forward, a number of issues will have to be addressed, notably:

Stability and Growth Pact (SGP). Before the COVID-19 crisis, the fault lines of fiscal rules were widely discussed and understood. In order to avoid the same pro-cyclical fiscal tightening as the one carried out after the global financial crisis, the SGP will have to be adapted. The jump in debt-to-GDP ratios will make the debt rule even less workable than before the crisis. Conversely, off-balance sheet liabilities will have to be monitored. For a while, it

may be advisable to think more in terms of gross financial needs than in terms of financial or structural deficit, and to develop contingent fiscal planning in case some risks materialise. At a later stage, expenditure rules could replace the pre-COVID-19 SGP as a way to monitor sovereign deleveraging over a long period while allowing for counter-cyclical fiscal policies.

Taxation. National governments should not shift abruptly from heavy subsidisation to heavy taxation. The only way to avoid such a self-defeating strategy while raising resources to service the new debts would be to broaden existing tax bases. Hence, anti-avoidance rules, efficient cooperation across national tax administration (for instance on VAT), fair taxation of digital activities and the elimination of the various tax holes and exemptions will be crucial elements of the recovery. Stronger cooperation is also desirable so as to allow for more progressive tax schedules, which would provide some relief for low-paid workers, who feel the brunt of the crisis more severely.

Convergence. The crisis will likely have long-lasting effects on some sectors such as the automotive industry, aeronautics and tourism, less on others such as business services, agriculture or utilities. To the extent that these various sectors are unevenly distributed across the EU, the shock will have asymmetric effects, calling for relative price adjustments, labour mobility or temporary transfers. Some of the instruments put in place during the COVID-19 crisis may need to be prolonged and adapted in order to address this legacy. Failing to do so would raise the discontent with sector specialisation that is at the core of the single market.

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A Framework for a European Economic Recovery After COVID-19

To slow the spread of COVID-19, European governments have adopted stringent containment measures. These have led to a severe recession, and policymakers in European Union countries are providing ample support to help companies cope with the immediate consequences. The basic approach has been to provide generous and indiscriminate emergency support to help cash-strapped firms meet their immediate liquidity needs. But even as economies tentatively reopen, countries face deep recessions and a more comprehensive strategy for the future needs to be designed.

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The success of support measures as COVID-19 lockdowns are relaxed depends on the type of recovery the EU wants to achieve. At the same time, decisions taken today will have long-term implications for the single market and government debt. How should further fiscal support provided to companies be structured? What implications will different approaches have for the single market, government budgets and the EU's climate strategy? Difficult trade-offs lie ahead: a speedier recovery could run counter to green ambitions; national rescues could hurt neighbouring markets. Hard choices in the coming phases should follow a set of four principles and the recovery effort should be structured around equity and recovery funds with borrowing at the EU level.

Three phases of economic response to COVID-19

COVID-19 lockdown measures have led to sharp contractions in economic output, household spending, corporate investment and international trade. EU countries have seen an estimated average decline in annual GDP growth of up to three percentage points per month of lockdown.¹

¹ Each month of lockdown is expected to cause a decline in annual GDP growth of 2.4 percentage points in Germany and of three percentage points in France and Italy.

The EU economy is predicted to contract by a record 7.4% in 2020 (European Commission, 2020a).

The impact of COVID-19 on the European economy might ultimately turn out to be even greater than currently estimated. The health and economic impact of the pandemic and the containment measures on sectors and countries have varied significantly. For example, tourism slowdowns have hit airlines and Mediterranean countries particularly hard. The construction sector is more heavily affected in some countries than in others (with construction production growth rates ranging from -61% in France to 0.7 in the Netherlands).²

In the fiscal economic policy response to the pandemic, three phases can be broadly distinguished.

Phase 1 measures are meant to temporarily freeze economies at the point they were at before the crisis in order to shield healthy businesses from bankruptcy and to protect European firms from hostile takeovers by foreign state-backed enterprises. Phase 1 support has been crude and indiscriminate, and rightfully so. The motto is speed over perfection. The national economic measures taken in phase 1 are characterised by indiscriminate, national liquidity support to firms and workers. These measures are meant to keep firms afloat in the face of near-universal cash shortfalls, to prevent unnecessary layoffs and to deter hostile takeovers (especially from non-EU state-financed enterprises).

As early as 19 March 2020, the European Commission amended the EU state aid rules with a so-called Temporary Framework to allow governments to undertake such measures. However, the size of fiscal responses in different EU countries has varied widely. For instance, immediate fiscal stimuli have ranged from 3% of GDP in Italy and 2% in Spain to 12% of GDP in Germany (Anderson et al., 2020).

Phase 2 is about solvency support. After months of lockdown, firms must take on increasing amounts of debt and draw on equity reserves to meet their working capital and investment needs. The European Commission estimates that by the end of 2020, 25% to 35% of European companies will have exhausted their working capital and liquidity buffers, falling short of an estimated €350 billion to €500 billion in liquidity (European Commission, 2020b).³ At the

same time, credit standards are tightening.⁴ For increasingly leveraged firms, bankruptcy looms. Solvency support through direct recapitalisation is needed. This phase is expected to last roughly until the end of any lockdown measures. Lockdowns may continue until full immunity or a vaccine is available, so possibly well into 2021.

Phase 3 will then be about recovering from the severe contraction phase that the likely on-and-off switching of lockdown measures will leave in its wake. On 21 July 2020, the European Council agreed on an EU recovery fund, called Next Generation EU, targeting the sectors and geographical parts of the EU most affected by the crisis. However, only a very small share of the planned €750 billion will be spent in 2020.⁵

In the following, we discuss the key principles that should guide support measures in phases 2 and 3. One key consideration is that decisions taken in phase 2 – who gets bailed out, how and under what conditions – will determine who is left standing in the recovery phase. Conversely, predictions about the shape of the recovery and about policy measures enacted in phase 3 (such as demand support) could determine whether or not a company can be deemed solvent today.

As countries move to the next phases, taking account of EU cross-border effects will become increasingly important. Phases 1 and 2 have so far largely involved national fiscal policy. However, differences in state-aid disbursements and other support during phase 2 could well leave lasting marks as countries make different and uncoordinated decisions, whether due to fiscal space or preferences. Decisions taken now will thus shape the single market of tomorrow. In phase 3, economic outcomes will be shaped by budget decisions related to the EU's multiannual financial framework (MFF) and the EU recovery fund, alongside national recovery programmes. A comprehensive strategy for phases 2 and 3 is needed.

Four guiding principles for managing phases 2 and 3

Moving from phase 1 to the next phases is not simply a matter of providing equity instead of debt. While phase 1 injections have been emergency measures, phase 2

4 As reported in the 2020 Q1 European Central Bank bank-lending survey.

5 While the European Commission's 27 May 2020 proposal included an increase in the 2020 EU budget (€11.5 billion), the Council's agreement does not. However, some measures taken since the crisis "should be eligible for financing under [the] ReactEU and Recovery and Resilience Facility [programmes], provided they pursue objectives of the respective programmes" (European Council, 2020).

2 Total construction, April in respect to February 2020. Eurostat data: http://ec.europa.eu/eurostat/statistics-explained/index.php?title=Impact_of_Covid-19_crisis_on_construction#Development_by_country.

3 Baseline scenario.

requires a long-term plan. It also requires recognition of difficult trade-offs ahead: speedy economic recovery versus environmental goals, health of the private sector versus public indebtedness, solvency versus social cohesion.

The job now for policymakers is to make clear the principles guiding their recovery strategies. Such principles should consistently inform policymakers' choices between the possible measures and the inevitable trade-offs. Can they ensure that rescue plans designed today do not cause unintended damage tomorrow?

But before reflecting on the principles that should guide future economic support, it is worth highlighting why such support is warranted in the first place. First, governments impose lockdown measures to achieve a public good: a healthy population. It is therefore appropriate that the public contributes to paying for the economic fallout from achieving that public good. Second, without further support, many jobs will be lost. Third, with numerous companies failing, invaluable tangible and intangible capital will be destroyed. Rebuilding that capital and founding new firms will take many years, during which time human capital will be permanently destroyed.

However, governments cannot and should not rescue every company with unlimited amounts of cash. This would be fiscally irresponsible and could cost the single market. A careful balance must be struck between public welfare objectives and the social, economic and political risks of rescue programmes.

We consider four principles to be of the utmost importance in this evaluation.

First, only financially viable firms should receive solvency support, with financial viability assessed in terms of both the past and future. Taxpayers should not support firms that were in bad shape before the virus-induced lockdowns, but assessments of financial viability need to go beyond published 2019 financial accounts.

The crisis may well alter consumer preferences and production systems. Public resources must focus on firms with business models that are expected to be viable in the post-crisis economy. Rescue plans should not be about preserving pre-crisis industrial structures. The recovery should be about jump-starting a healthy post-COVID-19 economy, which could mean letting some firms fail. Meanwhile, a forward-looking approach suggests financing the promising start-ups of the post-crisis economy. A key question here is who should conduct these forward-looking assessments?

We favour a mechanism in which the expertise of private investors is used to support decisions on the allocation of rescue funds. Such a system would be more transparent and accountable than if politicians and their administrations are left to decide unilaterally which companies to help. Involving private investors would help ensure that investments are viable in the long run, especially if they have a direct interest. Even so, credit tightening might lead to under-investment and the public sector therefore plays an important role.

The local knowledge and analytical capabilities of commercial banks are already extensively used to distribute state guarantees and subsidised loans to firms and individuals. Further partnerships will be required for equity-based instruments, especially for the more arduous assessments of the viability of smaller companies.

Second, state support should not undermine competition in the EU's single market. One of the EU's main strengths is well-functioning competition within its single market. Fair competition across borders ensures that the most innovative and productive firms thrive, rather than those that receive the most state support.

Relaxed state-aid rules allow EU governments to inject liquidity into cash-deprived registers. Inevitably, some countries will provide more generous support than others (Germany accounts for approximately half of the COVID-19 state aid approved by the Commission as of 1 May 2020). These differences risk distorting competition, especially if they continue during phase 2. At the extreme, fears of competitive disadvantage could trigger subsidy wars between EU countries, leading to huge wastes of public money (Motta and Peitz, 2020). The longer these differences persist, the more the single market and therefore the foundation of Europe's long-term growth will be affected.

Quantitative limits on the amounts of aid (e.g. the €800,000 cap on grants) impose some discipline (Neven, 2020). Nevertheless, some countries will deliver less than the maximum authorised amounts, while others will go beyond, taking advantage of the fact that aid provided under the Temporary Framework can be cumulated with other types of state aid.⁶ Furthermore, quantitative limits on aid to individual firms do not prevent major differences in the scope of deployment. Indeed, firms that operate in economically less-affected countries will be at a great advantage compared to firms that deal with insolvent suppliers and clients in their daily business.

⁶ For example, €200,000 of de minimis aid and aid under Article 107(2)(b), which permits governments to compensate firms for incurred direct damage.

Rules to restrain the behaviour of artificially competitive firms also work to limit further distortions of the single market. To that end, the Commission's state-aid amendments prohibit aid-infused firms from engaging in aggressive commercial expansions and from acquiring rivals while they are repaying the state. These rules are welcome additions to the Commission's arsenal. However, these rules rely on vague behavioural notions that are not easy to enforce – when is a pricing strategy 'aggressive' and when is it procompetitive? – and are distortionary in their own right.⁷

Third, state aid should support and not undermine the achievement of broader societal goals. The EU and its members have set themselves societal goals including climate neutrality and social cohesion. It would be absurd if public funds now subsidised the business models that need fundamental change.

As governments engage in bilateral negotiations with firms, they are in a uniquely strong position to push for the changes that normally require years of regulating to implement. Support given to firms should be conditional on making the changes required to achieve the EU's societal objectives.

Putting conditions on state aid will require that difficult technical questions be addressed – around monitoring and enforcement, for example. Political disagreements, e.g. over conditions on dividends and bonuses attached to equity injections or environmental obligations, will have to be resolved. Indeed, a clear definition of broader societal goals needs to be agreed and supported by the entire EU. If the goals in different countries diverge too much, there will be a risk of further market distortions, with some firms held to much higher standards (for example, on environmental protection) than others. In light of these difficulties, and under pressure to act fast, it will be tempting to postpone these discussions until after the crisis.⁸ But this would be a rare opportunity missed.

Fourth, taxpayers should receive their share of the rewards of the recovery. Generous support schemes funded by the taxpayer should give the taxpayer some claims on future profits. Moving beyond emergency rescues, interventions must be framed as worthy public investments, not expensive bailouts.⁹

7 Knowledge that a rival is barred from aggressive pricing could be an open invitation for tacit collusion.

8 None of the rescue packages given so far to airlines have included binding green conditions. See: <https://www.greenpeace.org/eu-unit/issues/climate-energy/2725/airline-bailout-tracker/>.

9 Lonergan and Blyth (2020) argue that 'bailout' is a misnomer in the case of COVID-19.

Applying the four principles in phase 2

Most of the public aid provided to firms so far has been in the form of debt (loans and guarantees) and does not address solvency worries that will get worse as the crisis lengthens. At the microeconomic level, phase 2 is characterised by the need for solvency support: direct capital injections into hard-hit balance sheets.¹⁰

In this context, the principles discussed in the previous section suggest a large European equity fund should be created to ensure a single approach to recapitalisation measures and to protect the integrity of the single market. Indeed, the centralisation of funds would allow for a proportionate allocation and a consistent approach to helping firms in different EU countries, thus limiting distortion.

The Council 'Next Generation EU' agreement of 21 July 2020 contains one measure in this direction: a budget boost to the existing InvestEU (previously known as the Juncker Plan). InvestEU is the EU's investment fund; it mobilises public and private investment through an EU budget-guarantee backing projects of the European Investment Bank (EIB) and others.

While we welcome this proposed boost to InvestEU, this measure will be of no use in Phase 2: none of the meager €5.6 billion dedicated to the programme are allocated to 2020, when the funds are most urgently needed (Darvas, 2020b). Even past Phase 2, it will be too little. What can €5.6 billion spread over seven years achieve in the face of the estimated €350 billion to €500 billion liquidity shortfall this year (European Commission, 2020b)? And can €5.6 billion spread over the entire EU realistically level the playing field when Germany has earmarked €100 billion for recapitalisation interventions?¹¹ In fact, a great disappointment with the Council agreement is its abandoning of a €26 billion EU equity fund, as had been proposed by the European Commission in its Next Generation EU proposal.¹²

The details of InvestEU can still change.¹³ In addition to a significantly larger budget overall and a positive budget for 2020, we recommend that the fund allocate capital ac-

10 On 9 April 2020, the European Commission proposed to further extend the scope of the Temporary Framework to include direct recapitalisation measures, e.g. in the form of equity stakes and subordinated debt. See https://ec.europa.eu/commission/presscorner/detail/en/STATEMENT_20_610.

11 As of 10 June 2020, only €6 billion were used (direct recapitalisation through the Economic Stabilisation Fund, *Wirtschaftsstabilisierungsfonds*).

12 The European Commission's 27 May 2020 proposal contained a €26 billion 'Solvency Support Instrument' to invest in coronavirus-hit businesses across Europe.

13 The Recovery Fund still needs ratification by the European Parliament.

cording to the four principles set out in the previous section.

As regards our recommended focus on viable firms, the involvement of the EIB is one of the strong points of the proposed measure. The Bank's deep ties with local partners, such as national promotional banks (e.g. ICO in Spain) and private financial institutions, mean a proven ability to leverage local knowledge. Within an EU framework, the expertise of these institutions would help direct funds towards the firms most likely to be viable in the long run.

Furthermore, conditions should be attached to the disbursed funds, ensuring accelerated changes towards agreed common societal goals. Better still, the fund should be managed for the public's benefit, and the profits dedicated to financing societal goals at the local level, thus providing a clear social sharing of the upsides. European taxpayers would thus not be bailing out firms, but would rather be investing in them. If well designed, this would not lead to systematic cross-border transfers because equity support would be given on the condition of receiving a share of future profits.

In terms of instruments, equity or equity-type instruments (e.g. transfers with a remuneration contingent on future profits¹⁴) are preferable to pure transfers or subordinated debt instruments because they allow for a share in future profits. However, care should be taken to limit the distortionary effects of pure equity instruments. Equity should be (i) without voting rights, (ii) with quantitative limits, (iii) with a timeline for government exit. For SMEs, equity-type instruments may be preferred to pure equity because of the known problems associated with valuing equity stakes in closely held SMEs. For example, Boot et al. (2020) propose injecting cash in exchange for future higher tax payments (conditional on the firm having recovered).

Short of a pan-European fund, the most effective way to limit the distortionary effects of state subsidies is crude and mechanical: state-aid exemptions must be short-lived and enforcement must be biting. This would risk too little state support, without common societal goals.

Principles in phase 3: Towards a strong and sustainable recovery

Even if a COVID-19 vaccine becomes available, it will likely take several years until the level of economic activity of 2019 will be reached, for three reasons.

¹⁴ See the SAFE proposal: <https://voxeu.org/article/ implementing-european-pandemic-equity-fund>.

First, despite all the government support provided, many firms will have disappeared. Valuable physical, financial and human capital will have been lost. Rebuilding new productive structures will take time and investment.

Second, households have suffered a major shock to their incomes and have reduced savings. They will want to rebuild their savings as soon as incomes recover. It is therefore entirely possible that the private savings rate will be higher post-lockdown, putting a drag on demand.

Third, global value chains could be significantly disturbed for some time because of the different stages of the virus and vaccination, and because of private and public responses to the experience. This could reduce productivity.

In phase 3, the EU must play a major role – through the MFF and the new recovery facility, 'Next Generation EU' – alongside national recovery programmes. As phases 2 and 3 are intrinsically linked, measures should be based on the same objectives. In light of that, we discuss the key principles of a recovery initiative/fund.

Next Generation EU responds to the need to counterbalance the huge differences between countries' fiscal room to manoeuvre and abilities to boost their economies. Notably, it aims at preventing two scenarios.

First is a rise in spreads that would render debt unsustainable and self-fulfilling crises more likely. Indeed, by relying exclusively on national borrowing, the debt of some countries could become difficult to fund on primary (and even secondary) markets. Second is underinvestment. Fearing market reactions, countries may borrow too little, thereby supporting their economies insufficiently and doing long-term damage to both EU economic performance and political cohesion.

Under the European Council's July 2020 agreement, Next Generation EU would be financed by long-term EU borrowing. As such, it represents significant cross-country insurance. Disbursed mostly in the form of grants, followed by loans and guarantees, the facility would support countries' primary markets (by avoiding an extra budgetary burden) and debt sustainability (with grants and by passing on the interest rate advantage of EU debt).

Next Generation EU will thus be crucial in the recovery phase. However, its design should be based on four guidelines.

First, the recovery fund needs to focus on broader EU societal goals. The EU has committed to lead the transition to a healthier planet and a new digital world (von der Ley-

en, 2019), and it is important that both demand and supply support measures promoted under the Next Generation EU be consistent with these broader societal goals. To that effect, the twofold increase in the budget of the Just Transition Fund – the EU programme that provides assistance to EU territories most negatively affected by the transition to a climate-neutral economy – is a welcome feature of the recovery facility (though it may not be enough, see Cameron et al. 2020).¹⁵ So is the stipulation that only countries that commit to climate neutrality by 2050 be eligible for full funding.

Second, the recovery fund needs to be financed primarily through borrowed money. It is optimal to smooth the consequences of a large shock over time, i.e. through borrowing. Wolff (2020) argued that EU borrowing is the way forward to fund the costs currently being incurred. In the monetary union in particular, such EU borrowing would bring significant advantages and strengthen the euro area macroeconomy, while helping to overcome the problems of single market fragmentation that result from primarily national responses. As discussed above, purely national borrowing would weaken the single market and also render the monetary union more fragile. We thus welcome Next Generation EU's reliance on long-term EU borrowing.

Third, the recovery fund needs to strike the right balance between grants, loans and accountability. Traditional European Commission schemes, from the Juncker Plan to InvestEU, up to the recently proposed European Green Deal Investment Plan, tend to focus on financial architecture based on guarantees and loans, in order to trigger large-scale private and public investment initiatives. Such initiatives have been received sceptically in the past, given the uncertainties about their real additionality (Claeys and Leandro, 2016; Claeys and Tagliapietra, 2020).

Given the unprecedented uncertainty faced by companies in the COVID-19 crisis, it is important that a large share of the recovery come in the form of grants. The current €750 billion agreement includes €390 billion in grants. However, a mere 25% would likely be spent in 2020–2022, when the recovery needs will be greatest (Darvas, 2020a).¹⁶

While grants provide more insurance, they also imply bigger transfers and are more politically charged. Their legitimacy and accountability is more difficult to establish. Ultimately, a system with large amounts of European grants

requires a European spending programme with central control, accountability and enforcement. Indeed, providing grants centrally while exercising spending decisions nationally is incompatible with legitimacy and accountability.

Fourth, the EU budget's structure and allocation methods should be rethought. President von der Leyen claimed she can turn the EU's budget into the "mothership" of the European recovery (European Commission, 2020). But in order to deliver on the objective of an effective economic recovery aligned with broader societal goals, the EU budget needs a structural rethink.

The 2014–2020 EU budget was predominantly focused on the Common Agricultural Policy (CAP) and Structural and Cohesion Funds (together making up 71% of spending; Moes, 2018). The economic literature shows that the CAP provides good income support, especially for richer farmers, but is less effective for greening and biodiversity and is unevenly distributed. The literature also shows great uncertainty over the real size and effectiveness of cohesion policy (Darvas and Wolff, 2018). In the wake of COVID-19, the EU budget should be targeted more at the sectors of the future – such as green and digital – and made more efficient and effective. It is thus disappointing that the Council's agreement misses the opportunity for a fundamental reform of the EU budget, including the CAP.

Finally, the way resources are allocated really matters. A significant part of spending should be targeted at the European regions most affected by COVID-19.¹⁷ To do so, it will be essential to introduce into the allocation methods a set of parameters that prioritise regions that have been impacted most by COVID-19, in both health and economic terms. The European Council's agreed recovery instruments, however, only partially fulfil this requirement. Significant parts of the overall programme are allocated exclusively on the basis of 2019 and prior data, and not on measures of the size of shock. As regards the main instrument for example (the €672.5 billion Recovery and Resilience Facility), it is only the allocation for the year 2023 that will account for GDP loss caused by the crisis.¹⁸ This may be too late – and too little given that most of the instrument is (rightly) allocated to 2021–2022. Targeting the programme more specifically to those regions most affected by the economic recession in the coming years is a worthwhile discussion going forward.

15 Note, however, that the Council agreement more than halved the Just Transition Fund's budget compared to the European Commission's 27 May 2020 proposal, from €40 billion to €17.5 billion.

16 Provided the recovery instrument is subjected to the same time constraints as usual, which was the case under the 27 May proposal.

17 Wolff (2020) discussed whether and to what extent this creates moral hazard concerns.

18 Real observed GDP loss over 2020 and cumulative loss in real GDP observed over the period 2020–2021.

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Common Fiscal Capacity Is Needed to Strengthen Risk Sharing

The COVID-19 pandemic has shown that the fabric of the European Union project, in its current design, cannot facilitate the needed risk sharing to deepen the Single Market. To boost cross-border banking and capital market integration, we need a common safe asset and therefore common fiscal capacity.

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The heterogeneous effect of COVID-19 across sectors and regions in the EU

Until we have a successful vaccine or an antiviral drug, the COVID-19 shock remains a dramatic example of a negative externality: people may become infected when gathering for social or productive purposes. The very nature of the shock implies that people, depending on their economic activity, have different probabilities of getting infected. In particular, activities that require team production (i.e. an assembly line) or those services that require the joint time of the provider and consumer (a restaurant) are severely disrupted by the coronavirus pandemic and the slow-down measures required to prevent infections. Other activities, however, especially in information and communication sectors, are less affected by the pandemic as workers can move more easily to teleworking. This asymmetric effect of the shock on economic activities becomes an asymmetric impact on countries depending on their sectoral composition. For instance, this shock hits

regions specialised in services such as tourism particularly hard.

Figure 1 shows a standard measure of employment specialisation across regions of the European Union. It reveals that regions with greater specialisation in retail trade are more affected by the pandemic. The impact of the shock is not only larger in regions specialised in contact-intensive services but, most likely, will have a more persistent effect. There are two reasons for this: first, substitution of labour for capital (robotisation) is much more difficult in non-routine jobs. Second, keeping safe physical distance implies that the very size of plants, shops, restaurants, etc. is a binding capacity constraint during the unlock phase. That is, restarting contact-intensive services in a way that complies with safety conditions requires a significant amount of investment in the sectors that have been hardest hit by COVID-19.

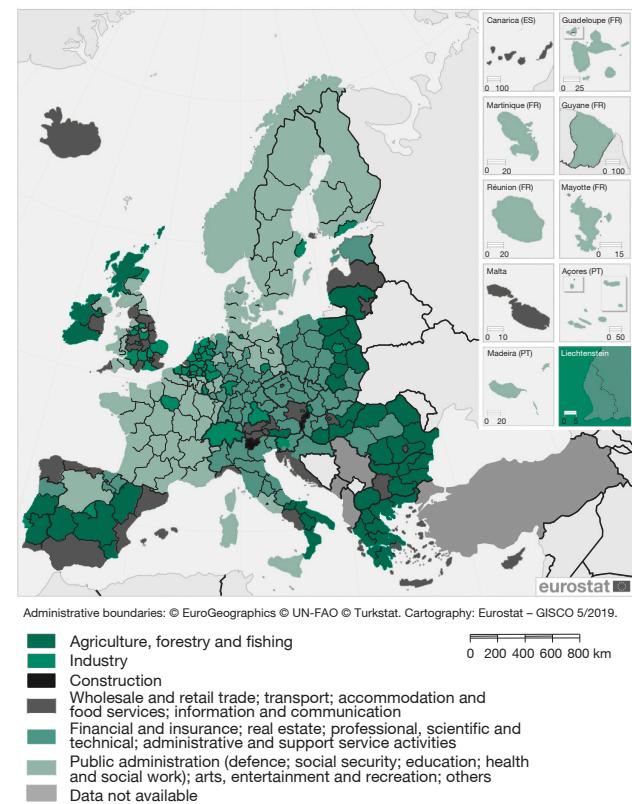
Moreover, the shift in consumer expenditures from face-to-face services to online services (or goods) implies that there are sectors that are actually benefitting from this crisis. In particular, the digital sector, dominated by international giants like Netflix, Google and Apple is making substantial profits in, almost literally, captive markets.

Risk sharing is needed to deepen economic integration

COVID-19 is an example of a shock that hits households, firms and sectors asymmetrically, within and across countries. This is particularly important in the European Union since all measures taken to boost the Single Market lead to exploiting comparative advantages across regions and, thus, sectoral specialisation; especially in the eurozone, as Mongelli et al. (2016) show. This specialisation raises the exposure of any regional economy to some risks and, therefore, increases the variance of its GDP. It could be argued that the COVID-19 shock is an extremely unlikely event, but there are many studies that point out that differences in sectoral composition are in fact an important factor in explaining the size of the business cycle fluctuations in the regions as well as the asymmetries and financial imbalances within the eurozone (see for instance, Imbs, 2004; Corsetti et al., 2008; Atalay, 2017).

Kalemlı-Ozcan et al. (2003) provide evidence that risk sharing and industrial specialisation are positively correlated using data that combines international and intra-regional information. The message is that countries (or regions) that can shield consumption against production risk are better equipped to exploit the gains from specialisation much more and advance further in economic integration. The channels for risk sharing, aside from fiscal transfers, are banking and capital markets integration.

Figure 1
Employment specialisation across European regions, 2016



Note: The share of the total number of persons employed in each NUTS 2 region is computed for the six activities: a similar calculation is made for the whole of the EU28; the most specialised activity is computed by taking the regional shares and subtracting the EU28 shares; the map shows for each region the activity whose employment share exceeded the EU28 average by the largest margin (as measured in percentage point terms). Norway and Switzerland: national data. Germany, Greece, Spain, France, Cyprus, the Netherlands, Poland and Romania: provisional. Slovakia: estimates.

Source: Eurostat (online data codes: `nama_10r_3empers` and `nama_10a10_3`).

Martinez et al. (2019) find that a banking union is efficient in sharing domestic demand shocks, while a capital market union is key to sharing supply shocks. That is, integration should go hand in hand on both fronts.

An incomplete risk-sharing architecture within the EMU

The question that arises is how countries in the EU, especially those in the Economic and Monetary Union (EMU), share the risks that arise from the industrial specialisation brought by the Single Market. Hoffman et al. (2019a) find for the EMU area that, after the adoption of the euro, bank-

ing integration grew significantly through wholesale funding and the interbank market, which are highly procyclical (see Admati and Hellwig, 2014), instead of cross-border banking integration. This implies that risk sharing actually plummets during economic downturns, as we have seen during the European debt crisis in 2010-2012. As a matter of fact, sharing the same currency without advancing further in the capital market and cross-border banking integration leaves countries more exposed to asymmetric shocks and financially fragile (Jaccard and Smets, 2020), especially if those countries do not share the same banking supervision. There have been advances in banking integration (see Bénassy-Quéré et al., 2018, for a discussion on this matter) and common banking supervision, but capital market integration is still lagging. The main obstacle to the latter is that the EMU lacks a safe asset. For capital markets to become deeper, abundant safe assets are needed to provide collateral; however, as we saw during the European debt crisis, sovereign bonds of countries facing fiscal tensions lose their safe asset status and, therefore, their value as collateral (Reis, 2019).

This problem is further amplified by the so-called deadly embrace between sovereign debt and bank debt (Farhi and Tirole, 2018). The main casualty of the deadly embrace is credit to small firms, which cannot grow, hampering competition, as shown by Hoffman et al. (2019b). Thus, the implication is that, in the absence of a common safe asset, it is very difficult to break the deadly embrace and advance in cross-border banking and capital market integration, which are crucial to risk sharing.

This incomplete risk-sharing architecture is also being threatened by national responses to the pandemic. The same logic that applies to coordinating across regions within countries follows across countries in the EU, especially if we want to preserve the Schengen space. In the presence of externalities, uncoordinated actions lead to inefficient outcomes. The fact that some countries have more fiscal capacity than others implies that some countries can give more state aid to firms and sectors than other countries. This industrial policy at the member state level distorts competition and harms the Single Market, as Motta and Peitz (2020) argue. One could object that the asymmetric fiscal capacity is the result of differences in fiscal discipline, which is true. Nevertheless, we should bear in mind that tax revenues have a different elasticity across countries and, most likely, industry specialisation and the firm size distribution affect that elasticity. The estimates of Koester and Priesmeier (2017), and Mourre and Princen (2019) go in that direction.

The need for a safe common asset leads us, inevitably, to discussions of some sort of eurobonds. Mutualisation

of debt among sovereign countries is not a good mechanism because it is plagued by many frictions, particularly limited commitment. But inaction is not an option because the current faulty architecture creates many economic and political tensions that endanger the European project. Additionally, faulty design can have unintended consequences. For instance, during the European debt crisis and the ensuing flight to safety, the return to German bonds reached historically negative levels. The question that arises is whether this was due to the fact that it was perceived as the only safe asset in euros. Finally, if we all agree that in order to make progress in banking and capital market integration, we need a safe asset, then we need to discuss common fiscal capacity as also argued by Pisani-Ferry et al. (2013). A safe asset will be valued if it is backed by tax revenues.

A common fiscal instrument conciliates risk sharing and fiscal discipline

The current coronavirus crisis has shown that uncoordinated policy responses lead not only to inefficient outcomes, but also to political tensions that give rise to anti-euro populism that may threaten the European project. A very stark example is the lack of coordination in health programmes and the protectionist reactions at the beginning of the pandemic. The disruption of global supply chains provoked by the virus has changed our understanding of the meaning of 'strategic industries' and there are calls to reduce country specialisations in a particular sector as a way to shield the economy against some shocks; that is, to reduce regional exposure to risk instead of sharing it. The underlying logic of this argument is that EU risk sharing mechanisms do not work well when needed so that it is better to smooth income by diversifying sectoral activities within countries. Thus, there is a serious protectionist threat that we have to deactivate.

The European Union is facing two big challenges: COVID-19 and climate change. They are both negative externalities; that is, both challenges call for coordinated action. We need to deepen risk sharing by means of common fiscal capacity and, at the same time, to coordinate policy against COVID-19 and the recovery phase of our economies while acting against climate change. But in doing so, we do not want to harm incentives: we do not want an enhanced EU fiscal capacity to backfire and result in the reduced fiscal discipline of EU member states. Thus, the simplest solution is to create a common fiscal instrument to finance a common policy that should be discussed and designed in the common institutions. The EU already has the instruments to channel targeted policies across regions: the European Social Fund, the European Regional Development Fund, Horizon 2020, etc., and the European

Semester as the coordination net. This measure would complement the Stability and Growth Pact and the European Stability Mechanism.

The first candidate for the common instrument is taxes directed at firms. There are three reasons, at least, why firm taxation should be done at the European level. First, the fact that firms can move headquarters and production plants easily across countries creates a problem for fiscal competition. Second, coordinated industrial policy can be undone by taxation at the national level. And third, the very size of many companies may give them strong influence at the national level but much less influence at the EU level.

EU common taxes to boost the Single Market

The first step would be creating a common digital service tax. The project “Fair Taxation of the Digital Economy” (European Commission, 2018) includes two proposals: a reform of corporate tax rules so that firm profits are taxed where they accrue and an interim tax that covers digital activities currently untaxed in the EU. The important thing about this initiative is that it is targeting income that is not currently taxed. That is, it is aiming to solve a problem of horizontal justice as well as efficiency, since not taxing activities distorts competition. As discussed above, the COVID-19 crisis has shifted household expenditures from face-to-face services to digital services. This huge shock has been positive for digital firms. The European Commission estimates that a 3% tax on digital services would generate €5 billion. To put this amount in perspective, notice that if the Commission raises €500 billion issuing bonds with a real return of 1%, the annual service would be exactly those €5 billion.

The second step would be to advance the Common Consolidated Corporate Tax Base (European Commission, 2016). Cross-border firms (and our goal is that EU firms grow enough to operate across borders) face 28 tax codes and have many opportunities for shifting profits and using loopholes. This fragmentation is a barrier to the Single Market, especially for small and medium-sized firms that want to grow as it is also an inefficient way to tax firms. According to the Commission (2016), 70% of firms’ profit is shifted across EU member states solely for tax purposes. This tax competition leads to a race to the bottom that is inefficient for two reasons. First, because it puts the burden of taxation on human capital accumulation. Second, without tax revenues we cannot build common public goods which are essential to fight the pandemic and climate change. According to the Commission estimates, EU businesses could cut their compliance costs by 2.5% under the common base and even

more with the full consolidation of the tax base. Corporate taxes collected 2.7% of GDP across the EU in 2017 (see European Commission 2019). Collecting this revenue could be done in a much more efficient way. A bolder step would be to phase out direct country contributions to the EU budget that are subject to much bargaining and negotiation and replace them gradually with revenues from the common corporate tax.

Additionally, to boost a green recovery, the EU Emissions Trading System needs to be clarified and, perhaps, allowances should be restricted. The auction system should be revised taking into account the dynamic responses of firms. We should also consider introducing a carbon tax, which levied upstream on the fuel itself when it is extracted or imported, simplifies its administration and the management of carbon leakages. These two ways of taxing firms should be coordinated within the common corporate tax base.

The political economy of risk sharing

Finally, we should take into account the fact that the gains of improving risk sharing across EU members and the costs of reforming current rules may occur at different horizons. Economies are dynamic and change over time. Not only that, the fact that countries have heterogeneous sectors and different income and wealth distributions implies that there are always winners and losers within countries. Thus, we should study further the gains of improving the mechanisms of risk sharing across countries, taking into account the underlying heterogeneity within EU country member states. In particular, the unanimity rule in the Council of the EU is a distortion to risk sharing since many side payments, transfers or budget rebates are agreed to circumvent veto power of member states regardless of efficiency criteria. We should replace the unanimity rule with a qualified majority rule. In this way we can design better policies so the net gains of risk sharing are felt by all citizens within the European Union.

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Massimo Motta and Martin Peitz*

State Aid Policies in Response to the COVID-19 Shock: Observations and Guiding Principles

Thanks to COVID-19, markets have disappeared from one day to the next, and firms' assets in most sectors have been rapidly depleting. This has increased the need for many firms to obtain funding. However, the ongoing economic uncertainty has made it even more difficult

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for firms to obtain credit from the financial sector. Thus, firms that are profitable in normal times face liquidity problems as a result of a negative supply and/or demand shock, and the financial sector does not satisfy the individual needs for liquidity support because of the large macroeconomic risks. In such a case, governments have to step in and assist with liquidity support or the appropriate guarantees so that banks and other financial institutions can provide the needed liquidity. Governments may also design other support schemes that protect workers or help demand to recover. In the current crisis, there are no doubts that state support is necessary to avoid long-run consequences for firms, workers and their human capital.

Many countries, including most EU member states, have announced various measures (and are considering new ones) to control the public health crisis and address the economic fallout due to the COVID-19 pandemic. State aid can be seen as a response to a system failure resulting from a severe economic shock, either hitting one sector (with possible contagion effects in other sectors) or – as in the case of the coronavirus crisis – simultaneously hitting several sectors.

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As a general principle, state aid to firms and sector-specific support schemes should be used only when there are market failures; that is, when there are good reasons to believe that the market would not deliver efficient and/or equitable outcomes. Aid should also be effective and proportional to the aims it intends to achieve. While there seems to be wide agreement that government inaction is not an option during the COVID-19 crisis, a few observations may guide the design and revision of state support schemes.

Sectors are hit differentially by the COVID-19 crisis

It has been documented that supply chain disruptions and demand shocks have had differential effects on sectors (for the UK, see for instance Bloom et al., 2020). This implies that some sectors need very little to no support, while others are in dire need. Clearly, liquidity support can then be targeted so that only those firms in need of such support sign up for the support programme. This implies that firms unaffected by the shock do not have the incentive or the ability to move under the umbrella of a liquidity support scheme. This also applies to state assistance for the labour costs of a firm (in particular, covering a fraction of the costs of furloughed employees). Keeping viable firms alive and enabling them to keep their staff makes it possible to quickly restart and scale up economic activities when demand picks up again and supply constraints have disappeared. By covering part of the wage bill for unemployed or underemployed staff, there is an incentive for firms hit by the shock to participate in this support scheme, while firms not hit prefer not to do so. Thus, well-designed liquidity support and employment subsidies can be applied across the whole economy, provided they are effectively targeted in the sense that only those firms negatively affected will participate in the programme.

Some firms were struggling even before the COVID-19 shock

Some firms would have difficulties regardless, and the risk of a badly designed, overly generous support scheme is that it would keep those firms alive. The entry and exit of firms is an important process in any flourishing economy, as it leads to a better allocation of resources. Since such a view may be dismissed as ‘neoliberal’ in the public debate, it is important to reflect on what happens when non-viable firms are kept alive. Consider the following constructed example: a village has a zoning law in place such that two restaurants have a license to operate. Suppose that one of the restaurants serves lousy food and cannot pay its bills, while the other serves decent food. If the village authorities provide support to

the former so that it can cover its losses, the villagers will continue to be served lousy food in this restaurant. If this restaurant were to exit the market, a different restaurant may serve the villagers better food. This increases the competitive pressure on the other restaurant and encourages it to strive even harder.

Therefore, state support schemes and in particular state aid that applies to a particular sector or to particular firms run the risk of supporting firms that are not viable in the long run even without the COVID-19 shock. It is therefore important that support schemes are temporary in nature. Also, to be eligible, well-established firms should provide evidence that their business was not in the red prior to the outbreak of the COVID-19 pandemic.

In line with these two observations, the European Commission (2020a, 2020b) adopted a Temporary Framework for state aid schemes aimed at ensuring firms’ access to liquidity and finance, and at preserving employment. This framework provides some limiting principles, establishing the temporary nature of such public interventions, and favouring their effectiveness and their incentivising nature. For instance, firms that were already having difficulties on 31 December 2019, and hence *before* the crisis, cannot have access to most measures; credit guarantees for loans beyond €800,000 cannot apply to more than 90% of the loan; the loan principal should normally not go beyond certain amounts (25% of yearly turnover, or twice the yearly wage bill); and wage subsidies given to workers who would have otherwise been laid off because of the crisis should not exceed 80% of the monthly gross salary.

Sectors and firms hit by a temporary shock may also be subject to a long-term shock

Some industries may never look the same after COVID-19. If large portions of temporary shocks become permanent, state aid will become more problematic for the sectors or firms that aim to preserve the status quo ante. Given the large fiscal strains on many countries, we submit that such support schemes for sectors that are unlikely to fully recover should not go ahead. We admit that such decisions are politically particularly hard to sell if the respective sectors are labour-intensive and have powerful trade unions or industry lobbies.

To the extent that this is foreseeable, support schemes should not use the status quo before the shock but rather the conditions that will prevail afterwards for reference. Thus, forward-looking state aid may also apply to sectors that were in decline before the shock or that will feel the long-run effects of the shock. Such sector-specific

support schemes may include measures that facilitate scaling down and restructuring (e.g. a move away from fossil fuels in the case of the car industry). Such state aid has to be carefully designed so as to avoid spending funds on a lost cause and preserving an outdated industry structure.

In the EU Single Market, some countries have more fiscal freedom for support programmes than others

In the EU context, there is the risk that public support for national companies creates trade and competition distortions within the internal market, and for this reason the European Commission (EC) has been given powers to control state aid. State aid programmes by EU member states require the approval of the EC. The founders of the EU understood very clearly that the internal market has to be protected from member states favouring their own companies, and introduced provisions in the Treaty on the Functioning of the European Union to this effect awarding the EC the task of state aid control.

The size of the economic shock and the ability to cushion its impact through state aid do not go hand in hand. In the current crisis, most countries hit severely by the COVID-19 pandemic are not in a strong fiscal position. This negatively affects the functioning of the Single Market. In particular, there is the risk of tilting the level playing field and creating a ‘domino effect’ (see Motta and Peitz, 2020a). If only some firms in a given industry are eligible for aid while others are not, competition will necessarily be distorted. This is inevitable when aid is provided by some countries and not by others, for instance, because only some member states can afford such aid or because different states support different industries. A firm that is generously funded by its home country becomes artificially more competitive, to the detriment of other efficient or more efficient rival companies, and the latter may be relegated to niche markets or even forced out of business. Or, to the extent that some of these rivals come from a home country that can afford state aid as well, a subsidy race among member states may be triggered, significantly wasting public money.

Some viable businesses may need recapitalisation

The EC extended the state aid Temporary Framework well beyond liquidity support and employment preservation so as to include the recapitalisation of businesses (see European Commission, 2020c). In some circumstances, short-run liquidity support may not be enough and a lack of finance may have long-term consequences: a firm that just barely keeps up with its payment obligations may have to abandon or postpone investment and

innovation plans. To the extent that such plans meet important EU policy objectives, for instance in energy transition and the digital agenda, aid that will enable their roll out may exceptionally be allowed (we proposed this in Motta and Peitz, 2020a; and this is also the position taken in European Commission, 2020c).

If recapitalisation takes the form of partial state ownership, as a matter of principle, this should be temporary and fully repaid shortly after the recovery of the sector, that is, after a period of a couple of years at most. Shares should be assessed at the market valuation *after* the crisis has hit but *before* the rumour of state aid support has spread. The longer the participation of the state, the bigger the dilution for current shareholders should be. (If a hybrid instrument allowing converting debt into equity is the chosen form of state support, similar principles should apply.) The EC has adopted these principles in the extension of the Temporary Framework (European Commission, 2020c).

Taking into account the arguments made above, a credible restructuring plan should be approved before any recapitalisation to ensure that public money does not support a level of activity by a firm or in an industry that is unlikely to be viable in the long run.

A sector-specific demand-side stimulus has serious drawbacks

Another instrument to revive a sector is a demand-side stimulus, e.g. in the form of vouchers for particular purchases. Such an instrument has been used in the past to stimulate car sales and is also on the table in the aftermath of the COVID-19 crisis. There are several problems with a broad demand-side stimulus (e.g. covering car purchases broadly). First, demand expansion may be limited if vouchers are redeemed mostly by people who would buy anyway – e.g. if transaction prices are increased by the amount of the voucher, in which case the instrument simply leads to a cash transfer from the government to the firms in the sector. Second, if consumers pay less after redeeming the voucher and demand picks up, this increased demand may come at the loss of future demand because of intertemporal substitution. To a certain extent, such intertemporal substitution may be socially desirable, but it should be considered when introducing the subsidy.

Furthermore, a programme introduced in one member state but not in others may still be distortive even if applied to all purchases within the country in case there is a home bias in consumption. For example, the home bias is well documented in the car industry.

A voucher programme for an industry is an indirect subsidy to the firms in the industry. It may be popular as it could be presented as benefitting primarily consumers. Industry lobbyists also prefer it as the firms operating in the industry may get the support with few strings attached (e.g. on managerial compensation and dividend policies). Strings can more easily be attached when state aid goes directly to firms. It should be stressed that a voucher programme might have further pitfalls. For instance, if vouchers for the purchase of cars running on fossil fuels were introduced, this would also conflict with the EU's climate objectives and other environmental goals (e.g. the reduction of nitrogen oxide emissions).

EU-wide sector support system would avoid the distortions created by national programmes

A truly European public support programme would not suffer from risks to the internal market's functioning as funding decisions would be made at the European level and based on common goals. Moreover, all companies operating in a sector covered by such a programme could be beneficiaries, independent of the country they originate from (Motta and Peitz, 2020a). In line with this observation, the European Commission (2020c) stated that

[i]f support were to be granted at EU level, taking into account the EU common interest, the risk of distortion to the Internal Market could be lower, and may therefore require less stringent conditions to be imposed. The Commission considers that additional EU level support and funds are necessary to make sure that this global symmetric crisis does not transform into an asymmetric shock to the detriment of Member States with less possibility to support their economy and the EU's competitiveness as a whole. (C164/4)

In some countries, some individual companies are particularly close to political decision-making and may lobby for particularly generous support programmes with few strings attached. While an individual company's influence at the member state level may be strong, its position is much weaker at the EU level. This provides another strong argument in favour of an EU-wide programme, as the EC is less likely to be captured by special interests than individual member states. For the sake of well-functioning economies in all member states, it would help if they publicly acknowledged the advantages of EU-wide programmes.

An advantage of an EU-wide sector support system compared to national programmes is that all firms in that particular sector would be eligible for aid, which would

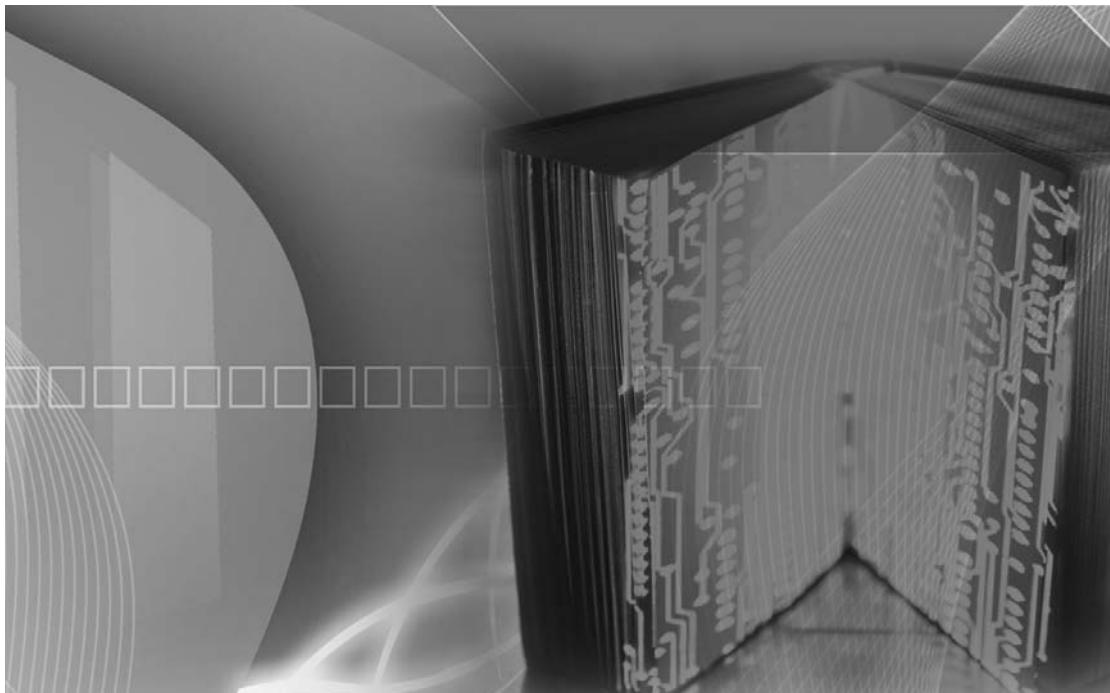
eliminate a source of distortion, namely, that only firms from some member states (and possibly the wrong ones) may receive aid within the sector.

One of the advantages of the EC playing a central role in designing a European aid programme is that it would reduce horse-trading between member states. The track record of the EC in this regards gives some reasons for hope: the EC has (in general) been able to resist the recurrent pressure for it to relax state aid control over the years.

In addition to competition policy objectives, there are other policy objectives that are linked to EU-wide goals and may justify a leadership role by the EC. Individual member states may not have the resources or, because of cross-country externalities, may not be willing to provide sufficient resources to pursue other objectives, such as climate and digital ones, or may lack resilience in times of crisis that would generate benefits in other member states as well (see Bénassy-Quéré et al., 2020; and Motta and Peitz, 2020b). State aid in the member states and EU funding schemes should also be aligned with those goals.

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Michael König and Adalbert Winkler

COVID-19 and Economic Growth: Does Good Government Performance Pay Off?

The coronavirus pandemic led to substantial revisions of 2020 GDP growth projections. We analyse whether and to what extent the quality of government policies in handling the health aspects of the crisis influence cross-country differences in the economic impact of the pandemic as projected by the OECD, the IMF and the World Bank. We measure policy quality by a recently published Economist Intelligence Unit index and a COVID-19 Misery index combining the stringency of government-imposed distancing measures with the COVID-19 fatality rate. Moreover, we control for international spillovers captured by trade openness and export exposure to tourism. Results for most specifications show that good government performance pays off as the respective countries record less severe revisions of growth forecasts. Only in a few cases, our findings suggest that the pandemic's global effect might be so strong that actions by individual governments do not affect cross-country differences of growth revisions. Finally, there is broad evidence supporting the view that a country's exposure to the global economy influences its growth outlook relative to other countries.

The COVID-19 pandemic is a global phenomenon. However, different countries are affected differently in terms of output losses. We test whether cross-country differences in economic impact reflect the degree to which countries successfully manage the pandemic. Our analysis is motivated by an index recently published by the Economist Intelligence Unit (EIU, 2020) designed to capture how well 21 Organisation for Economic Co-operation and Development (OECD) countries have responded to the coronavirus. We add to this index a COVID-19 Misery (CM) index which allows us to expand the analysis to all OECD countries and to several additional countries. In its baseline version, the CM index represents the product of the number of COVID-19 deaths per one million inhabitants with the government stringency index reflecting the degree of rigidity with which governments impose mandatory forms of social distancing (Hale et al., 2020).

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We make use of both indices and test whether they significantly explain cross-country differences of revisions in GDP growth projections for 2020 recently published by the OCED (2020), the International Monetary Fund (IMF) (2020a) and the World Bank (2020) in June 2020. We account for international transmission channels (Lane and Milesi-Ferretti, 2011), as they are likely to play a major role in explaining differences in relative economic performance across countries. Even if there had been one country unaffected by the pandemic itself, i.e. recording zero infections and hence no increase in social distancing, economic activity would have likely declined due to its integration into the global economy (Rathke et al., 2020). We capture the level of integration by the degree of trade openness and the exposure of export revenues to tourism (Gössling et al., 2020). Finally, we include pre-crisis GDP growth to control for convergence effects.

The findings show that countries whose governments are handling the pandemic more successfully record revisions of growth forecasts that are less severe than countries with poorly performing governments. This result stands up to several robustness checks. In only a few specifications do the results suggest that the pandemic's global effect might be so strong that individual government actions do not affect cross-country differences in growth revisions. Finally, international spillovers matter, as we often find that a country's exposure to the global economy significantly influences its relative vulnerability to the pandemic in terms of projected growth. We con-

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clude that despite the global character of the pandemic and the economic crisis it has triggered, the way individual governments handle the crisis will impact economic outcomes across countries.

COVID-19 policies

There is no country unaffected by COVID-19. Accordingly, all governments have responded to the pandemic, mainly by imposing some form of mandatory social distancing. However, the effectiveness of the measures taken varies, as governments might have responded too late and too timidly, or too early and too harshly. This is not surprising as governments faced several challenges when responding to the coronavirus crisis. First, they did not know how fast the virus was spreading, how many people became infected and how high the fatality rate would turn out to be. Second, they did not know to what extent voluntary measures of social distancing would suffice to contain the pandemic in such a way that people would judge the associated fatality rate as acceptable. Thus, they were hesitant in applying restrictions even if government-imposed measures might have more efficiently achieved the level of social distancing needed to address the crisis (Eichenbaum et al., 2020).

Third, the government response was influenced by many country-specific factors (Deb et al., 2020; Pepinsky, 2020; Wharton School, 2020). For example, the fragility of a country and its political cohesion likely played a role: Governments of fragile states and countries characterised by a high degree of polarisation might have been less able to rely to a large extent on moral suasion in reaching the desired overall level of social distancing. In addition, governments' assessments of the danger the coronavirus presents have varied. For example, views expressed by the Brazilian President and the German Chancellor on COVID-19 suggest that the response to the crisis in Brazil and Germany was different. Related to this, governments' views on the political fallout of mandatory measures, i.e. whether they will consolidate or undermine the government in power, likely influenced how hesitant or forceful they responded by imposing mandatory measures. In addition, government policies presumably varied with the quality of the health sector: Governments of countries with better health systems have more leeway to contemplate mandatory measures given system abilities to cope with a larger number of infected people. Finally, the fatality rate and social distancing measures are endogenous to each other. A higher number of deaths raises risk aversion and hence leads to stronger voluntary and government-imposed measures of social distancing, while stronger voluntary and government responses are likely reflected by a lower number of deaths.

The EIU (2020) aims at addressing these complexities by designing an index expressing the quality of the government response to the pandemic. The EIU index accounts for three 'quality of response' criteria (number of tests, provision of non-COVID-19 healthcare and the number of above-average excess deaths) and three pre-existing risk factors (share of older population, obesity prevalence and number of international arrivals). The index is available for 21 OECD countries (Table 1). It indicates that New Zealand, Austria, Germany, Australia, Denmark, Iceland, Israel and Norway have performed best in managing the pandemic by acting swiftly and early, largely avoiding very tight lockdowns and running substantial tracking and testing programmes. As a result, these countries record a relatively low fatality rate, even though rates are quite heterogeneous within the group, and have been able to provide healthcare services to non-COVID-19 patients despite a significant share of the population above 65. By contrast, Spain, the UK, Italy and Belgium score worst either due to bad luck because they were the first countries in Europe to be hit by the pandemic or due to policies that were too slow and inconsistent. Portugal, Chile, France and the US fall in the middle, followed by Switzerland, Japan, South Korea, Sweden and the Netherlands.

Given the limited number of countries for which the EIU index is available, we apply the Corona Misery index for larger samples. As the name indicates, it uses the logic of the macroeconomic misery index developed by Arthur Okun (Cohen et al., 2014) to the pandemic. However, while Okun's index represents the sum of two unfavourable macroeconomic outcomes, inflation and unemployment, the CM index is the product of two unfavourable pandemic outcomes, namely the number of deaths per one million inhabitants and the stringency of the government-imposed measures (Hale et al., 2020). Correlation analysis reveals a significant negative correlation between the CM index and the EIU index (-0.786, p<0.05).

Despite the negative correlation, the CM index suggests a different ranking of the 21 countries in terms of the quality of the government response to the health crisis than the EIU index (see Table 1 and Figure 1). This is because the number of deaths per one million inhabitants drives the CM index ranking. Accordingly, countries showing a low fatality rate (such as South Korea and Japan) perform better, and countries with a relatively high fatality rate (such as Austria, Germany, the US and France) perform worse relative to the EIU index. By contrast, Sweden's ranking is almost unchanged as the negative impact of the high fatality rate for the CM index is also reflected in factors accounted for by the EIU index. Thus, Sweden's substantially more liberal policy approach (Born et al., 2020; Winkler, 2020) does not pay off in either ranking.

Table 1
EIU and CM indices for country ranking

Country	EIU	Rank	CM (ln)	Rank	Stringency	Rank	Deaths per million	Rank	Start stringency	Delay
New Zealand	3.67	1	5.27	2	41.86	11	4.64	2	21	-37
Austria	3.56	2	8.06	8	40.44	9	77.94	8	23	-4
Germany	3.56	3	8.37	9	40.32	8	107.39	10	54	-2
Australia	3.44	4	5.12	1	40.11	6	4.14	1	57	0
Denmark	3.44	5	8.38	10	41.72	10	104.83	9	24	0
Iceland	3.44	6	6.85	5	31.75	3	29.7	5	22	-37
Israel	3.44	7	7.55	7	51.55	19	36.75	6	26	-26
Norway	3.44	8	7.48	6	38.06	4	46.65	7	30	-27
Portugal	3.22	9	8.84	11	46.05	17	150.45	11	25	-37
Chile	3.11	10	9.21	13	39.53	5	252.6	13	32	12
France	3.11	11	10.08	17	51.94	20	457.47	16	73	10
USA	3.11	12	9.70	16	43.84	15	372.91	15	22	-2
Switzerland	2.89	13	8.98	12	40.30	7	197.17	12	55	-1
Japan	2.89	14	5.44	3	30.80	2	7.61	4	6	-8
South Korea	2.78	15	5.48	4	43.28	14	5.51	3	30	11
Sweden	2.56	16	9.51	14	25.73	1	522.38	17	68	37
Netherlands	2.44	17	9.63	15	42.54	13	357.39	14	65	7
Spain	2.22	18	10.28	19	47.55	18	615.77	19	30	-1
UK	2.22	19	10.21	18	42.26	12	641.64	20	32	2
Italy	2.22	20	10.35	20	54.62	21	571.94	18	22	-8
Belgium	2.11	21	10.56	21	45.71	16	846.7	21	27	-7

Notes: The presented CM index is displayed in logarithmic form $\ln(x+1)$ and represents the product of the total number of COVID-19 Deaths per million inhabitants as of 28 June and the Stringency mean value between 1 January and 28 June 2020. Start stringency accounts for the number of days from 1 January 2020 without mandatory measures (e.g. 14 March 2020 = 74). Delay represents the period in days between starting mandatory measures (Start stringency) and the first registered COVID-19 infection.

Sources: Economist Intelligence Unit (2020), How well have OECD countries responded to the coronavirus crisis? – A report by The Economist Intelligence Unit; T. Hale, S. Webster, A. Petherick, T. Phillips and B. Kira (2020), Variation in government responses to COVID-19, Oxford COVID-19 Government Response Tracker, BSG Working Paper Series, BSG-WP-2020/032, www.bsg.ox.ac.uk/covidtracker (27 June 2020); authors' compilation.

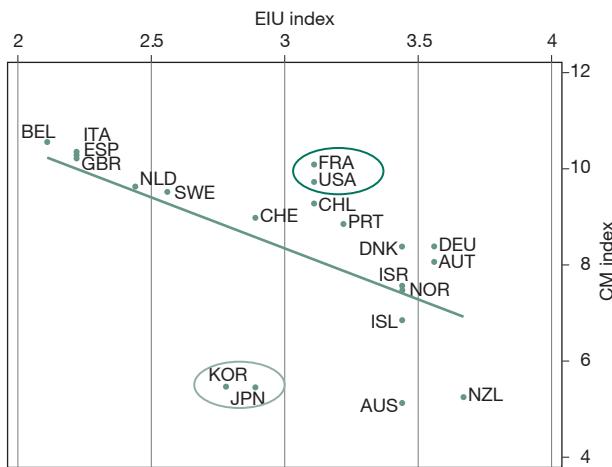
The COVID-19 policy response and economic growth

The COVID-19 pandemic has had a severe negative impact on economic activity. This is reflected in dramatic revisions of GDP growth forecasts. The IMF (2020b) growth forecasts for 2020 declined for all countries compared to those published in late autumn 2019, i.e. before the pandemic. Still, cross-country differences within projections are substantial. For example, the most recent IMF forecast (2020a) records a revision for GDP growth in 2020 of -2.75 percentage points for Pakistan, while that of Spain amounts to -14.65 percentage points (Table 2).

Moreover, on average, revisions have become more severe the more time elapses and the more samples

focus on advanced economies. Thus, correlations of projected revisions are far from perfect. Indeed, for countries covered in the recent OECD and IMF projections, the correlation coefficient of growth revisions compared to late 2019 is just +0.39 and fails to be significant at a 10% level. The respective projections also differ markedly regarding their country coverage. While the OECD sample covers all of its member countries, the IMF World Economic Outlook (WEO) update released in June 2020 provides projections for 30 countries only. The World Bank just released new projections for 46 countries, but as Oxford University does not include many of them in the stringency index sample, our analysis of these projections covers only 29 countries.

Figure 1
EIU and CM indices for 21 countries



Sources: Economist Intelligence Unit (2020), How well have OECD countries responded to the coronavirus crisis? – A report by The Economist Intelligence Unit; T. Hale, S. Webster, A. Petherick, T. Phillips and B. Kira (2020), Variation in government responses to COVID-19, Oxford COVID-19 Government Response Tracker, BSG Working Paper Series, BSG-WP-2020/032, www.bsg.ox.ac.uk/covidtracker (27 June 2020); authors' compilation.

Finally, the composition of countries varies substantially. While OECD member countries include larger and smaller advanced economies plus several key emerg-

ing markets, the IMF WEO update focuses on the larger advanced and emerging markets only. The World Bank sample, by contrast, is mainly composed of developing countries.

Against this background, we test whether the quality of the government response as captured by the EIU and the CM indices significantly explains cross-country heterogeneity in terms of growth revisions associated with the pandemic, i.e. we test whether good government performance in handling the pandemic is likely to pay off. We apply a framework developed by Lane and Milesi-Ferretti (2011) and Blanchard and Leigh (2013) for testing the impact of various factors and policies on the depth of the recession countries experienced in the global financial crisis. Our choice reflects the finding that the global financial crisis is arguably the closest point of reference in post-World War II history with regard to growth outcomes we are likely to observe in 2020.

Concretely, we run the following regression (Equation 1):

$$(1) \quad \Delta Y_{i2020} = \alpha + \beta_1 * \text{POLCOVID}_i + \beta_2 * \text{INT}_i + \beta_3 * Z_i + \varepsilon_i$$

where ΔY_{i2020} is the change in the 2020 GDP growth projection of country i from the autumn 2019 to the sum-

Table 2
Descriptive statistics

	Mean	Median	SD	Minimum	Maximum	Countries
Growth revisions						
OECD	-9.419	-9.60	1.89	-12.77	-3.53	47
IMF	-8.517	-8.62	2.84	-14.65	-2.75	29
World Bank	-5.563	-5.30	2.42	-14.60	-1.00	46
COVID-19 responses						
CM index	7.859	7.80	1.57	4.69	10.56	47
EIU index	2.994	3.11	0.52	2.11	3.67	21
Controls						
Openness	95.003	77.85	63.47	27.54	387.10	47
Tourism	8.110	5.43	6.24	1.52	26.38	47
Trend growth	2.694	2.48	1.51	-0.62	6.73	47
Instruments						
Delay	-14.745	-5.00	21.99	-62.00	37.00	47
Start stringency	33.766	27.00	18.95	0.00	73.00	47
State fragility	40.007	38.26	19.97	14.63	79.15	47

Notes: The observations for *Controls* and *Instruments* are based on the OECD sample ($n=47$). Values for *Growth revisions* represent the respective full samples. CM index is the logarithm value $\ln(x+1)$ of the product of deaths per million inhabitants as of 28 June and the *Stringency* mean value of between 1 January and 28 June 2020. *Openness* is the sum of exports and imports divided by GDP in 2018. *Tourism* is the share of international tourism receipts in total exports in 2018. *Trend growth* is the mean average GDP growth rate over the period 2015–2019. *Start stringency* accounts for the number of days from 1 January 2020 without mandatory measures (e.g. 14 March 2020 = 74). *Delay* represents the period in days between starting mandatory measures (*Start stringency*) and the first registered COVID-19 infection. *State fragility* is measured by the Fund for Peace in 2018.

Source: Authors' own calculation.

Table 3
GDP growth revisions and the quality of government response – baseline

Variables	(1) OECD	(2) OECD	(3) OECD	(4) IMF	(5) World Bank
EIU index	2.127*** (0.688)				
CM index		-0.898*** (0.212)	-0.614*** (0.219)	-0.820*** (0.262)	-0.523*** (0.170)
Openness	-0.003 (0.010)	0.005 (0.010)	-0.005 (0.005)	-0.019 (0.016)	-0.005 (0.015)
Tourism	-0.276** (0.101)	-0.245*** (0.075)	-0.095** (0.036)	-0.076 (0.129)	0.029 (0.030)
Trend growth	0.661 (0.911)	0.300 (0.500)	-0.364*** (0.120)	0.234 (0.319)	-0.031 (0.146)
Constant	-14.377*** (2.501)	-0.590 (1.453)	-2.347 (1.988)	-1.442 (2.276)	-2.674* (1.506)
Sample	EIU countries		Full samples		
Number of countries	21	21	47	28	29
Adj. R ²	0.367	0.609	0.255	0.324	0.301
F-Statistic	11.996	14.201	4.992	4.126	5.422

Notes: Dependent variables are the changes in OECD (1), (2), (3), IMF (4) and World Bank (5) GDP growth revisions for 2020 from autumn 2019 to summer 2020. **, *** denote significance at 10%, 5%, and 1% levels, respectively. OLS estimations. Robust standard errors in parentheses. *CM index* is the logarithm value $\ln(x+1)$ of the Oxford University stringency index mean value from 1 January to 28 June 2020 times the number of COVID-19 deaths per million inhabitants on 28 June 2020. *Openness* is the sum of exports and imports divided by GDP in 2018. *Tourism* is the share of international tourism receipts in total exports in 2018. *Trend growth* is the mean average GDP growth rate over the period 2015–2019.

Source: Authors' own calculation.

mer 2020 projection made by the OECD (2020), the IMF (2020a) and the World Bank (2020). POLCOVID, either represents the EIU or the CM index, i.e. the quality of government policies in handling the crisis. The CM index is calculated by multiplying the mean of the Oxford University stringency index for the period 1 January to 28 June 2020 with the number of COVID-19 deaths per million inhabitants as of 28 June 2020. Given the skewed nature of the cross-sectional distribution of the CM index, the variable is employed in log form. INT_i is a vector representing 2018 values for trade openness, defined as the sum of exports and imports divided by GDP, and the share of tourism receipts in total exports of countries. Finally, we follow Lane and Milesi-Ferretti (2011) and account for a general control variable Z_i. However, as the number of countries covered by the EIU index and by the various recently published projections is limited, we opt for a parsimonious approach and only account for average GDP growth over the five years preceding 2020 to capture convergence effects, i.e. we refrain from including population density and GDP per capita (König and Winkler, 2020).

Results and discussion

The baseline has five specifications of Equation 1 (Table 3). We start with two specifications (1-2) based on the 21 countries for which the EIU index is available and test for the significance of the EIU index and the CM index. We find in both specifications that the quality of the government response matters: countries with a higher EIU index and a lower CM index record less severe revisions of growth projections for 2020. Moreover, cross-country heterogeneity in terms of tourism exposure significantly influences the results. Countries depending more on tourism revenues show significantly greater negative growth revisions than countries where tourism plays a less pronounced role in total exports. By contrast, differences in trade openness have no influence on growth revisions.¹

Specifications 3-5 capture policy quality by the CM index only, as the respective samples are either too differ-

¹ This is also the result for most specifications in the Lane and Milesi-Ferretti (2011) analysis of the global financial crisis.

Table 4

GDP growth revisions and the quality of government response in the fourth quartile

	(1) OECD	(2) OECD	(3) OECD	(4) IMF	(5) World Bank
Lowest EIU index	-2.686*** (0.856)				
Lowest CM index		2.283** (0.923)	1.463 (0.889)	2.076** (0.900)	1.376 (1.572)
Openness	0.001 (0.009)	-0.002 (0.011)	-0.006 (0.004)	0.023 (0.013)	-0.005 (0.019)
Tourism	-0.265*** (0.080)	-0.276** (0.097)	-0.094** (0.045)	-0.070 (0.132)	0.032 (0.045)
Trend growth	0.791 (0.748)	0.783 (0.585)	-0.268* (0.154)	0.495 (0.307)	0.058 (0.175)
Constant	-7.992*** (1.482)	-9.006*** (1.422)	-7.756*** (0.726)	-8.505*** (1.068)	-6.280*** (1.442)
Sample	EIU countries			Full samples	
Number of countries	21	21	47	28	29
Adj. R ²	0.440	0.358	0.126	0.153	0.058
F-Statistic	7.456	3.042	2.438	4.245	2.858

Notes: Lowest EIU index and Lowest CM index (fourth quartiles) represent dummy variables which take the value 1 if the country is in the first quartile of the EIU index (high index countries perform better than low index countries) and the CM index (low index countries perform better than high index countries) distribution.

Source: Authors' own calculation.

ent (IMF, 2020; World Bank, 2020) or too large (OECD, 2020) in terms of country coverage to run an analysis with the EIU index as the policy variable of interest.² Results confirm the explanatory power of the CM index for all samples. However, tourism loses significance in specifications for the IMF and World Bank samples. This is not surprising as both are widely based on large advanced and/or emerging market countries where exposure to tourism is not a major characteristic of export revenues.

We employ several robustness checks. First, we test for the economic impact when countries belong to the first quartile of either index (Table 4). Results confirm the baseline for EIU and IMF sample countries. However, OECD and World Bank sample countries with governments grouped in the first quartile do not show significantly different growth revisions due their government crisis management. Indeed, the World Bank sample estimation suggests that none of the variables we account for has explanatory power for cross-country differences in projected GDP growth revisions.

Secondly, we test the robustness of our results by changing the way the CM index is calculated. Concretely, we

Table 5
Ranking of GDP growth revisions and the quality of government response

	(1) OECD	(2) OECD	(3) IMF	(4) World Bank
Misery ranking	-0.143*** (0.027)	-0.043*** (0.013)	-0.123*** (0.034)	-0.061 (0.040)
Openness	-0.002 (0.009)	-0.010** (0.005)	-0.029* (0.014)	-0.008 (0.018)
Tourism	-0.237** (0.096)	-0.097** (0.041)	-0.089 (0.116)	0.035 (0.031)
Trend growth	0.444 (0.604)	-0.203* (0.112)	0.503* (0.290)	0.065 (0.153)
Constant	-4.818*** (0.924)	-5.107*** (1.047)	-3.908** (1.447)	-3.933* (2.243)
Sample	EIU countries			Full samples
Number of countries	21	47	28	29
Adj. R ²	0.589	0.221	0.297	0.133
F-Statistic	11.412	4.765	5.055	2.963

Notes: Misery ranking is the sum of the country ranking values for the stringency index ranking and the deaths per million ranking. A lower Misery ranking indicates a better performance.

Source: Authors' own calculation.

2 The overlap between the IMF (World Bank) and EIU country sample is restricted to ten (one) countries, only.

Table 6
Instrumental variables in GDP growth revisions and the quality of government response

Variables	(1) OECD	(2) OECD	(3) OECD	(4) IMF	(5) World Bank
	A1: Second Stage				
CM index		-0.570** (0.247)	0.472 (0.488)	0.437 (0.624)	-1.279** (0.558)
EIU index	1.429* (0.737)				
Openness	-0.006 (0.010)	-0.001 (0.008)	-0.010** (0.005)	-0.022* (0.013)	-0.012 (0.017)
Tourism	-0.273*** (0.087)	-0.253*** (0.071)	-0.050 (0.053)	-0.069 (0.123)	-0.006 (0.043)
Trend growth	0.795 (0.775)	0.581 (0.497)	0.092 (0.269)	0.704* (0.397)	-0.196 (0.201)
Constant	-12.405*** (2.779)	-3.431 (2.171)	-12.009*** (4.418)	-11.873** (5.312)	2.938 (4.494)
Adj. R ²	0.344	0.548	.	.	.
F-Statistic	6.474	7.157	5.882	3.059	2.246
	B1: First Stage				
Start stringency	0.011* (0.006)	0.025 (0.023)	0.010 (0.018)	0.033 (0.031)	0.018 (0.030)
Delay	-0.022*** (0.006)	0.037 (0.024)	0.014 (0.016)	-0.022 (0.019)	0.013 (0.019)
State fragility	-0.018** (0.007)	0.075*** (0.021)	0.006 (0.010)	-0.032 (0.025)	-0.049 (0.031)
Constant	3.572*** (0.461)	4.805** (2.046)	8.464*** (1.050)	8.959*** (1.751)	11.110*** (2.458)
Sample	EIU countries				
Number of countries	21	21	47	28	29
Adj. R ²	0.394	0.390	0.170	0.045	0.156
F-Statistic for weak identification	5.729	5.310	2.049	0.684	0.987
Sargan stat. (p-value)	0.202	0.089	0.684	0.790	0.888
Wooldridge (p-value)	0.353	0.102	0.050	0.003	0.035

Notes: Dependent variables are the changes in OECD (1), (2), (3), IMF (4), and World Bank (5) GDP growth revisions for 2020 from autumn 2019 to summer 2020. **, *** denote significance at 10%, 5%, and 1% levels, respectively. OLS estimations. Robust standard errors in parentheses. CM index is the logarithm value $\ln(x+1)$ of the Oxford University stringency index mean value from 1 January to 28 June 2020 times the number of COVID-19 deaths per million inhabitants on 28 June 2020. Openness is the sum of exports and imports divided by GDP in 2018. Tourism is the share of international tourism receipts in total exports in 2018. Trend growth is the mean average GDP growth rate over the period 2015–2019. Start stringency accounts for the number of days from 1 January 2020 without mandatory measures (e.g. 14 March 2020 = 74). Delay represents the period in days between starting mandatory measures (Start stringency) and the first registered COVID-19 infection. State fragility is measured by the Fund for Peace in 2018.

Source: Authors' own calculation.

take the sum of each country's ranking values for the stringency index and the number of deaths per one million inhabitants in the respective samples, with a lower number indicating better performance. Results (Table 5) confirm the baseline with the exception of the World Bank sample.

Finally, we run instrumental variable (IV) regressions explicitly accounting for some factors usually referred to in debates about government performance during the coronavirus crisis, namely political conditions as well as the speed with which governments responded to the

pandemic. Accordingly, we use the fragile state index as measured by the Fund for Peace³ and the time it took governments to respond as instruments for the CM index. We capture the latter using the number of days starting from 1 January 2020 without government-imposed stringency measures (e.g. 14 March 2020 = 74), and the number of days between the government applying initial social distancing measures and the occurrence of the first registered COVID-19 infection in the respective country. As shown in the last two columns of Table 1, there are substantial cross-country differences with regard to the speed of the government response. For example, while many countries started with some form of mandatory measures on social distancing even before the first case was recorded, others were more hesitant and waited until the first case was observed.

We run IV regressions for all specifications of the baseline. Results for the EIU sample countries of the first stage regression indicate that our instruments significantly explain cross-country differences in both indices (Table 6). Moreover, the second stage regression confirms the findings of the baseline. By contrast, for the other samples none of the chosen instruments is significant in the first stage regression, and the statistical significance of the CM index is only confirmed for the World Bank sample. Thus, the IV approach findings raise questions about the link between government performance and economic impact of the pandemic that should be addressed in the future when new data, either in the form of projections or as actual GDP growth, is available for a larger and more balanced set of countries.

Conclusion

The COVID-19 pandemic has triggered the most severe global recession since World War II. However, as in the global financial crisis of 2008/2009, countries are affected differently. Based on the most recent OECD, IMF and World Bank projections of the GDP growth, this article presents evidence indicating that these differences are driven by the quality of the government response to the pandemic and by countries' exposure to the international transmission of the pandemic's impact, notably via tourism. Thus, governments performing well in handling the crisis can be expected to do better in terms of economic outcomes as well: good crisis management pays off.

We want to conclude by repeating that our analysis is based on growth projections only. Moreover, these pro-

jections involve country samples which are rather small and heterogeneous. Finally, a few robustness checks fail to support our main results. Thus, in several aspects these are preliminary results which we plan to continuously review and update as new evidence on 2020 GDP growth becomes available on a cross-country basis.

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³ See <https://fragilestatesindex.org/>.

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COVID-19 Crisis: How to Avoid a ‘Lost Generation’

The spread of the coronavirus has made economic conditions difficult in many economic areas and has led to skyrocketing youth unemployment in most European countries. On the basis of simple model calculations, we estimate the consequences of the COVID-19 shutdown on youth unemployment in the European Union for the year 2020. According to our estimations, youth unemployment will increase from 2.8 to 4.8 million. The youth unemployment rate will increase to 26%, and the number of young people not in education, employment and training (NEET) will increase from 4.7 to 6.7 million. Policymakers at the national and international level should react as quickly as possible and make great efforts to avoid these negative scenarios. We suggest the introduction of a new European Youth Guarantee to ensure fiscal relief for those countries that suffer the most economically. It should be financed jointly by the EU and the respective member states. We suggest a new formula-based co-financing model in order to guarantee solidarity between the member states.

The shutdown of major parts of the economy to avoid the rapid spread of the coronavirus has led to skyrocketing unemployment rates in most countries. However, the labour market situation for young people has been especially difficult and this has rarely been recognised in public debates. The latest proposal from the European Commission (EC) has the promising title “Europe’s Moment: Repair and Prepare for the Next Generation” and youth employment support is explicitly mentioned. The recovery plan has an impressive budget of €750 billion (EC, 2020a), which should leave room for the necessary focus on young people (EESC Workers’ Group, 2020). On 1 July the EC presented the proposal “Youth Employment Support: a bridge to jobs for the next generation”, with a suggested budget of €22 billion (EC, 2020c).

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To give an idea of the extent of the problem, this paper estimates on the basis of simple model calculations the consequences of the current recession on youth unemployment and on the number of young people who are not in employment, education or training (NEET) in the European Union for the year 2020.

Economic downturn and youth unemployment

Youth unemployment and general economic developments are highly correlated (Clark and Summers, 1982; Dietrich, 2013). Given a recessive economic situation, companies make employees redundant or hire fewer people due to a decline in orders. This affects young people disproportionately. On the basis of OECD data for the time period from 1970 to 2009, Bell and Blanchflower (2011) show that a 1% increase in the adult unemployment rate leads to a 1.79% increase in the youth unemployment rate. O’Higgins (1997) explains the high business cycle sensitivity of youth unemployment from a supply-side and demand-side perspective. From a supply-side point of view, young people tend to have a lower threshold when it comes to resigning or changing jobs as they have fewer firm-specific qualifications and fewer economic responsibilities. Even though these arguments seem plausible, the demand-side explanation has more weight: firms have lower opportunity costs if they make young employees redundant instead of older ones because they have invested less in their training, and young employees often have less protection against dismissal (last in, first out). Besides the aggregated demand with its major role in youth labour market outcomes, demo-

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Table 1

Forecast 2020 scenarios for the youth labour market in the European Union

Youth 15-24 years, EU27	2008	2009	Change 2008-2009			2020 forecast scenarios		
			Absolute	Relative (%)	2019	Optimistic	Middle	Pessimistic
						IMF spring forecast	EC spring forecast	Assumption
Real GDP growth rate, percentage change on previous year				-4.30		-6.60	-7.40	-10.00
Youth population in millions	52.70	52.04	-0.66	-1.25	46.38	46.38	46.38	46.38
Active labour force in millions ^a	21.96	21.40	-0.56	-2.55	18.25	18.25	18.25	18.25
Employed youth in millions	18.44	17.04	-1.40	-7.59	15.49	13.69	13.47	12.76
Unemployed youth in millions	3.52	4.37	0.85	24.15	2.76	4.56	4.78	5.49
Number of NEET individuals in millions ^b	5.64	6.40	0.76	13.51	4.68	6.49	6.71	7.06
Youth unemployment rate in % of labour force	16.00	20.04	4.04	25.25	15.00	25.01	26.21	30.11
Share of young people who are NEET (NEET rate in %)	10.70	12.30	1.60	14.95	10.10	13.99	14.46	15.23

Notes: ^a Active labour force comprises unemployed (seeking employment) and employed. ^b Estimated via NEET rate in percent multiplied by youth population in million/100.

Source: Eurostat, Ifsa_pgawns, Ifsa_pgaiied, une_rt_a, edat_lfse_20, own calculations.

graphic developments and institutional factors play a part, such as employment protection legislation (e.g. Bassanini and Duval, 2006; Boeri et al., 2015), the vocational system (e.g. Breen, 2005; Cahuc and Hervelin, 2020; Quintini et al., 2007) and labour market policy (Tamesberger, 2015). Boeri et al. (2016) even point out that the rise in youth unemployment in Southern Europe during the Great Recession was in part an unintended consequence of pension reforms which increased the retirement age.

Background of the forecast scenarios

During the Great Recession, specifically between 2008 and 2009, GDP in the EU27 countries decreased by 4.3% and the number of young people in employment decreased by 7.59%. The youth unemployment rate increased by four percentage points within one year to 20.04% in 2009. In relative terms, the increase amounted to 25% (see Table 1). On the basis of this experience, we derive our assumption that a decrease in GDP by 1% leads *ceteris paribus* to a decrease in youth employment of 1.77%, and the unemployment rate as well as the number of young people who are NEET will increase accordingly. In the current economic downturn, the International Monetary Fund (IMF) assumes for Europe a reduction in real GDP of 6.6% for the year 2020. The European Commission's spring forecast predicts an even deeper recession (-7.4% of real GDP) in the European Union. We use these forecasts as an optimistic and a middle scenario

respectively in order to calculate the corresponding impact of the economic downturn on the youth labour market. Due to the considerable uncertainties in current forecasts, we add a third assessment, a pessimistic scenario, of -10% of real GDP for the EU27.

The youth unemployment rate for each member state was calculated as follows.¹ In the first step, the 2019 youth unemployment rate YR was computed as

$$YR_{i, 2019} = \frac{Y_{i, 2019}}{(Y_{i, 2019} + X_{i, 2019})}$$

for each country i in the sample, where $Y_{i, 2019}$ is the absolute number of young unemployed people in country i and $X_{i, 2019}$ is the absolute number of young employed people.

In a next step, the reduction in the number of employed young people was computed as

$$-\Delta X_i = GDP_i \cdot 1.765116 \cdot X_{i, 2019}$$

where GDP_i is the predicted decrease of GDP for each country i by the EC spring forecast. For each country, we used the overall (EU27) elasticity of youth employment and economic

¹ The sources used are the European Commission Spring 2020 Economic Forecast for GDP_i and Eurostat for $Y_{i, 2019}$ (yth_empl_090) and $X_{i, 2019}$ (Ifsa_pgawns).

growth of 1.765116 during the financial and economic crisis in 2009. Of course, there is a variation in the elasticity among the member states. However, we assume that the Youth Guarantee implemented in the year 2013 had contributed to a certain convergence between the EU member states and therefore the average seems to be more realistic. This gives a first estimation that could be refined in a next step using country-specific elasticities and longer time series.

Finally, the number of employed young people $X_{i,2020}$, the number of unemployed young people $Y_{i,2020}$ and the youth unemployment rate $YR_{i,2020}$ were estimated via the following formulae:

$$X_{i,2020} = X_{i,2019} - \Delta X_i,$$

$$Y_{i,2020} = Y_{i,2019} + \Delta X_i \text{ and}$$

$$YR_{i,2020} = Y_{i,2020} / (Y_{i,2020} + X_{i,2020})$$

All measures were computed for the age group 15 to 24 years.

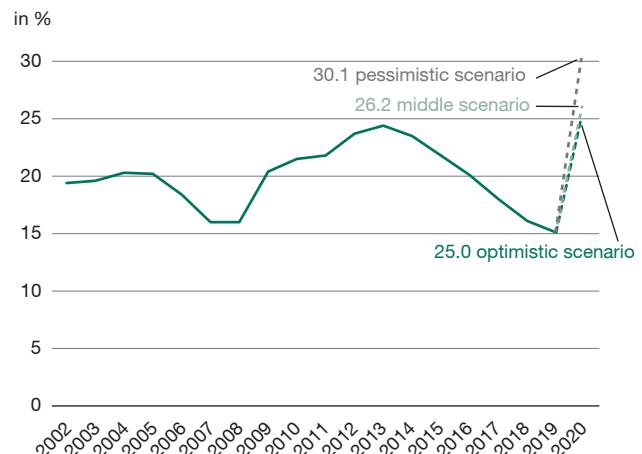
Results: The extent of the problem

If the predicted recession becomes a reality, the situation for young people will be dramatic. Youth unemployment will increase from 2.8 to 4.8 million (middle scenario in Table 1). The youth unemployment rate would increase to 26%, meaning that one in every four young people who wants to work will not find a job. Due to the limited relevance of the youth unemployment rate (Tamesberger, 2015), researchers focus on an additional indicator known as NEET (Maguire, 2013; Tamesberger et al., 2014). The underlying assumption is that the NEET status better captures young people who are at high risk of social exclusion. According to our estimation (see Table 1), the number of young people who are NEET will increase from 4.7 to 6.7 million, leading to a NEET rate of 14%, which means that one in every seven young people in the European Union will be in a NEET situation.

The optimistic scenario would be such that the youth unemployment rate in the EU27 would increase slightly above the 2013 level (see Figure 1). However, in the case of the middle or the pessimistic scenario, the youth unemployment rate would be the highest since the beginning of the recording on Eurostat. In all three scenarios, the NEET rate in the year 2020 will be historically high (see Figure 2).

Figure 3 provides country-specific estimations for the middle scenario. The expected youth unemployment rate in 2020 will vary between 16% and 46.3%. Greece, Spain and Italy have predicted values over 40%. Their youth unemployment rate was already high in 2019 and the EC spring forecast

Figure 1
Development of youth unemployment rate, EU27



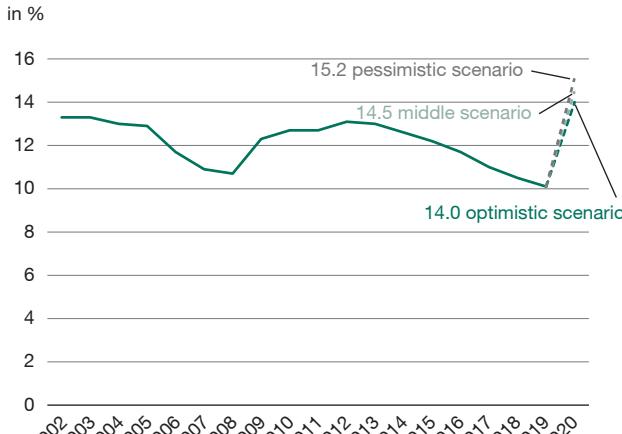
Source: Eurostat Ifsa_urgan edat_ifse_20, own calculation.

predicts a reduction in real GDP of 9.4% to 9.7% for these countries (Greece: -9.7%, Spain: -9.4%; Italy: -9.5%). On the other hand, the Czech Republic, Germany and Poland are the countries with the lowest predicted youth unemployment rates. However, their values are equal or above 16% (Czech Republic: 16.0%, Germany: 16.6% and Poland: 16.7%).

Negative consequences of youth unemployment

Unemployment generally, but especially during one's youth, has far-reaching consequences for individuals, society as a whole and economic development. Young adulthood is a sensitive period in life, characterised by socialisation and identity formation. Periods of unemployment during one's youth can have a negative impact later in life, which justifies the term 'lost generation' (Allegretto, 2013; Scarpetta et al., 2010). One month of unemployment at age 18-20 causes a permanent income loss of 2% (De Fraja et al., 2017). Morz and Savage (2006) show that a six-month unemployment period at the age of 22 leads to lower hourly wages of about 8% at the age of 23. At the age of 31, wages will be 3% lower in comparison to people without unemployment experience. With regards to health consequences, a vicious circle can be assumed: young people with health issues have a higher risk of becoming unemployed, and longer unemployment can in turn negatively influence health (e.g. Bacher et al., 2016; Bartley, 1994; Kuhn et al., 2009; McKee-Ryan et al., 2005; Schaufeli, 1997). A meta-analysis by Moser and Paul (2009) reveals both effects: the drift or rather selection effect of health problems on unemployment and the social causation effect of unemployment on health problems with reference to mental health. In addition, their study reveals both effects for school dropouts and university graduates alike. The negative consequences of youth

Figure 2
Development of NEET rate, EU27



Source: Eurostat Ifsa_urgan edat_lfse_20, own calculation.

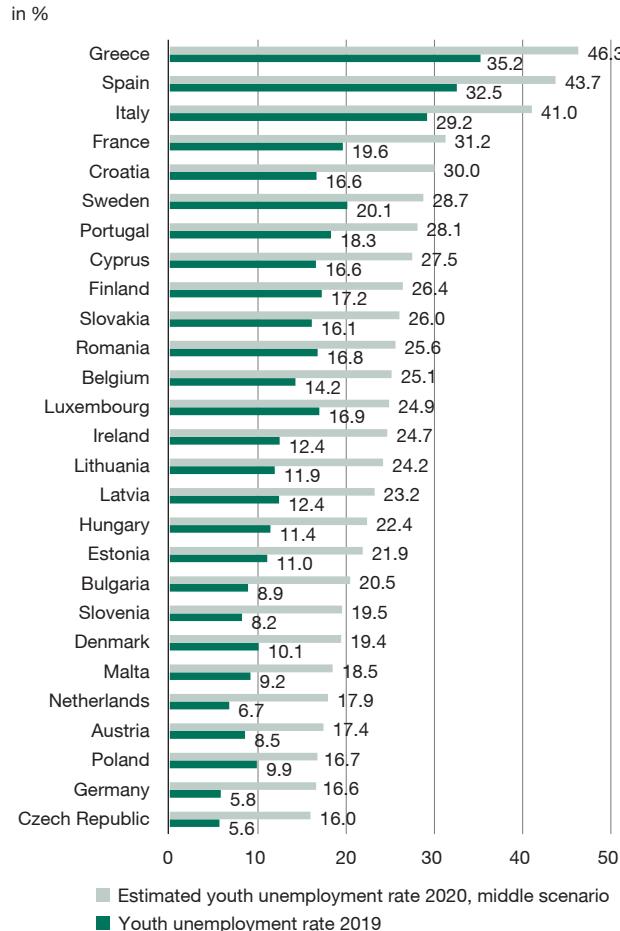
unemployment on health can also be proven when the affected person turns 50 (Bell and Blanchflower, 2011).

In a qualitative study of long-term unemployed young people, Beelmann et al. (2001) identified three groups of social exclusion. Nearly half of them are characterised by high social exclusion in different fields of life (low opportunity to return to the labour market, precarious financial situation, social isolation, cultural and institutional exclusion). Eurofound (2015) calculated the economic costs of young people being NEET. They came to the conclusion that through the non-integration of young people during the Great Recession, European economies lost around €162 billion per year. Eurofound (2012) highlights that the consequences of youth unemployment are not merely economic but are also societal, with the risk of young people opting out of democratic and social participation in society. A decline of social capital (Putman, 2000) would be one of the consequences; an increase of extreme right-wing orientation and violence would be another (Heitmeyer, 1989). High youth unemployment in suburban areas may result in criminal or conflict subculture, as shown by Cloward and Ohlin (1960) and supported by recent studies (Body-Gendrot, 2013).

A European Youth Guarantee as possible solution

In the face of skyrocketing youth unemployment during the Great Recession, the European Union introduced a Youth Guarantee scheme in 2013 to ensure that all young people under the age of 25 would receive a good-quality offer of employment, continued education, an apprenticeship or a traineeship within four months of becoming unemployed or leaving formal education (Council of the European Union, 2013). The Youth Employment Initiative was the main EU funding programme to roll out this Youth Guarantee with a total budget

Figure 3
Estimated youth unemployment rate 2020 by country



Source: Eurostat Ifsa_urgan edat_lfse_20, own calculation.

of €6.4 billion for the period from 2014 to 2020. It particularly supports regions where youth unemployment is higher than 25%. In 2015, the Commission proposed a 30% advance payment to eligible member states. Between 2014 and 2020, the Youth Guarantee will be partly financed for a total of €12.7 billion from the EU budget through the European Social Fund (ESF) and the Youth Employment Initiative (European Court of Auditors, 2015; Andor and Veselý, 2018). Even though the aim of the European Youth Guarantee was reasonable, its implementation has caused problems. Rautner et al. (2019) mainly criticise the insufficient funding total, the inadequate targeting as well as the quality of the programmes and the slow bureaucratic start. Also the European Court of Auditors (2015) highlighted the “adequacy of total funding” as one of the threats to the successful implementation of the Youth Guarantee.

Sufficient funding

It would go beyond the scope of this article to propose a specific form of a redesigned European Youth Guarantee.

From our point of view, it would be necessary to introduce a new European Youth Guarantee promptly and with sufficient funding so as to ensure that those countries that suffer most economically are unburdened. The estimated necessary costs of a Youth Guarantee for the EU are around €45.4 billion per year. The background of this estimation is the experience of Sweden, where the national Youth Guarantee had very positive impacts at a relatively modest cost. In 2010, the estimated cost per participant of the Swedish Youth Guarantee plan was approximately €6,000 plus administrative costs (Escudero and Mourelo, 2015). Eurofound (2015) estimated it at €50.4 billion per year, which is still lower than the cost of not acting (around €162 billion per year).

If policymakers intend to provide adequate total funding, the majority must be financed by the EU budget with member states contributing to the Youth Guarantee according to their financial capacity. The latest proposal for a recovery fund from the European Commission includes this distribution idea as well with a budget of €750 billion titled "Europe's moment: Repair and Prepare for the Next Generation" (EC, 2020a), there should be room for a focus on young people (EESC Workers' Group, 2020). In addition, the EC (2020b) announced a programme called "Recovery Assistance for Cohesion and the Territories of Europe" (REACT-EU) that provides an additional fund of €55 billion from 2020 to 2022. Youth unemployment is mentioned as a distribution criterion. "The REACT-EU funding will be distributed among member states taking into account their relative prosperity and the extent of the effects of the current crisis on their economies and societies, including on youth unemployment" (EC, 2020b, 1). In our opinion, more money is immediately needed to successfully reduce youth unemployment. Therefore, we propose a new fund that should be endowed with €50 billion per year.

With reference to our prediction (middle scenario, see Table 2), the fund would guarantee that €10,400 is available on average for each unemployed young person. This amount is below the average cost of the non-integration of young people NEET (Eurofound, 2012, 2015).

Two-thirds of the fund should be financed by the EU and could be taken from the €750 billion recovery fund and from the REACT-EU programme if it is established in the foreseeable future. The member states should finance one-third according to their increase in youth unemployment.

Fair distribution of EU funding

Our concept is inspired by the ideas of formula-based financing of educational systems (Levacic, 2008). Here, one main element of formula-based financing is to provide those schools with additional resources that have

more disadvantaged students. More equity and transparency are important advantages of formula-based financing (Levacic, 2008). One main criticism is that the output is neglected (Levacic, 2008; Hanushek, 2003). Given the urgency, this argument does not carry the same weight. In the long term, formula-based financing can integrate the output (outcome) as an additional component.

In order to guarantee solidarity and to avoid a possible free-rider problem, the co-financing by a member state should decrease if the pandemic results in a higher increase in youth unemployment in that country than in others.

If the increase is zero, the EU will not co-finance. If the increase exceeds a certain threshold t , the EU will finance 100% of the Youth Guarantee. We can call this the solidarity threshold. A lower value symbolises more solidarity.

The contribution c_i of a country to the fund is

$$c_i = n_i \cdot cf_i \cdot a_i$$

with n_i being the number of unemployed young people for a certain reference date during the crisis (e.g. June 2020), cf_i representing the co-financing factor (100% if there is no increase in youth unemployment and 0 if a certain threshold is passed), and a_i being the normalising factor so that the sum $\sum c_i$ gives €16.5 billion.

If the increase in youth unemployment as a percentage for a country i is denoted by Δy_i and the threshold by t , the co-financing factor is

$$cf_i = \begin{cases} 100 & \text{if } \Delta y_i \leq 0 \\ 100 - 100 \frac{\Delta y_i}{t} & \text{if } \Delta y_i > 0 \text{ and } \Delta y_i \leq t \\ 0 & \text{if } \Delta y_i > t \end{cases}$$

The increase in youth unemployment is measured as the difference between the youth unemployment rate before the COVID-19 crisis and during or shortly after the crisis:

$$\Delta y_i = yr_{i, \text{during}} - yr_{i, \text{before}}$$

One possibility for normalising the threshold could assume that the country with the highest increase co-finances with a symbolic low percentage of π :

$$\pi = 100 - 100 \cdot \frac{\max(\Delta y_i)}{t} \Leftrightarrow t = \frac{100}{100 - \pi} \cdot \max(\Delta y_i)$$

$$\text{If } \pi = 5\% \text{ the threshold is } t = \frac{100}{95} \cdot \max(\Delta y_i)$$

Table 2
Parameters of the suggested new European Youth Guarantee

Parameters in thousands	Optimistic scenario	Middle scenario	Pessimistic scenario
Fund	€50,000	€50,000	€50,000
Two-thirds financed by the EU.	€33,50	€33,500	€33,500
One-third financed by countries according to the respective increase in youth unemployment.	€16,500	€16,500	€16,500
Number of unemployed youth	4,565	4,8	5,49
Number of NEET individuals	6,49	6,71	7,06
Funding per unemployed youth	€11.0	€10.4	€9.1
Funding per NEET youth	€7.7	€7.5	€7.1
Cost of NEET (valorised values of Eurofound 2012)	€11.7	€11.7	€11.7

Source: Own calculation.

Of course, it is possible to lower the threshold and thus to demonstrate more solidarity. According to our calculation, the largest increase of the youth unemployment rate occurs for Croatia, with a value of 13.43. Hence, t would have a value of 14.14.

After paying into the fund, each country receives an amount s_i according to the number of unemployed young people n_i , the purchasing power parities (comparative price level) of the country ppp_i and a normalisation factor b_i :

$$s_i = n_i \cdot ppp_i \cdot b_i$$

The normalisation factor guarantees that the sum $\sum s_i$ is €50 billion.

The specification of the parameters of the model requires further research. It might be useful to integrate additional social and economic factors as co-financing factors. Additional criteria might be the poverty rate as a measure of the social component and the general government gross debt as an economic component. Member states with a higher poverty rate and/or a higher debt rate should co-finance less because of their restricted opportunities. In this case, the co-financing factor contains three components (increase in youth unemployment, poverty rate, general government gross debt), which can be averaged by:

$$cf = w_{YR} cf_{YR} + w_{PR} cf_{PR} + w_{GGGD} cf_{GGGD}$$

where cf_{YR} stands for the co-financing factor 'increase in youth unemployment', cf_{PR} is the co-financing factor 'poverty rate', cf_{GGGD} represents the co-financing factor 'general government gross debt' and w_x stands for weight for co-financing factor x ($\sum w_x = 1$).

A general formula for calculating the co-financing factor is

$$cf_{x,i} = \begin{cases} 100 & \text{if } x \leq x_{\min} \\ 100 - 100 \frac{x_i - x_{\min}}{t_x - x_{\min}} & \text{if } x > x_{\min} \text{ and } x \leq t \\ 0 & \text{if } x > t \end{cases}$$

where w_i is the value for the country i in co-financing factor x , x_{\min} is a defined minimum for co-financing factor x and t_x is the solidarity threshold for co-financing factor x .

In the above example of youth unemployment, x_{\min} was set to zero.

Conclusion

This paper sheds some light on the consequences of the COVID-19 shutdown on youth unemployment in the European Union. The presented estimations of youth unemployment on EU average and the country-specific estimations can serve as orientation for policymakers. However, the extent of the problem with a predicted increase of about two million young unemployed people is alarming. Because of the far-reaching negative consequences of youth unemployment, policymakers on national and international levels should act promptly and take great pains to avoid these negative scenarios.

As one possible solution to tackle increasing youth unemployment, we are suggesting a new European Youth Guarantee that should be endowed with €50 billion per year. The fund should be financed by the EU and the member states (two-thirds and one-third, respectively). We suggest a formula-based co-financing model in order to guarantee solidarity among the member states. The co-financing criteria could contain three components (increase in youth unemployment, poverty rate and general government gross debt). Further research on this topic would be worthwhile for several reasons. The expected high unemployment makes effective policy measures necessary. The proposed fund has the advantage of avoiding free-riding because each country has to pay in. On the other hand, it promotes solidarity. The formulation objectifies the political discussion. Finally, the motivation of the member states is a given because each country receives more than it pays in.

This new European Youth Guarantee with a formula-based co-financing model would not only signal that the

European Union cares about the next generation, but also that it is keen to support economically and financially struggling regions. For those unemployed young people who have already been awarded a qualification, the Youth Guarantee should also serve as a job guarantee (Tcherneva, 2018), meaning that young people gain their first experience of employment in the public or the non-profit sector. This public job guarantee would benefit not only young people, but rather the society as a whole would benefit from socially and ecologically useful products or services. After all, the coronavirus pandemic has painfully proven just how essential public services are within the welfare state.

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Alberto Botta, Eugenio Caverzasi and Alberto Russo

Fighting the COVID-19 Crisis: Debt Monetisation and EU Recovery Bonds

This paper highlights some peculiar characteristics of the economic crisis induced by the spread of COVID-19. It suggests two intertwined policy measures in order to tackle the emergency phase of the crisis and to support the economy in the subsequent recovery phase. The proposed short-term policy measures offer policy responses in the event of a second wave of coronavirus infections in the coming months. In the aftermath of the emergency phase, the current proposal puts forward the implementation of a massive EU-wide recovery plan addressing the long-lasting technological and environmental challenges of these years, which will be financed by European institutions through the issuance of European Pandemic Recovery Bonds.

The spread of COVID-19 has initiated major changes in governments' and central banks' policies. There is consensus among economists that the governments in Europe and in the US, i.e. the current epicentres of the pandemic, will have to take extraordinary measures in order to deal with the disruptive economic consequences of the coronavirus crisis. The overwhelming pressure on healthcare systems and the forced halt of economic activities require massive urgent emergency action to tame the immediate consequences of the crisis. Following the emergency phase, governments will need to implement further interventions in order to "prevent a recession morphing into a prolonged depression" (Draghi, 2020).

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Bold government interventions might imply a considerable increase in public debt. However, financial concerns should not limit governments' actions as the cost of hesitation may be dramatic both in terms of present and future social well-being. Concerns over the implications for the European public balance sheets may be justified, but they completely vanish in the face of the major damages that may be incurred by the European real economy. Sound public finance ultimately depends on a robust real economy.

In this paper, we first recommend a strong emergency response in which eurozone governments would cover operative costs of companies (small and medium firms in particular) and guarantee income flows to households in the context of a 'suspended' economy. In other words, "[t]he job is maintaining the economy on life support during a period of an artificially induced coma while we address the public health challenge" (Tooze, 2020). We then suggest the implementation of an EU-wide recovery plan based on public investment and addressing the not-to-be-forgotten climate crisis and the now well understood needs of our healthcare systems. We propose that these interventions be financed by two sets of bonds:

- bonds issued by the national governments to cover emergency costs, to be fully monetised and subsequently written off by the European Central Bank (ECB), in order to prevent any emergency-related increase in public debt stocks;

- recovery bonds to be issued by European institutions to relaunch the European economy in the immediate aftermath of the health crisis.

The first point is indispensable, urgent and might perhaps help to overcome the existing contrast among eurozone governments (even though it implies other types of institutional changes). The second is equally relevant, and indeed much needed, even regardless of the current crisis, though there is a little more time for discussion.

Three crucial aspects of the COVID-19 economic shock

First, there is no doubt that the COVID-19 economic shock is a truly *exogenous* one. It does not depend on the will or previous misbehaviour of any government or private sector. This is a significant difference with respect to the frequently cited 2007-08 financial crisis. Indeed, the outbreak of this crisis was due to new practices in the financial sector, e.g. the emergence of so-called ‘shadow banking’, which was in turn closely connected to long-term developments in advanced economies, rising inequality first and foremost (Botta et al., 2019). European economies were initially affected by the worldwide financial meltdown because European banks were actively engaged in the diffusion of ‘toxic’ new financial products or supported unsustainable processes such as housing bubbles in Ireland, Spain and Greece. That crisis then morphed into the eurozone sovereign debt crisis due to (external) imbalances among eurozone countries, endogenously built-up in the initial phase of monetary integration (1999-2007), and the institutional deficiencies in monetary and, especially, fiscal policy (i.e. the pro-cyclicality of austerity measures during recessionary phases).

Second, the COVID-19 economic shock stands out as a *common* shock affecting all eurozone countries. While the timing and the size of the shock may slightly differ from country to country, there is little doubt that all of the eurozone economies will experience a recession.

Third, the economic crisis that Europe faces consists of a *complex mix of supply and demand shocks*. On the supply side, the restrictive measures taken by governments in order to implement social distancing and contain the spread of the virus have stopped or decreased production. Restrictions on mobility and firms’ functionality have simultaneously induced a tremendous drop in aggregate demand. If there is something that European policymakers should have learned from the global and the eurozone crises, it is that the recovery is much slower with no management of aggregate demand. The acute contraction in aggregate demand may well explain why inflation

spikes due to supply constraints do not represent a serious threat at the moment; instead, even more worrisome deflationary trends appear more likely (De Grauwe, 2020).

A brief look at some existing proposals

There is a growing debate among economists about the most appropriate monetary and fiscal measures for tackling such an extraordinary situation. Some of these have been already announced by national governments, the European Commission and the ECB.

A first proposal comes from previous ECB president Mario Draghi (2020), who emphasises the importance of financial institutions accommodating all credit requests from the private business sector in order to avoid firms’ bankruptcies and reductions in the employment level. In this sense, Draghi (and many others, e.g. Bénassy-Quéré et al. 2020) welcome the ECB’s recent decision to extend long-term refinancing operations, to expand quantitative easing (which may help large corporations to issue corporate bonds at a cheap rate), to reduce the main refinancing rate for banks to below zero (*de facto* subsidising their activity) and to temporarily slacken banks’ capital requirements. In their view, all these measures may help banks to expand lending as much as possible and at very low interest rates, possibly close to zero. Nevertheless, governments might have to intervene by compensating borrowers and *de facto* bailing out private companies by moving private liabilities to an expanding public balance sheet. Together, with extraordinary measures already taken in order to support healthcare systems, this will obviously imply that “much higher public debt levels will become a permanent feature of our economies and will be accompanied by private debt cancellation” (Draghi, 2020).

Economists all agree that governments should massively intervene via public expenditures; consequently, EU member states temporarily suspended the Stability and Growth Pact (SGP). Their views, however, diverge when it comes to the financing of much larger fiscal deficits of eurozone countries.

The ECB has already taken a fundamental step in the right direction by creating the Pandemic Emergency Purchase Programme (PEPP). This adds €780 billion to existing quantitative easing and makes the issuance of new public bonds easier and cheaper on financial markets (overcoming the 33% limit on a single country’s bond share, based on the capital key with some deviations). Given such a favourable monetary context, some economists think that the creation of long-term (50, 100 years or even perpetual) eurobonds issued by single member

countries but jointly guaranteed by the tax capacity of the eurozone as a whole would be the best solution (Giavazzi and Tabellini, 2020; Bénassy-Quéré et al., 2020). Alternatively, the expanded asset purchasing programme recently announced by the ECB could represent the proper framework for the introduction of a ‘European safe asset’ possibly issued by a European institution (the European Commission, for example) rather than by national governments, and backed by a centralised taxation scheme, i.e. revenues from a newly created European tax or compulsory transfers from member states to the centre (Codogno and van den Noord, 2020). One reason for such centralised eurobonds,¹ among many others, should be the creation of fiscal space for stabilisation policies in times of major crises.

In a similar vein, the European Commission has announced the creation of SURE, a EU-level financial scheme supporting member states in the emergency provision of short-term work schemes such as *Cassa Integrazione Guadagni* in Italy and *Kurzarbeit* in Germany. Indeed, the main goal of SURE is to reduce EU member states single-country reliance on financial markets by partially replacing potentially costlier new issuances of national bonds with cheaper temporary loans provided by the European Commission, and in turn financed by the introduction of a common European AAA-rated asset.

The above proposals share a common aspect: They all foresee emergency plans grounded in the functioning of financial markets. While market mechanisms are suspended and cannot work for most of the real economy, its financial needs should still remain satisfied by the ‘normal’ provision of credit from financial institutions. This aspect is not trivial. In fact, it implies that at the end of the emergency phase, private companies and/or the public sector might face a higher stock of debt, albeit at reduced or no (interest) cost. And this may in turn weaken the effectiveness of recovery measures implemented in the post-pandemic period in fragile economies overburdened by newly created emergency-related debt.

While frequently treated separately, the emergency and post-pandemic phases of the current crisis are closely connected. Gali (2020) recognises this fact and suggests an alternative that relies on so-called helicopter money. This may take the form of either direct money transfers from central banks’ accounts to citizens’ bank accounts, generally referred to as ‘direct cash handouts’, or by

¹ Codogno and van den Noord (2020) also propose that centralised eurobonds should replace national bonds in the balance sheets of financial institutions in their role as collaterals with seniority in refinancing operations with the ECB and in inter-bank transactions.

‘monetary financing’ of government expenditures by providing governments with grants. This has the advantage of central banks creating all the needed resources to deal with the emergency but not creating extra debt.

An integrated policy package for the emergency and economic recovery

Our proposal addresses both the emergency and post-pandemic phases of the coronavirus crisis. The acute phase of the COVID-19 pandemic seems to be over in most European countries. Accordingly, they have lifted the most stringent lockdown measures implemented in March and April. The short-term policy measures described below can thus be interpreted as potential policy responses should a second wave of coronavirus infections occur in the coming months.

Short-term actions to sustain the ‘suspended’ economy

In the event of a second wave of COVID-19 and a new lockdown, eurozone governments should step in to secure the incomes of a large part of the private sector. The idea is to accept that the normal functioning of eurozone economies might be de facto suspended again. While continuing to remunerate public servants, all businesses requiring support should receive government assistance covering around 70-80% of their labour costs (up to a pre-determined ceiling) and the full amount of their fixed costs according to recent administrative/fiscal data. This should be done in favour of all businesses forced to close and of those that are still active but experiencing a major reduction in demand. Different types of support can be linked to different types of conditionalities, such as a no-layoff clause for employees benefitting from temporary employment protection schemes, or workers’ involvement in the co-direction of companies benefitting from temporary equity from the public sector. Government expenditure should replace lacking demand during possible future emergency periods. Government transfers should also be directed towards self-employed and freelance workers unable to work in a new lockdown. Extra compensation should be remunerated to active workers employed in vital sectors, from hospitals to food, energy, communications, etc.

Financing the emergency spending

Our proposal is in line with the idea of governments as the ‘buyers of last resort’ (see Saez and Zucman, 2020). Differently from Saez and Zucman (2020), however, we stress that the financing of these measures should come from the ECB and not from a tax increase, even not for the wealthiest. Even though more progressive taxation would

be highly desirable across Europe, the risk of a recessive effect must be avoided during emergency phases.

Specifically, we foresee a scheme according to which emergency spending by eurozone governments should be certified by the European Commission based on shared rules. Such certification from the EU Commission can effectively replace ‘weak’ conditionality associated with the emergency credit line from the ESM. Governments should then finance their crisis response by issuing public bonds that the ECB directly purchases on the primary market (see De Grauwe, 2020) and subsequently writes off from its own balance sheet. In doing so, the ECB will de facto make a transfer to the accounts of eurozone governments in order to provide them with the resources needed to tackle the current economic emergency (see Gali, 2020). This way, it will avert further increases in public debt stocks that could restrain governments’ efforts to boost economic recovery.

The implementation of this financing scheme would certainly represent a violation of the ECB statute. If such an economic taboo cannot be challenged openly, it should be addressed implicitly. The ECB’s purchases of government bonds on primary markets could take place indirectly via the creation of a public special purpose vehicle. This financial institution would buy bonds from governments on the primary market, and indirectly pass them to the ECB by issuing liabilities that the ECB itself can purchase in the context of ECB quantitative easing. Eventually, when public bonds issued during the crisis mature, they should be automatically rolled over (effectively becoming consols, i.e. perpetual, non-redeemable bonds) and, in any case, they should never be included in the computation of the debt-to-GDP ratios.

It is worth mentioning that such a proposal overcomes the political problem of the mutualisation of public debt. And it certainly implies no less challenging temporary amendments in the relationship between the ECB and national governments. Nonetheless, the close cooperation between governments and the ECB is vital for keeping the eurozone economy going and for avoiding financial speculations during possible future lockdown periods.

Relaunching the economy in the aftermath of the emergency

When the situation allows for a gradual return to social life and for a restart of the private sector, European institutions should take a second step to support the recovery of the eurozone (one that was already needed even before the outbreak of the COVID-19 pandemic). A large-scale plan for financing physical and digital infrastructures,

healthcare and scientific research, energy-saving and clean technologies along an ecological transition is needed. Emergency financing should not come at the expense of the other financial and developmental programmes of the EU, particularly the European Green Deal, the European Social Fund, the European Investment Fund, Horizon Europe and other cohesion funds. Rather, those programmes should be used to reignite the economy in a timely fashion.

In the case of the eurozone, the COVID-19 crisis is hitting a limping economic system, lagging behind in the evolution of key sectors (e.g. the automotive sector) and characterised by very low levels of public investment.² At the global level, the pandemic is taking place in the midst of an ecological crisis. The goal of a European recovery plan should thus not be limited to jumpstarting economic activity, but rather should guide the economy of the EU, and of the eurozone in particular, towards a more sustainable, technologically advanced and inclusive socio-economic system.

On the one hand, public investment may represent an important contribution to euro area aggregate demand. The countercyclical aspect of this plan is fundamental in order to support solid recovery in the profitability of private business and prompt a strong economic rebound. On the other hand, given its exceptional character, such a recovery plan should shape the long-run development path of the European economy by supporting public investment (e.g. infrastructure) at the European level, as well as country-specific actions in selected strategic areas (e.g. improvements in the healthcare systems or the decarbonisation of European economies). Time is a crucial element. A major investment plan needs to be implemented as soon as the health emergency ends. The later EU institutions and national governments intervene to reignite the private sector’s confidence and to counteract the self-reinforcing vicious circle of low demand and production, the harder it will be for the whole European economy to recover.

Financing the relaunch of the economy

In order to emphasise its EU-wide nature, the recovery plan outlined in the previous section should be implemented and financed by recovery bonds, let us call them European Pandemic Recovery Bonds (EPRBs). EPRBs

² See Della Posta et al. (2019) for an analysis of investment deficiencies in Europe and the necessity – after the two recessions of 2008–09 and 2012–13 (and even more now, we might add) – of a grand European investment plan that, among other things, could help in restoring a pro-European sentiment (after fiscal austerity and the consequent dreadful social conditions).

differ from public bonds issued in the crisis because they aim at financing the medium- to long-term recovery of the European economy by supporting the technological upgrade and ecological reconversion of its production system. EPRBs could be issued by different European institutions. One option entails the European Investment Bank (EIB) being entitled to issue European recovery bonds. While this option might be the quickest and easiest one to implement as it may imply relatively minor institutional changes, it still requires that the EIB is recapitalised by member states in order to allow it to finance a massive pan-European investment plan. Alternatively, the European Commission could be responsible for the financial support of a more structural and deeper European recovery plan (although this may perhaps be harder for member states to agree on in the short term). This will represent a first significant step towards the creation of a proper fiscal union.

Following Codogno and van den Noord (2020), EPRBs, issued by either the EIB and/or the European Commission, should represent safe assets for financial markets eligible for the ECB's asset purchase programmes. The ECB should decide the amount of EPRB-financed expenditures to ultimately cover with money (i.e. by purchasing EPRBs itself), and the amount to leave to investors. In this sense, the ECB should act by taking into account the fine-tuning of eurozone inflationary dynamics with respect to its own inflationary target. Nonetheless, the ECB should also bear in mind that both the ability to meet financial commitments by European firms and governments, i.e. the financial stability of the euro area, and the value of the euro currency ultimately depend on the strength of the underlying production system. All concerns for ECB monetary financing should thus pale in comparison with the urgency to preserve and re-launch the European production system.

Economic concerns may arise from the monetisation of public expenditures. Inflation is not directly linked to the amount of money issued by the central bank, and no major concerns for inflation seem plausible today. Nonetheless, it is important to remember that the present crisis, unlike the Great Recession of 2009, involves some aspects of a potentially relevant supply shock so that, if fought only via demand-side policies (regardless of the financing), undesired levels of inflation may occur. It is precisely for this reason that it is of vital importance to intervene to preserve and relaunch the production potential of the European real economy sector. The much-needed countercyclical fiscal policy should therefore not be limited to relaunching aggregate demand. Still, it is also important to keep in mind that a higher level of inflation than what we have been witnessing in recent years will be

desirable to lower the burden of the debt inherited from the crisis. All in all, public spending during the crisis and during the recovery would prevent a further drop in GDP, thereby averting an even greater surge in the public debt-to-GDP ratio. Moreover, a European plan to boost the recovery after the crisis based on investments would play a beneficial role both on the demand side, by increasing aggregate demand that may give rise to an inflationary pressure as time elapses, and the supply side, by enlarging the productive base that instead would contribute to keeping inflation under control.

An outlook on the future of the eurozone

The project of building a European Union with common markets and institutions has proceeded in alternate phases of great difficulties and great progress in the course of European integration. While fiscal policy has remained anchored to national decisions and inter-governmental coordination due to the overly timid political climate and the obsession with moral hazard, monetary policy under ECB president Draghi greatly changed in order to respond more effectively to the long-lasting consequences of the 2007-08 financial crisis and to the specific problems within the eurozone. An additional step is urgently needed. Fiscal and monetary policy must evolve jointly at the European level. It is not the time for self-imposed restrictions on the spending capacity of the public sector. It is time to abandon dogmas and flawed economic theories on the functioning of monetary systems. With the likely collapse of aggregate demand in the eurozone as a consequence of the fight against the spread of the coronavirus, a new expansion of the ECB's balance sheet to create money is needed, this time to be used in the real economy sector. This monetary expansion will hardly have any significant inflationary impact.³ And if this were not the case, a (modest) increase in price dynamics might actually make the higher debt burden inherited from this crisis more sustainable.

The temporary suspension of the SGP in the midst of the current health and economic emergency is certainly a positive development. Nonetheless, the ongoing discussions among member states seem to suggest that once the emergency phase is over, pro-austerity countries will push for reintroducing tough fiscal rules and austerity

³ According to Blanchard (2020), a very unlikely sustained increase in inflation in the aftermath of the COVID-19 crisis might be due to a combination of three factors: a very large increase in the debt-to-GDP ratio, larger than the 20-30% or so under current forecasts; a very large increase in the neutral rate, that is the safe real rate needed to keep the economy at potential; perhaps most important, fiscal dominance of monetary policy. Overall, we should be more worried about deflation than inflation.

plans, reiterating the sad story we already saw in the recent past. If we consider that a huge contraction in GDP and a strong increase in government spending jointly contribute to a massive surge in public debt-to-GDP ratio, it becomes clear that the application of SGP – or fiscal compact-inspired fiscal discipline is untenable. We suggest the following alternatives (in ascending order of effectiveness):

1. The crisis-led debt accumulated during the pandemic does not account for the application of fiscal rules once the crisis is over.
2. Bonds issued by national governments during the crisis are fully monetised by the ECB, i.e. they are cancelled or forgiven at maturity.
3. The ECB acts directly as a buyer of last resort, bypassing governments, thus implementing the operations already described above. This helicopter money is calibrated on the need to replace the private economy during the suspension of market activities during the health crisis.

In the long run, European institutions, and eurozone governments in particular, need to be aware that changes are unavoidable, as the current crisis renders fiscal rules and existing treaties outdated and inapplicable. Such long-run structural changes should not be the disorganised results of concessions, but the fruits of a vision for the recovery and development of the economy of the EU as a whole, and of the eurozone in particular. It is time for the eurozone to act as a union. If this is not the case even in the face of such a dramatic crisis and its aftermath, the very existence of the EU will be called into question. In a way, the current COVID-19 emergency may be the last call to make significant steps towards a proper political union.

If even under exceptional conditions disagreements among member states persist regarding the need to act jointly against a huge symmetric shock (with asymmetric impact), then single countries will eventually have to monetise crisis debts by themselves. It goes without saying that this will imply leaving the euro and returning to national central banks, or perhaps moving towards a smaller aggregation of countries agreeing on a deeper sharing of monetary and fiscal policies in a renewed and more cooperative Europe. This might be the case of a Mediterranean European monetary area, perhaps putting together France, Italy and Spain, arising with its own currency, a common fiscal policy and a fully operational central bank. Needless to say, this is a very different type of Europe, and of Economic and Monetary Union, than was originally intended by the noble fathers of European integration.

This is why, in the midst of a tremendous health and economic crisis, we need more than ever full access to all possible joint fiscal and monetary tools. The suspension of the SGP and the instruments proposed in the European Council on April 23rd, as well as the expanding operability of the ECB through PEPP and other measures, give us hope that something is moving in Europe. But, especially for fiscal policy, this is an overly timid step forward. The current discussion among EU member states about the EU recovery fund might represent a promising development towards the creation of a much-needed fiscal space at the EU level supporting an investment-led recovery of the European economy.

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Martin Larch and Philipp Mohl*

Mitigating the Gap Between the Rich and the Poor: Key Trends and Drivers of Redistribution

The growing inequality of market income has attracted considerable attention; less so the redistribution of income. This article analyses key trends and drivers of income redistribution in the EU and the world. It shows that in the EU increasing redistribution has largely stabilised the dispersion of disposable income since the late 1990s. Only some advanced countries with a dominant free market ideology have recorded an increasing inequality of disposable income alongside a growing inequality of market outcomes. The evidence from panel data shows that the degree of redistribution increases with per capita income and with the share of low-tech, low-income sectors in manufacturing as well as, in line with the median voter model, when more than half of the voters earn less than the average income in countries with a majoritarian electoral system. More redistribution is associated with lower budgetary surpluses or higher deficits.

Condemned to live in the shadows of the policy debate for a long time, income inequality has taken centre stage in the wake of the Great Recession of 2007. Academics and policymakers alike have paid increased attention to the growing income gap between the rich and the poor. The post-2007 crisis was only the trigger – not the cause – of the change of heart. Since the 1980s, the distribution of market income has become more unequal in almost all advanced countries.

The policy discussion has paid less attention to the evolution of redistribution, which increased significantly over the past decades. Classical median voter models represent the conventional view wherein redistribution is expected to increase with a rising income gap between the mean and the median voter (Meltzer and Richard, 1981). By contrast,

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focusing on the insurance motives of public transfer spending, Moene and Wallerstein (2001, 2003) predict a negative relationship, implying that greater inequality in pretax earnings is associated with less, not more, spending on welfare policies targeted to people who have lost their market income because of layoffs, accidents or illness. Finally, some models conclude that redistribution runs from the ends of the income distribution towards the middle class (Stigler, 1970; Dixit and Londregan, 1998; Epple and Romano, 1996).

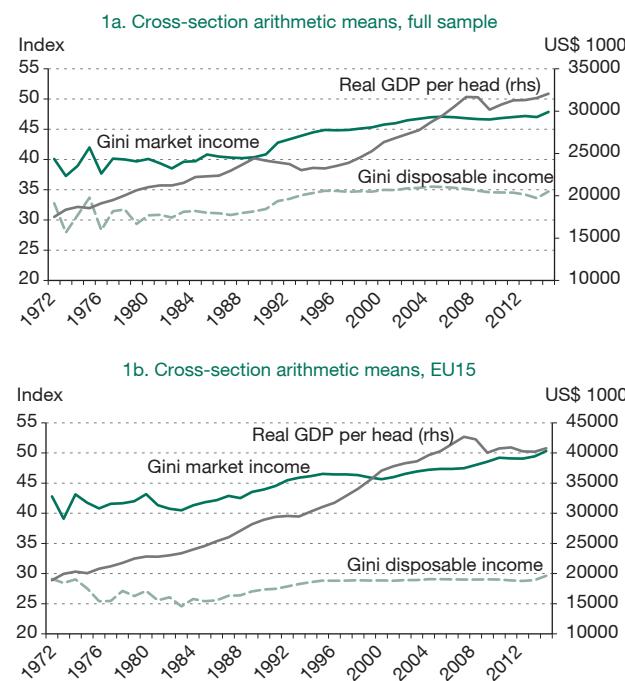
Against this background, this paper analyses key trends and drivers of income redistribution in the EU and the world. This study goes beyond the existing literature by exploring a wider range of economic, political and institutional factors. In particular, it offers an empirical test of the median voter model.

Income redistribution in the EU: Main trends and facts

Despite the booming interest in distributional issues, the availability and comparability of inequality data remains limited. This paper relies mainly on the Gini index from the Standardized World Income Inequality Database (SWIID), compiled by Solt (2016) and widely used in the literature (e.g. Ostry et al., 2014), and covers a large set of countries (66 advanced and developing countries from the early 1970s to 2015). We measure the degree of redistribution as the difference between the Gini index of market income and the Gini index of disposable income.

The first important fact to highlight is how the redistribution of income via fiscal policy has largely offset the trend

Figure 1
Distribution of market and disposable income, 1972–2014



Sources: SWIID, OECD, IMF.

towards increasingly unequal market outcomes in advanced countries. The growing degree of redistribution has been underpinned by significant progress in terms of real per capita income (Figures 1 and 2).

The distribution of market income has grown much more unequal. The average cross-section Gini index climbed from around 40 in the early 1970s to close to 50 in 2015. To put this into perspective, a difference of ten points is more than what currently divides Finland and Greece, with Finland being an example of a comparatively low dispersion of market income and Greece as an example of a particularly high dispersion.

Alongside the conspicuous surge in the inequality of market income, real GDP per capita has almost doubled, not least thanks to the catching up of lagging countries. A prominent implication of the combined increase, especially in developing countries, is a pattern highlighted by Milanovic (2016): there is income convergence across countries yet divergence of household income within countries.

The growing dispersion of market outcomes has to a large extent been mitigated by government redistribution policies. Since the late 1990s, the average Gini index of dis-

posable income has effectively remained unchanged in both the full sample (Figure 1a) and the EU15 (Figure 1b).

The second important fact about the distribution of income over time is that different countries and regions reacted differently to the growing dispersion of market income. In advanced economies, differences also reflect diverging ideological views about how much the public sector should intervene into the market process (Figure 2).

The global trend towards more unequal market outcomes is visible across all economic areas covered by our sample.¹ The relative ranking of economic areas has not changed much since the 1970s with one exception (Figure 2, left-hand panel). The group of non-OECD countries, which had the highest dispersion of market income in the 1970s, has also seen an increase in inequality but significantly less so than in other areas. As a result, their average Gini index of market income is now even slightly below the OECD average.² The group of non-OECD countries includes low- or middle-income countries (such as Morocco, South Africa and Russia) that are all at different stages of the economic catching-up process.

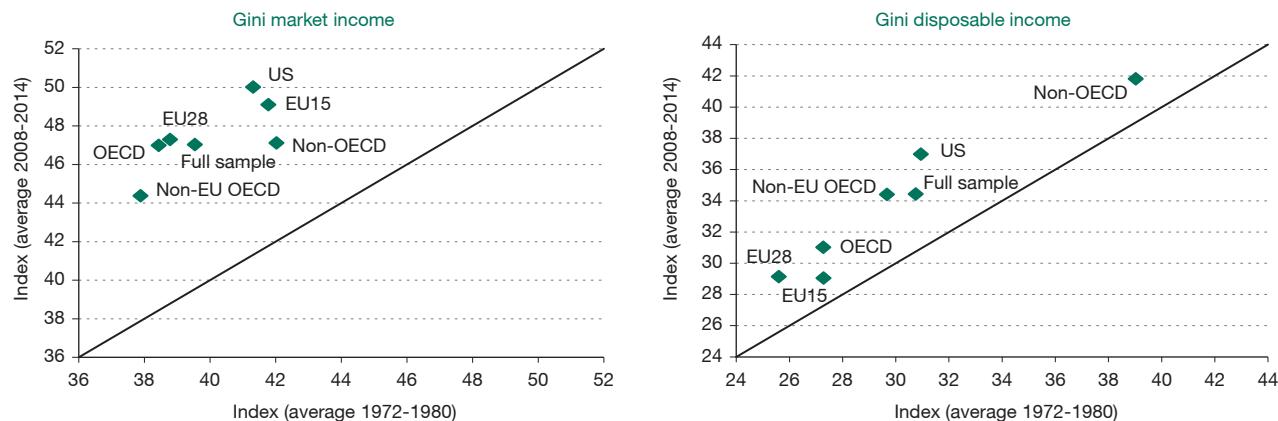
The relative performance of the EU15 and the US is of particular interest. Starting from a relatively high dispersion of market income in the 1970s, inequality has increased almost in lockstep in both areas and is now the highest among the group of countries considered. The situation is distinctly different when it comes to disposable income after transfers and taxes (Figure 2, right-hand panel). While the dispersion of market income has very much rubbed off on households' disposable income in the US (and in most non-EU countries), the distribution of disposable income has broadly remained unchanged in the group of countries that formed the EU prior to 2004. Since the 1970s, the Gini index of the EU15 countries shows a very minor increase and remains the lowest among the different economic areas considered. In other words, the governments of the EU15 have effectively offset the trend towards more unequal market outcomes. In contrast, governments in other areas intervened less, either for ideological reasons (in countries like the US, Australia or New Zealand, liberal economic thinking is deeply entrenched) or due to budget constraints, which prevented

1 List of countries in the sample: Australia, Austria, Belgium, Bulgaria, Brazil, Canada, Switzerland, Chile, China, Colombia, Costa Rica, Cyprus, the Czech Republic, Germany, Denmark, Estonia, Finland, France, Greece, Croatia, Hungary, Indonesia, India, Ireland, Iceland, Israel, Italy, Japan, South Korea, Lithuania, Luxembourg, Latvia, Mexico, Malta, the Netherlands, Norway, New Zealand, Poland, Portugal, Romania, Russia, Slovak Republic, Slovenia, Spain, Sweden, Turkey, South Africa, the UK, the US.

2 This can be explained by data availability, e.g. new and relatively more developed countries may have been added to the database.

Figure 2

Distribution of market and disposable income by groups of countries



Source: SWIID.

larger redistribution programmes (typically in low-income countries which *inter alia* still need to develop the necessary institutional and administrative infrastructure).

The third important fact about the distribution of income is that the post-2007 economic and financial crisis did not accelerate the tendency towards more unequal income. While the situation varies across economic areas and across countries, the assumption that the crisis cum austerity policies made things worse is not generally confirmed (Table 1).

In the public debate, the post-2007 crisis is often associated with a significant rise in income inequality – not least because euro area countries implemented sizeable austerity programmes, some under tightly monitored assistance programmes. Our dataset does not support this view, at least not as a general conclusion. The trend towards a more unequal distribution of market income continued during the crisis years but did not accelerate across the board. In the US, the crisis years did indeed have a noticeable impact, but not a striking one, at least as regards market income. The average annual increase in the Gini index of market income in 2007–2014 only marginally exceeds the one for the sample period as a whole. At the same time, the dispersion of disposable income has actually declined somewhat after 2007 as the US government launched a comparatively large expenditure programme, which over the course of seven years led to an increase of total government expenditure by more than two percentage points of GDP, as compared to an increase of around five percentage points in more than four decades.

No adverse effect of the crisis is, on average, visible in non-OECD countries. The dispersion of both market and disposable income actually improved somewhat af-

ter 2007, most likely because of the general catching-up process that most of those countries have been going through and because they were less affected by the fallout of the financial crisis.

The situation is somewhat more diverse in the EU. On average, the crisis did not give rise to a steeper trend towards a wider dispersion of disposable income, mainly thanks to more benign developments in the post-2004 enlargement countries. The latter started off with a higher degree of inequality and recorded higher average per capita GDP growth and a less pronounced increase in unemployment compared to the ‘old’ member states.

In the EU15, by contrast, the trend worsened after 2007 but not only in countries that are commonly associated with severe adjustment programmes. The group of countries where market income has become increasingly unequal after 2007 includes Spain, Greece, Portugal and Ireland, and interestingly also Sweden and Denmark. More importantly, the distribution of disposable income actually improved in Portugal and Ireland, and it deteriorated further in Spain than in Greece. Less susceptible countries such as Germany, Denmark and Sweden also saw their dispersion of disposable income grow more intensely after the crisis. This is not to say that adjustment programmes did not have any negative impact on the economies concerned. Adjustment programmes weigh on aggregate economic activity: people lose jobs and houses, and enterprises close. However, available evidence seems to suggest that the crisis did not affect the relative position of households across income levels in a consistent manner across countries.

Without a more detailed analysis it is difficult to pin down the factors driving different trends in the redistribution of

Table 1
Evolution of income distribution, selected countries

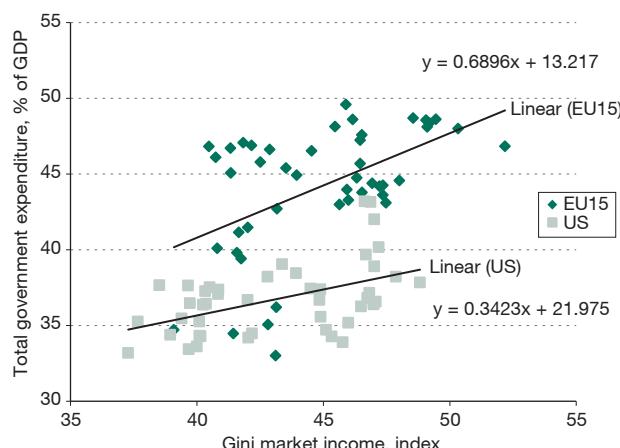
Market and disposable income

	Gini market income (index)				Gini disposable income (index)				Total government expenditure (% of GDP)				
	average				average				average				
	1970- 1980	2006- 2014	Δ	Δ 2014- 2007*	1970- 1980	2006- 2014	Δ	Δ 2014- 2007*	1970- 1980	2006- 2014	Δ	Δ 2014- 2007*	
AT	47.9		-0.1		28.9		0.6		40.3	49.5	9.2	2.5	
BE	42.4	44.2	1.8	2.3	23.0	24.9	1.9	-1.3	46.5	51.3	4.8	6.1	
DK	41.1	46.0	5.0	5.1	25.5	24.2	-1.2	1.1	41.7	53.5	11.9	4.4	
DE	42.2	50.5	8.2	0.6	28.2	28.8	0.6	1.1	40.6	43.5	3.0	1.6	
ES	36.7	49.2	12.5	7.3	32.4	32.8	0.4	3.5	23.1	41.1	18.0	9.4	
EL	53.4	50.3	-3.1	4.5	37.6	33.0	-4.6	1.7	24.1	48.8	24.8	5.0	
IE	38.3	53.5	15.2	5.1	27.5	29.5	2.0	-0.6	41.6	34.4	-7.2	4.7	
FR	40.5	47.4	6.8	-2.7	32.4	28.0	-4.4	-1.4	39.7	54.1	14.4	5.5	
IT	49.7	48.5	-1.2	0.7	35.0	32.6	-2.4	0.0	34.9	47.9	13.1	5.2	
LU		46.2		1.8		27.5		0.9		39.3		5.2	
NL	45.5	45.5	0.0	-1.7	24.8	26.0	1.2	-2.1	43.8	44.4	0.6	4.1	
PT	41.3	51.4	10.2	5.1	26.3	33.6	7.3	-1.8	27.2	46.7	19.4	5.2	
SE	39.8	49.2	9.4	3.2	21.4	25.2	3.9	0.9	46.5	49.7	3.2	1.6	
FI	39.8	46.5	6.7	-1.1	23.6	25.8	2.2	-1.3	33.0	53.6	20.6	11.1	
UK	36.7	52.8	16.1	0.5	26.6	33.4	6.8	-1.2	36.4	41.9	5.5	2.5	
EU15	42.1	48.6	6.7	2.0	28.0	29.0	1.0	0.0	37.1	46.7	10.1	4.9	
EU15 (Pop. weighted)	41.0	49.4	8.4	1.2	29.1	30.3	1.2	0.1	36.6	46.3	9.7	4.5	
US	41.0	49.7	8.7	2.0	30.9	37.0	6.2	-0.1	33.0	38.1	5.1	2.0	
First and last year in sample			first	last	Δ		first	last	Δ	first	last	Δ	
AT	1983 and 2014	31.4	47.7	16.2		25.9	28.8	2.9		47.9	49.9	2.1	
BE	1970 and 2013	42.4	45.4	3.0		23.0	24.4	1.3		52.7	53.7	1.0	
DK	1970 and 2014	40.8	48.5	7.7		28.3	24.9	-3.4		36.0	53.9	17.9	
DE	1970 and 2013	47.9	51.0	3.1		30.3	29.5	-0.8		34.9	43.7	8.8	
ES	1973 and 2014	31.8	52.1	20.2		33.0	34.1	1.1		20.5	44.5	24.0	
EL	1974 and 2014	53.4	52.4	-1.0		37.6	33.7	-3.9		23.6	49.2	25.6	
IE	1973 and 2014	36.3	55.1	18.8		28.5	29.1	0.6		35.6	30.5	-5.1	
FR	1970 and 2013	38.9	45.2	6.4		38.7	26.8	-11.9		36.6	55.4	18.8	
IT	1970 and 2013	52.2	48.7	-3.5		36.7	32.7	-4.1		29.9	50.2	20.3	
LU	1985 and 2013	37.6	47.5	9.9		23.7	28.4	4.7			41.1		
NL	1975 and 2014	45.9	44.5	-1.4		25.7	25.3	-0.5		45.7	45.6	-0.1	
PT	1980 and 2014	51.2	54.7	3.6		32.3	33.2	1.0		29.4	48.5	19.1	
SE	1970 and 2013	42.2	50.7	8.5		24.2	25.5	1.3		38.1	51.1	13.0	
FI	1971 and 2014	37.2	45.5	8.4		23.6	25.0	1.5		28.7	57.1	28.4	
UK	1970 and 2015	34.4	52.2	17.8		26.5	32.6	6.0		32.7	41.2	8.5	
EU15		41.6	49.4	7.8		29.2	28.9	-0.3		35.2	47.7	13.0	
EU15 (Pop. weighted)		42.5	49.6	7.1		31.7	30.2	-1.5		33.3	47.4	14.1	
US	1970 and 2014	39.5	50.2	10.7		30.5	37.0	6.6		32.1	37.6	5.5	

Note: * For DE, FR, IT and LU, Δ 2013-2007.

Source: SWIID.

Figure 3
Distribution of market income versus size of government, 1970-2015



Sources: SWIID, IMF, OECD.

income. The following section takes a closer look at possible determinants in a panel framework. However, one element that certainly plays a role is the size of government, a crude but still useful proxy for the role of fiscal policy. The most widely used indicator of the size of government is the level of total government expenditure in percent of GDP. Not all government outlays have the deliberate goal of redistributing income across income groups, but the actual incidence of spending relative to taxation de facto always implies redistribution across income groups.

Figure 3 plots the size of government of the EU15 and the US in 1970-2014 against the respective distribution of market income. The patterns emerging from this simple juxtaposition are quite revealing. With the exception of the early 1970s, the EU15 countries exhibit a markedly higher share of government expenditure for any given degree of income distribution. In addition, government expenditure in the EU15 also seems, on average, to be more sensitive to increases in income inequality.

In the early 1970s, the size of government was still comparable on both sides of the Atlantic, with total government expenditure below 35% of GDP. At the time, the US model still echoed the imprint of Roosevelt's New Deal Policy, which had led to a steep change in the US government's involvement in economic activity. The situation changed markedly in the face of the severe economic downturns triggered by the succession of oil crises starting in 1973. In the EU15, the size of government increased progressively towards an average of close to 50% of GDP in the early 1990s. The size of government edged down during the sustained economic expansions of the 1990s and ear-

ly 2000s, before again approaching 50% in the wake of the post-2007 crisis.

In the US, total expenditure increased only very gradually to a maximum of 39% of GDP at the end of the 1980s and early 1990s, fell back to the pre-oil shocks level during the 1990s and early 2000s before posting an important increase to slightly more than 40% in the first years of the Great Recession. It is now back to under 38% of GDP.

Taking a closer look at the drivers of redistribution

We use a dynamic panel data framework to identify the key drivers of redistribution based on a sample of up to 49 countries indexed with the subscript i and nine five-year periods t between 1970 and 2014. The sample is somewhat smaller than the one used in the previous section due to the limited availability of some explanatory variables. Our panel framework can be formalised as follows:

$$\ln \text{red}_{i,t} = \beta_1 \ln \text{red}_{i,t-1} + \beta_3 \ln X_{i,t} + \vartheta_t + \theta_i + \varepsilon_{i,t} \quad (1)$$

The degree of redistribution (red) is the dependent variable that measures the difference between the Gini coefficient of market income and the Gini coefficient of disposable income. Both indicators are taken from the SWIID. A larger difference indicates a higher degree of redistribution. Explanatory variables, summarised in vector X , are selected in line with the literature and taken from a variety of sources (see Table 2).

The use of five-year averages offers important advantages. It helps to remove business cycle effects on the redistribution of income, mostly linked to temporary swings in unemployment benefits and active labour market policies, and enables us to examine medium- to long-term relationships. It has the additional advantage of increasing comparability to the existing literature, since many studies also follow the same approach (e.g. Carter, 2006; Voitchovsky, 2005).³

Our estimation results reveal that the redistribution of income is, to an important extent, determined by its past, as shown by the highly significant coefficient of the lagged dependent variable. This is not surprising; redistributive policies typically exhibit a high degree of inertia due to the political economy of reforms. Barring revolutions, it takes time for the relevant institutional and structural factors to record significant changes that eventually impact the way

³ We control for the endogeneity of the lagged dependent variable and the unemployment rate by using a first-difference generalised method of moments estimator (Blundell and Bond, 1998). We start with a parsimonious specification and successively extend it to include additional explanatory variables.

Table 2
Description of variables and sources

Variable name	Source
Redistribution Gini market	Standardized World Income Inequality Database (SWIID)
Median and average incomes	Wang and Caminda (2017)
Real GDP per capita (US\$) Real GDP growth Unemployment rate NAIRU General govt. headline balance Gross general govt. debt Degree of openness Share of population aged over 65 Share of 25-99 year-olds with sec. education Share of 25-99 year-olds with no education	OECD Economic Outlook
Fraser size of government Fraser top marginal tax rate	Fraser Institute, Economic Freedom
Share of low-tech sectors in value added of manufacturing	OECD National Accounts
Share of left-wing parties in govt. Share election month in a year	Armingeon et al. (2016)
Political stability and absence of violence Government effectiveness Summary indicator Quality of the governmental framework	World Bank, Worldwide Governance

Source: Authors' compilation.

income is distributed and redistributed across individuals in the economy as a whole.

The regression analysis confirms the positive correlation between redistribution and the level of per capita income described above. In other words, redistribution is a matter of living standards: the higher per capita income, the more redistribution a government can and will afford. This result is in line with the findings of Gründler and Köllner (2016). It is also robust across the different geographical regions considered: it holds for the full sample (Table 3), the EU (Table 4) and the OECD (Table 5). We also tested a broad range of additional indicators, which turned out to be insignificant and are therefore not shown in the regression tables. These include variables related to the economic cycle (real GDP growth), labour market (non-accelerating inflation rate of unemployment), trade (the degree of openness as measured by the sum of exports and imports over GDP), skills (share of 25-99 year-olds with secondary or no education) as well as political economy indicators (share of left- or right-wing parties in parliament/government, voter turnout).

Our results also suggest that countries with lower surpluses or higher deficits of the general government

budget tend to be associated with a higher degree of redistribution as measured by the difference between the dispersion in market and disposable income. To exclude the possible effect of the business cycle on the budget, we would have preferred to use the cyclically adjusted budget balance, but the availability is very limited, pushing the size of our sample below levels that would support meaningful statistical inference. In the short run, and by design, unemployment benefits and government expenditure on active labour market policies strongly correlate with labour market conditions. In countries where unemployment benefits are sizeable, they very much contribute to smoothing wage losses and represent a very important part of redistribution. Using five-year averages of the budget balance is not a perfect solution, but it is likely to mitigate the possible effects of the cycle. This expectation is indirectly confirmed by the fact that in our regressions the rate of unemployment, or the five-year averages thereof, turns out to have a very small and, most importantly, statistically insignificant effect on the redistribution of income.

Although the estimated link between the redistribution of income and the budget balance looks plausible at first – if a government borrows more money, it can (partly) spend it on redistribution – the causality is not entirely obvious. First, it is not clear why more deficit spending should necessarily go into projects that mitigate the dispersion of income; expansionary fiscal policy can also accentuate income inequality. Secondly, the interaction could also work the other way round: in the face of a more unequal distribution of market income, political pressure on governments to find resources to address the issue may increase. And for reasons extensively discussed in the literature (see Drazen, 2000; Alesina and Perotti, 1995), issuing new debt tends to be easier than increasing taxes. There are studies supporting both views about cause and effect. Larch (2012) argues it is the combination of income inequality and political instability that tends to increase the government deficit. Agnello and Sousa (2012), by contrast, reason fiscal adjustments have a negative impact on the income gap between the rich and the poor. Since their model is symmetric, their findings logically imply that fiscal expansions tend to have redistributive effects.

At the macro level, it is difficult to conclude which of the two narratives is closer to reality. Both can be at play across time and countries. A clearer answer would require a more detailed analysis using micro data, which goes beyond the scope of this paper. However, irrespective of which narrative actually applies, both raise the issue of sustainability. To the extent that the inequality of market income were to further increase or to remain at current high levels, mitigating its impact on disposable income

Table 3
Regression results, full sample

Dependent variable: ln redistribution	(1)	(2)	(3)	(4)	(5)	(6)	(7)
In redistribution (t-1)	0.747*** (4.514)	0.857*** (5.576)	0.993*** (5.326)	0.908*** (7.091)	0.860*** (7.534)	0.787*** (5.066)	0.842*** (10.171)
In real GDP per capita (t)	0.043* (1.720)	0.030 (0.354)	0.017 (0.666)	0.020 (1.254)	0.055*** (4.282)	0.052*** (3.083)	0.058*** (3.556)
In headline balance (t)		0.196** (-1.978)	-0.123** (-2.010)	-0.131** (-2.317)	-0.227* (-1.771)	-0.253* (-1.658)	-0.305* (-1.786)
In unemployment rate (t)			0.005 (0.417)	0.003 (0.357)	0.023** (1.996)	0.021 (1.215)	0.015 (1.174)
In union density (t)				-0.001 (-0.082)	-0.007 (-0.804)	-0.004 (-0.412)	-0.015 (-1.368)
In low-tech value added (t)					0.027** (2.116)	0.030* (1.948)	0.032*** (2.617)
In mean-median ratio (t-1)						-0.043 (-0.314)	0.029 (0.402)
Dummy majoritarian system (t-1)							-3.668* (-2.207)
Mean-median ratio x majoritarian system							0.766** (2.187)
No. observations	319	253	240	218	130	105	105
No. countries	49	45	42	40	30	25	25
Max No. per country	8	8	8	8	8	8	8
Min No. per country	3	3	3	1	2	1	1
Average No. per country	6,510	5,622	5,714	5,450	4,333	4,200	4,200
Wald time dummies (p-value)	0,340	0,050	0,075	0,159	0,004	0,000	0,000
AR(1) (p-value)	0,061	0,096	0,082	0,045	0,049	0,064	0,042
AR(2) (p-value)	0,161	0,108	0,121	0,156	0,219	0,120	0,164
Hansen (p-value)	0,324	0,199	0,213	0,122	0,228	0,316	0,950
No. instruments	23	26	27	26	29	30	45

Notes: The sample includes up to 49 advanced and developed countries, covering the period 1980-2014 using five-year averages. The dependent variable is redistribution as defined by the difference between the Gini indices of market and disposable income. All estimations include time dummies, which are not shown due to space constraints. The regressions are estimated using the first-step difference GMM estimator (FD GMM) following Blundell and Bond (1998), controlling for endogeneity of the lagged dependent variable and the real GDP per capita. Due to the small sample size the set of internal instrumental variables is restricted to up to four lags and the matrix of instruments is then “collapsed”. The standard errors are corrected following Windmeijer (2005). AR(1,2) and Hansen tests confirm the validity of the GMM specifications. A marginal increase of the mean-median ratio has no statistically significant impact on the redistribution for countries with a proportional electoral system (coefficient of mean-median ratio of 0.029 is not statistically significant). However, the mean-median ratio becomes statistically significant and positive for countries with a majoritarian electoral system (the coefficient of 0.794 is statistically significant at the 5%, as reported in the last two columns labelled “interaction terms”). ***, ** and * denote statistical significance at 1%, 5% and 10% respectively.

Source: Authors' estimation.

through redistribution could put additional pressure on policymakers at a time when the long-run sustainability of public finances is already challenged in many countries by high government debt levels and the budgetary impact of ageing.

To capture the possible role played by the structure of the economy or the composition of the labour force, our regressions include the share of low-tech sectors in total value added of manufacturing. We use the OECD classification of manufacturing industries based on re-

search and development intensities, which allows us to cover a sufficiently large set of countries. Our estimation results point to a statistically significant relationship in the sense that a higher share of low-tech sectors tends to go along with a high degree of redistribution. Although the exact mechanism may not be entirely obvious and may take different forms, this finding does not come as a complete surprise. Low-tech sectors tend to employ a larger share of low-skilled and low-paid workers (Shi, 2002), a group of citizens and voters who may objectively be in need of income support and/or sup-

Table 4
Regression results, EU28 sample

Dependent variable: ln redistribution	(1)	(2)	(3)	(4)	(5)	(6)	(7)
In redistribution (t-1)	0.853*** (13.020)	0.824*** (10.455)	0.823*** (10.638)	0.816*** (8.608)	0.834*** (9.601)	0.735*** (4.435)	0.835*** (7.457)
In real GDP per capita (t)	0.025*** (3.060)	0.020** (1.980)	0.021** (1.985)	0.021** (1.964)	0.047*** (3.019)	0.058*** (3.406)	0.061*** (2.762)
In headline balance (t)		-0.057 (-0.647)	-0.077 (-0.787)	-0.073* (-1.918)	-0.297* (-1.860)	-0.416* (-1.770)	-0.509* (-1.878)
In unemployment rate (t)			-0.030 (-0.475)	0.002 (-0.320)	0.004 (0.490)	0.000 (0.024)	-0.005 (-0.409)
In union density (t)				0.004 (0.415)	-0.006 (-1.022)	-0.006 (-0.618)	-0.019 (-1.267)
In low-tech value added (t)					0.032* (1.944)	0.043** (2.267)	0.039* (2.542)
In mean-median ratio (t-1)						-0.103 (-0.601)	-0.030 (-0.131)
Dummy majoritarian system (t-1)							-0.364 (-0.116)
Mean-median ratio x majoritarian system							0.071 (0.108)
No. observations	170	162	162	162	98	83	83
No. countries	28	28	28	28	28	28	28
Max No. per country	8	8	8	8	8	8	8
Min No. per country	3	3	3	3	3	3	3
Average No. per country	6,071	5,786	5,786	5,786	4,261	4,368	4,368
Wald time dummies (p-value)	0,507	0,881	0,912	0,916	0	0	0
AR(1) (p-value)	0,065	0,088	0,067	0,025	0,093	0,102	0,079
AR(2) (p-value)	0,173	0,229	0,228	0,121	0,189	0,372	0,302
Hansen (p-value)	0,111	0,162	0,156	0,138	0,417	0,990	0,950
No. instruments	23	24	25	26	27	30	46
Interaction term (size)							0,041
Interaction term (p-value)							0,959

Note: See notes to Table 3.

Source: Authors' estimation.

port political platforms favouring the redistribution of income.

But how do political demands for redistribution translate into actual policies? One of the early and still most compelling explanations rests on the median voter theorem. Using a general equilibrium model, Meltzer and Richards (1981) show that under a majoritarian electoral system, the degree of redistribution increases when mean income rises relative to median income, that is, when the number of voters with below average income exceeds 50%. We test this well-known proposition in our panel framework by including the mean-median ratio together with a dummy variable that controls for the type of electoral system. In line with the Meltzer and Richards' hypothesis, we find that an increase of the mean-to-median ratio increases the degree of redistribution in countries with a majoritarian electoral

system. By contrast, the mean-to-median ratio does not play a decisive role for proportional electoral systems, because preferences over the redistribution of income are more fragmented. The findings are significant for the large country samples (OECD and full sample), but not for the EU28. This can be explained by the fact that electoral systems with a simple plurality system or modified proportional representation are much less frequent in the EU28 (only three out of 28 countries in the sample ranging from 2010 to 2014, i.e. around 10% of the total number of countries) than in the OECD or full sample (eight out of 36 OECD countries, i.e. around 20%).⁴

4 We use the classification of proportional and majoritarian systems in the Comparative Political Data Set compiled by Armingeon et al. (2016); Inter-Parliamentary Union; Ismayr (2003); Lijphart (2012); national sources and constitutions; EJPR Political Data Yearbook (various issues).

Table 5
Regression results, OECD sample

Dependent variable: ln redistribution	(1)	(2)	(3)	(4)	(5)	(6)	(7)
In redistribution (t-1)	0.868*** (10.323)	0.825*** (7.245)	0.824*** (7.683)	0.861*** (6.445)	0.880*** (7.296)	0.698*** (5.417)	0.743*** (7.886)
In real GDP per capita (t)	0.026** (1.962)	0.023 (1.624)	0.030* (1.839)	0.023* (1.742)	0.056*** (4.536)	0.047** (2.482)	0.047** (2.358)
In headline balance (t)		-0.155* (-1.884)	-0.162* (-1.769)	-0.114* (-1.776)	-0.236* (-1.815)	-0.270* (-1.860)	-0.302** (-2.044)
In unemployment rate (t)			0.009 (1.049)	0.006 (0.697)	0.022** (1.962)	0.027 (1.625)	0.026* (1.908)
In union density (t)				0.002 (0.207)	-0.008 (-0.934)	-0.001 (-0.046)	-0.008 (-1.021)
In low-tech value added (t)					0.028* (2.289)	0.022* (1.821)	0.019 (1.120)
In mean-median ratio (t-1)						-0.222 (-1.518)	-0.400** (-1.967)
Dummy majoritarian system (t-1)							-3.766*** (-3.268)
Mean-median ratio x majoritarian system							0.788*** (3.248)
No. observations	261	227	227	210	127	102	102
No. countries	41	38	38	37	29	24	24
Max No. per country	8	8	8	8	8	8	8
Min No. per country	3	3	3	2	2	1	1
Average No. per country	6,366	5,974	5,974	5,676	4,379	4,25	4,25
Wald time dummies (p-value)	0,273	0,299	0,18	0,21	0	0,012	0
AR(1) (p-value)	0,014	0,048	0,059	0,078	0,051	0,092	0,068
AR(2) (p-value)	0,113	0,103	0,203	0,203	0,222	0,181	0,194
Hansen (p-value)	0,342	0,119	0,134	0,191	0,268	0,442	0,95
No. instruments	23	24	25	26	29	30	44
Interaction term (size)							0,389
Interaction term (p-value)							0,007

Note: See notes to Table 3.

Source: Authors' estimation.

Interestingly, the level of per capita income seems to dominate or dwarf a number of other factors which a priori one may expect to influence the degree of redistribution (Table 6). Prime factors (also in light of our own descriptive analysis) are the size of government, the political colour of the incumbent government, the prevailing economic doctrine or value system of a country and the strength of trade unions. Our expectation was that for a given level of economic development, as measured by per capita income, redistribution should still differ significantly according to the role played by government and trade unions. In particular, one would expect redistribution to be less important in countries with smaller governments and weak trade unions and more important in countries with larger, more interventionist governments and stronger trade unions. However, these priors were

not born out by our regression analysis. As long as per capita GDP is included as explanatory variable, none of the other variables gauging the role of government and trade unions turn out to be statistically significant.

This does not mean that different types of government do not play a role at all. Our descriptive analysis clearly shows that the US, the UK and Australia exhibit visible differences as regards redistribution, especially compared to high-income EU countries. But then, these evident differences do not play out in a larger sample of countries and over the medium and long term. Economic development seems to be the overriding factor very much in line with the prediction of Wagner's law, according to which populations are voting for increasing welfare programmes as general income levels grow.

Table 6
Robustness: Testing additional independent variables

Dep. var.: In redistribu- tion	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
In redistribu- tion (t-1)	0.868*** (10.323)	0.825*** (7.245)	0.824*** (7.683)	0.861*** (6.445)	0.880*** (7.296)	0.815*** (5.328)	0.775*** (4.641)	0.719*** (4.654)	0.858*** (6.257)	0.855*** (5.949)	0.799*** (5.381)	0.701*** (4.714)	0.804*** (5.297)	0.767*** (4.256)
In real GDP per capita (t)	0.026** (1.962)	0.023 (1.624)	0.030* (1.839)	0.023* (1.742)	0.056*** (4.536)	0.053*** (3.334)	0.046*** (2.518)	0.066*** (5.330)	0.059*** (3.806)	0.062*** (3.658)	0.050*** (3.131)	0.055** (2.509)	0.053*** (3.253)	0.062* (1.645)
In headline balance (t)	-0.155* (-1.884)	-0.162* (-1.769)	-0.114* (-1.776)	-0.236* (-1.815)	-0.267* (-1.740)	-0.229* (-1.740)	0.506** (-2.108)	-0.286* (-1.759)	-0.287* (-1.701)	-0.243* (-1.736)	-0.238* (-1.750)	-0.275* (-1.749)	-0.218 (-1.635)	
In unem- ployment rate (t)		0.009 (1.049)	0.006 (0.697)	0.022** (1.962)	0.020 (1.223)	0.019 (1.061)	0.003 (0.233)	0.018 (1.349)	0.019 (1.379)	0.017 (1.144)	0.036* (1.912)	0.020 (1.232)	0.018 (0.943)	
In union density (t)			0.002 (0.207)	-0.008 (-0.934)	-0.006 (-0.587)	-0.003 (-0.295)	-0.007 (-0.647)	-0.009 (-0.835)	-0.009 (-0.858)	-0.006 (-0.605)	-0.003 (0.224)	-0.005 (-0.522)	-0.002 (0.193)	
In low-tech value added (t)				0.028** (2.289)	0.030** (2.038)	0.024 (1.553)	0.050*** (3.245)	0.035** (2.467)	0.036** (2.445)	0.031** (2.008)	0.025* (1.788)	0.031** (2.055)	0.025 (1.300)	
In mean- median ratio (t-1)					-0.032 (-0.209)	-0.071 (-0.490)	-0.119 (-0.737)	0.021 (0.138)	0.027 (0.161)	0.052 (-0.352)	0.108 (-0.562)	0.048 (-0.301)	0.092 (-0.589)	
In economic- ic freedom index (t)						-0.007 (-0.700)								
In gross debt (t)							0.007 (-1.098)							
In pop > 65 (t)								0.014 (-0.536)						
In OADR (t)									0.023 (-0.976)					
In govt. left (t)										0.025 (1.598)				
In govt. right (t)											0.001 (-0.192)			
Election year (t)												0.000 (-1.511)		
WB govt. effectiveness (t)													0.026 (-0.699)	
No. observa- tions	261	227	227	210	127	102	102	83	102	102	102	89	102	90
No. coun- tries	41	38	38	37	29	24	24	19	24	74	74	23	24	24
Max No. per country	8	8	8	8	8	8	8	8	8	8	8	8	8	4
Min No. per country	3	3	3	2	2	1	1	3	1	1	1	1	1	1
Average No. per country	6,366	5,974	5,974	5,676	4,379	4,25	4,25	4,368	4,25	4,25	4,25	3,87	4,25	3,75
Wald time dummies (p-value)	0,273	0,299	0,180	0,210	0	0	0	0	0	0	0	0,003	0	0,623
AR(1) (p-value)	0,014	0,048	0,059	0,078	0,051	0,062	0,079	0,108	0,054	0,05	0,05	0,162	0,074	0,081
AR(2) (p-value)	0,113	0,103	0,203	0,203	0,222	0,118	0,119	0,51	0,112	0,112	0,177	0,153	0,164	0,118
Hansen (p-value)	0,342	0,119	0,134	0,191	0,267	0,359	0,363	0,964	0,601	0,657	0,834	0,839	0,818	0,509
No. instru- ments	23	24	25	26	29	30	31	31	31	31	31	31	31	27

Note: See notes to Table 3.

Source: Authors' estimation.

Several empirical studies corroborate this trend showing also that government expenditure tends to outgrow income levels especially in catching-up countries (see e.g. Akitoby et al., 2006; Lamartina and Zaghini, 2011). There are some countries where the trend is less pronounced, i.e. where more per capita income translates into less additional government spending and redistribution, such as the US or Australia, but the trend is visible nevertheless.

Conclusions

Our analysis supports a number of important conclusions. First, the redistribution of income is, to a large extent, a matter of living standards. While market outcomes have definitively become more unequal since the 1970s, the long-term increase in per capita income across countries enabled governments to implement growing welfare programmes, thus mitigating the impact on the distribution of disposable income. There are prominent examples of countries where a dominant free-market ideology appears to have put a break on redistribution, but the role of ideology is not confirmed by inferential statistical analysis. The top ten jurisdictions, in order, were New Zealand, Switzerland, Hong Kong, Australia, Canada, the Netherlands, Denmark, Ireland, the UK and Finland.

Second, redistribution seems to weigh on the state of public finances: countries with a higher degree of redistribution record on average a lower budgetary surplus or a higher deficit. While the causality underpinning this result is not entirely clear, it can raise important questions of sustainability should the trend towards more unequal market outcomes continue.

Third, our analysis finds support of the conventional view of median voter models: a growing gap between mean and median income translates into a higher degree of redistribution in countries with a majoritarian election system.

Finally, our findings belie the popular belief that macroeconomic adjustment programmes implemented in some euro area countries in the wake of the post-2007 crisis always came at the price of a more unequal distribution of disposable income. In some programme countries, the distribution of disposable income even improved somewhat during the programme as governments protected or even increased spending for low-income families; the composition of adjustment plays a crucial role.

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Basak Kus*

Relief, Recovery, Reform: A Retrospective on the US Policy Responses to the Great Recession

The Great Recession presented the US with economic and political challenges that had not been experienced since the time of the Great Depression. This article provides a retrospective on the government's response to the crisis ten years after the enactment of the Dodd-Frank Act, as the country is heading into its next presidential election in the midst of yet another downturn, this time fueled by the COVID-19 pandemic.

When the Republican candidate for president, Senator John McCain, declared the fundamentals of the American economy to be strong on September 15, 2008, the day Lehman Brothers filed for bankruptcy, his words sounded familiar to students of American political economy. On October 25, 1929, only four days before Black Tuesday, President Herbert Hoover had declared that the fundamentals of American business were "on a sound and prosperous basis" (U.S. Congress, 1929, 5070). In the months that followed, production began to fall drastically and unemployment increased on an unprecedented scale. By October 1931, the number of unemployed had reached nine million, entire neighborhoods in industrial towns had been devastated, and farm and home foreclosures had risen sharply (Fox Piven and Cloward, 1977). The economy, which was believed to be "roaring" in the preceding decade, had plunged into the Great Depression.

The economic crisis of the late 2000s – now referred to as the Great Recession – did not end up being as deep or as long as its predecessor, but it was still severe, as shown in Figure 1. Over the course of the crisis, the unemployment rate increased to 10%, and the GDP fell by over 4%. More

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than 450 banks failed, and more than 10 million houses were foreclosed (Grusky et al., 2011; Martin and Niedt, 2015). The share of households with negative net worth climbed to 22.5% (Wolf, 2012), and millions of Americans had to postpone their retirement or completely lost the possibility of ever being able to retire.

This article provides a retrospective on the government's response to the crisis, as the country is heading into its next presidential election in the midst of yet another downturn, this time fueled by a pandemic. This is, therefore, a particularly good time to think about government intervention in times of crises. The article provides an overview of the relief, recovery and reform measures taken in response to the Great Recession. It highlights the key issues and concerns that remained salient to each aspect of the government's response, and how those issues were understood and tackled by those who were at the helm of policymaking.

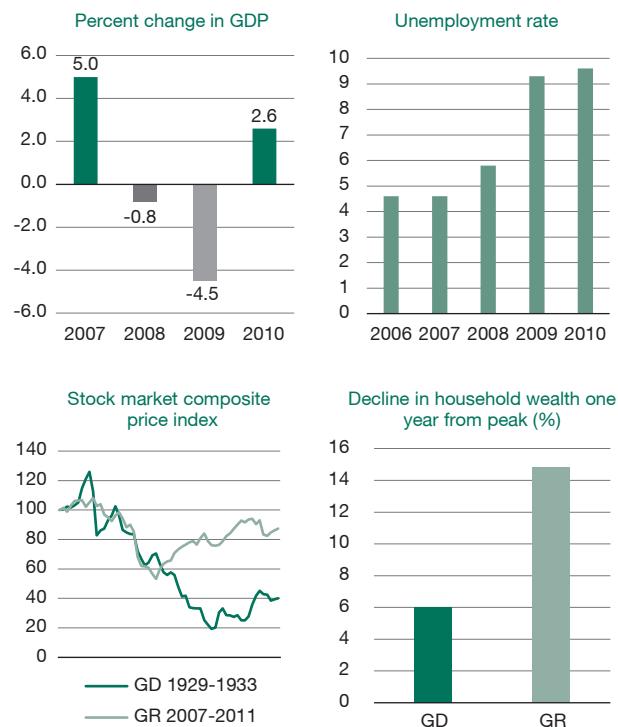
Politics in hard times¹: From uncertainty to action during the Great Recession

Crises are times of uncertainty, and they often make space for policy change. As Hay elaborates, "the very parameters that previously circumscribed policy options are cast asunder and replaced, and the realm of politically possible, feasible and desirable is correspondingly reconfigured" (Hay, 2001, 197). Before uncertainty turns into action, however, political actors must first decide what the crisis is actually a crisis of, and this tends to be a contested process (Blyth, 2002). An important point of contention in these political deliberations concerns the role of the government. Disagreements abound about the size, substance and tools of government intervention;

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¹ Subtitle "Politics in hard times" is a hat tip to Peter Gourevitch's book of the same title.

Figure 1
Great Recession: Economic indicators



Note: GD: Great Depression; GR: Great Recession.

Sources: GDP data from the Bureau of Economic Analysis (Q1); unemployment data from the Bureau of Labor Statistics; Stock market data from R. Shiller, "U.S. Stock Markets 1871-Present" data set; data on household wealth from Charting the Financial Crisis: US Strategy and Outcomes, joint report by Hutchins Center on Fiscal and Monetary Policy at Brookings and Yale School of Management Program on Financial Stability.

who deserves help and who does not; which trade-offs are acceptable, and which are not. The 2007-2010 economic crisis was no exception in this regard.

The government's initial response was a figure-it-out-as-you-go involving various emergency initiatives aimed at staunching the blood loss in the economy. Decisions had to be made swiftly and with limited foresight. The former Fed Chair Bernanke recalls:

When I first became chairman of the Federal Reserve in 2006, literally one of the first things I did was I asked the staff to give me the handbook on what you do in the case of a financial crisis. And they provided me a little notebook and the notebook was typed on a manual typewriter in mimeograph and had about four pages in it. It said open the discount window and that was about it...I think Tim Geithner had a similar experience at the

New York Fed. We went into one of the most complicated and consequential financial crises in human history with very little in the way of a playbook for thinking about how to address the crisis. (2018)

The Fed played a significant role in this stage, supplying large quantities of reserves to tackle the dislocations in financial markets. Early on in the timeline of the crisis, however, many of the risk-mitigation tools that the Treasury, the Fed and the Federal Deposit Insurance Corporation had at their disposal were aimed at depository institutions. Non-bank financial institutions – although they had become a significant part of the American financial system in the decades preceding the crisis – did not have access to those same tools and this posed a challenge that deeply concerned policymakers (Alvarez and Dudley, 2018). Senior officials who served at the New York Fed at the time recall:

As we stood on the eve of the financial crisis, the non-bank sector was very fragile. When the housing bubble burst and home prices declined, we knew that the stress on this sector was going to increase, and as it increased there was very little in the tool kit that the regulatory authorities had to respond as circumstances deteriorated. And I think that made it just much more difficult to arrest the downward dynamic and to restore confidence. So, in 2008, when we were faced with the eminent failures of Bear Sterns, Lehman and AIG in short order, policymakers were faced with an important question – how far could they go in stretching the available tools, which were clearly inadequate, to limit contagion and constrain an ever-broadening financial crisis? (Dudley, 2018)

A systemic crisis calls for a central bank lending to the broad financial system basically temporarily substituting for the breakdown in private lending relationships until the system can stabilize itself. But that absolutely can't happen if the lending facility actually excludes most of the financial system. So, distress at non-banks continued and accelerated. (Mosser, 2018)

It was within these circumstances that the Fed, for the first time since the Great Depression, invoked in March 2008 its emergency authority under section 13(3)² of the Federal Reserve Act to lend to non-banks. These emergency measures were followed by a more systematic program that extended to financial and non-financial institutions, and to a limited extent, American households,

² For section 13, Powers of Federal Reserve Banks, see <https://www.federalreserve.gov/aboutthefed/section13.htm>.

Table 1
Government's response to the financial crisis: Relief, recovery, reform

Relief and recovery	Reform
The Housing and Economic Recovery Act, 2008	The Dodd-Frank Wall Street Reform and Consumer Protection Act, 2010
The Emergency Economic Stabilization Act, 2008	
The Economic Stimulus Act, 2008	
The American Recovery and Reinvestment Act, 2009	

Source: Author's compilation.

as US Congress passed a series of Acts aimed at relief, recovery and reform (see Table 1).

Relief and recovery attempts

The bailout

What amount of relief would be provided, to whom, and under what conditions remained a highly contested area of post-crisis governmental response. This is because government intervention often takes place under resource constraints – even if said constraints are political constructs rather than objective reality – and it happens to be, especially in the context of a crisis, fraught with moral questions as well as electoral calculations.

Early on in the crisis, in the spring of 2008, public opinion was largely opposed to the federal government helping Wall Street. Sixty-one percent of those who participated in the Gallup survey³ conducted in March said that they did not support the federal government taking steps to help major financial institutions to prevent them from failing. Over time, in the face of a deepening crisis, the American public became somewhat less opposed to a Congressional bailout plan.⁴ At the same time, it seemed that the majority of that same public considered it important for the government to impose conditions – such as limits on executive compensation – on corporations that would participate in the plan.⁵ At that point in time, public confidence in banks was at an all-time low,⁶ and there was

3 For Gallup poll, see <https://news.gallup.com/poll/106114/six-oppose-wall-street-bailouts.aspx>.

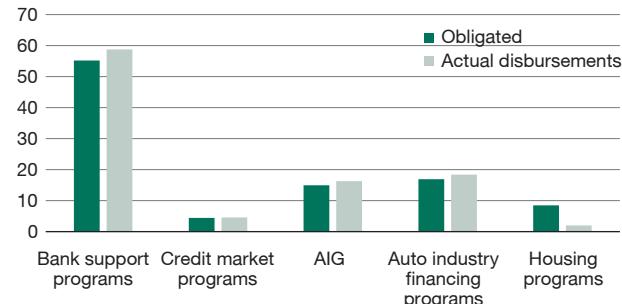
4 See numerous polls conducted in September 2008 by Pew, Gallup and ABC/Washington: <https://www.pewresearch.org/2008/10/01/the-bad-rap-on-the-bailout-bill/>.

5 <https://news.gallup.com/poll/110746/americans-favor-congressional-action-crisis.aspx>.

6 Whereas, according to a Gallup survey, 60% of the public indicated a great deal/quite a lot of confidence in banks in 1979, by the time of the bailout, this figure was slightly over 20%. See <https://news.gallup.com/poll/183749/confidence-banks-low-rising.aspx>.

Figure 2
Distribution of TARP funds

% of total outlay



Source: Author's calculation based on data as of June 2013 from B. Wbel (2013), Troubled Asset Relief Program: Implementation and Status, Congressional Research Service.

concern that the government would let those responsible for the economic downturn off the hook.⁷

The key objective of the Housing and Economic Recovery Act, enacted in July 2008, was to bail out the government-sponsored entities Fannie Mae and Freddie Mac, stabilize the mortgage market and prevent a further drop in home prices. The Emergency Economic Stabilization Act passed a few months later, in October, was broader in its reach. It created the Troubled Asset Relief Program (TARP), authorizing the Treasury to spend \$700 billion⁸ in a financial rescue plan. The rescue plan entailed the purchase of troubled assets held by financial institutions, capital injections to banks, loans to the auto industry, assistance to American International Group (AIG), and provisional funds for various housing programs including the Home Affordable Modification Program. Looking at the distribution of the funds in terms of percentage of the total outlay (Figure 2) gives a good sense of how TARP money was spent across the board.

As the data shows, although the government's response to the crisis involved measures to provide relief to homeowners as well, the reach of these programs ended up being quite limited overall. The actual disbursements to housing programs were only about 2% of the total TARP disbursements. By the end of 2010, approximately ten million houses had been foreclosed, and millions of homeowners were under water with negative equity, (Martin and Niedt, 2015). The government has thus received criti-

7 See Pew Research Center survey: <https://www.people-press.org/2008/09/30/small-plurality-backs-bailout-plan/>.

8 Congress authorized \$700 billion for TARP in October 2008. The Dodd-Frank Act reduced it to \$475 billion. See <https://www.treasury.gov/initiatives/financial-stability/TARP-Programs/Pages/default.aspx>.

cism that it bailed out the failing financial institutions, but did not do nearly enough for homeowners. This is how a senior Treasury official who served as a TARP administrator explains the government's perspective at the time:

The most common question I am asked about housing and the financial crisis is why didn't we do more for home owners? Couldn't we have just taken the 700 billion dollars and instead of focusing on banks, just focus on homeowners? Wouldn't that have solved the crisis? My reaction is, the US economy had a massive heart attack. And why does a heart attack kill the patient? A heart attack kills the patient because it deprives blood to their critical organs. And if you have a heart attack, heaven forbid, you go to the emergency room, the surgeon is not going to operate on all your organs. The surgeon is going to go right for the heart, to stabilize the heart, to get blood flowing to the organs. And that's why the capital programs that we talked about earlier were so focused on getting blood flowing in the US economy again or get credit flowing again. (Kashkari, 2018)

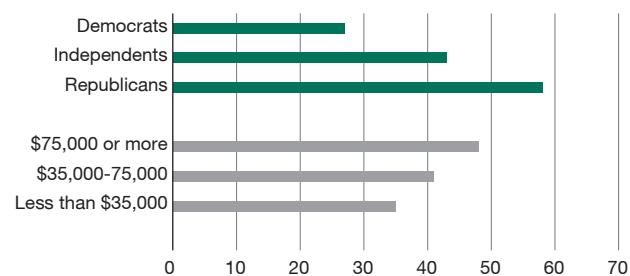
Paulson (2018), while agreeing with the heart attack analogy, deemed the notion that the US government had not helped homeowners inaccurate. He argued that while it was hard to convince Americans of this fact – with the workings of credit markets being so complex and obscure – putting Fannie and Freddie under conservatorship was ultimately for the benefit of the homeowners, since without that measure housing prices would have fallen even further. Geithner, who succeeded Paulson as the Secretary of Treasury in 2009, largely agreed with Paulson's assessment while also conceding that housing programs came later than needed and were not large enough:

The approach we adopted, and we were trying to do the best with the available tools we had, was to try to make sure we brought mortgage rates down. We kept the housing mortgage market open and functioning, so that house prices would start rising again, people wouldn't suffer a massive additional loss of wealth. (2018)

While it is true that the measures that were taken were helpful to some extent, the "trade-off" narrative around relief that was constructed by key policymakers of the time does not reflect the reality. There is no consensus that rushing to the rescue of the source of credit meant that the government's hands were tied to then help the borrowers. This was a political choice, which was likely affected by the public concern over "undeserving" homeowners getting help. This concern was particularly prevalent among high-income groups and Republican voters

Figure 3

Do you favor or oppose the federal government taking steps to help prevent people from losing their homes because they cannot pay their mortgage (%) oppose)



Source: Gallup, <https://news.gallup.com/poll/106114/six-oppose-wall-street-bailouts.aspx>.

(see Figure 3). The biggest opposition was among Tea Party supporters who were critical of government's relief and recovery attempts in general, and help to homeowners in particular.⁹ For policymakers tackling the crisis, therefore, this meant walking a fine line with respect to the "inherent tension between helping lots of people and minimizing waste" (Kashkari, 2018).

Stimulus packages

The politics around the stimulus was also contentious. The government attempted to offset the decrease in private spending with an increase in public spending in order to tackle unemployment and stop further economic decline. The key question was how much to spend.

In the US, public discourse around government spending tends to evoke fears of big government and swelling debt. In a national poll conducted in 2011, for instance, only 38% of those surveyed agreed with the statement that "government spending is critical during an economic downturn, even if the government is already running a deficit because government has the unique ability to stimulate the economy through public investment and infrastructure improvement projects that lower unemployment and encourage consumer spending" (Heartland Monitor, 2011, 5). The majority of those surveyed (56%) instead held that "government spending when the government is already running a deficit is the wrong approach during an economic downturn because it is only a temporary solution that increases long-term debt" (Heartland Monitor, 2011, 5). This might explain, to some extent, why

⁹ See New York Times/CBS News poll: <https://www.peoplepress.org/2008/09/30/small-plurality-backs-bailout-plan/>.

the initial stimulus package signed into law on February 13, 2008 by the Republican President George W. Bush – the Economic Stimulus Act – did not go big on spending. Although the Act found bipartisan support, as a stimulus effort, amounting to only 1% of the GDP, it did not have much impact on a \$14.4 trillion economy. John Maynard Keynes, in an open letter to FDR had warned the President of the perils of not making recovery through government spending a priority: “During a major downturn only large increases in government expenditures can resuscitate the economy” (1933). In 2008, Keynesian economists voiced similar concerns (see, for instance, Krugman, 2008).

On February 17, 2009, President Obama signed into law the American Recovery and Reinvestment Act (ARRA).¹⁰ At \$787 billion, roughly 5.5% of GDP, it was, to quote Christina Romer, then Chair of the Council of Economic Advisors, “the boldest countercyclical fiscal action in American history” (2010). It was also large in comparative terms, as seen in Figure 4. The Act focused on initiatives intended to create jobs and jumpstart the economy, and maintain spending on education and health programs through federal transfers to state governments.

The stimulus package was relatively successful. In 2010, GDP began to grow as unemployment fell. Compared to other financial crises, the length of the Great Recession was shorter and the speed of recovery was faster, as seen in Figures 5 and 6. Despite these relatively favorable figures, many Americans continued to believe that the majority of funds spent under the stimulus bill were “wasted.”¹¹

Reform: The Dodd-Frank Act

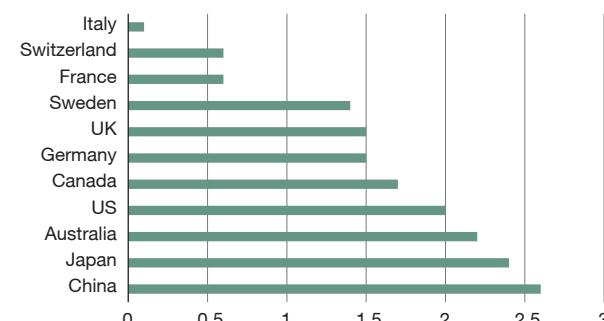
While the relief and recovery measures had to be put in place immediately, the formulation of regulatory reform took more time and deliberation and was not signed into law until July 2010. The crisis had bared the weaknesses of the regulatory architecture within which the economy operated. The period since the early 1980s had been characterized by the financialization of the American economy. The share of financial institution profits in total corporate profits had increased tremendously, non-financial corporations had begun to invest in financial instruments instead of their core businesses to generate

¹⁰ Unlike the Economic Stimulus Act passed earlier, ARRA did not receive bipartisan support.

¹¹ CNN Opinion Research Poll showed that 74% of adults thought that half or more of the funds were wasted. See <http://i2.cdn.turner.com/cnn/2010/images/01/25/rel1g.pdf>. A more recent poll conducted by the Pew Research Center shows that Americans are still skeptical of stimulus spending, with 41% disapproving of the 2009 stimulus package. See <https://www.people-press.org/2012/02/23/auto-bailout-now-backed-stimulus-divisive/>.

**Figure 4
Fiscal stimulus in advanced countries**

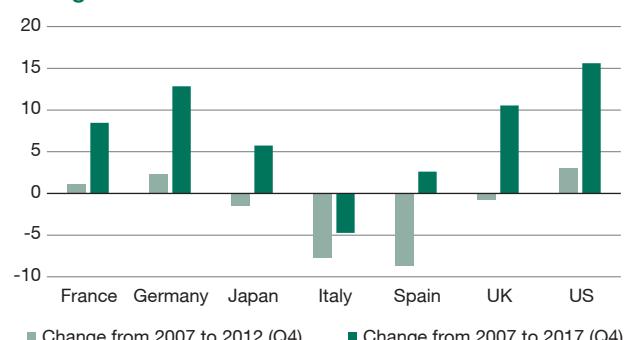
% of GDP



Note: Data captures the magnitude of fiscal stimulus that took effect in 2009 as a share of GDP.

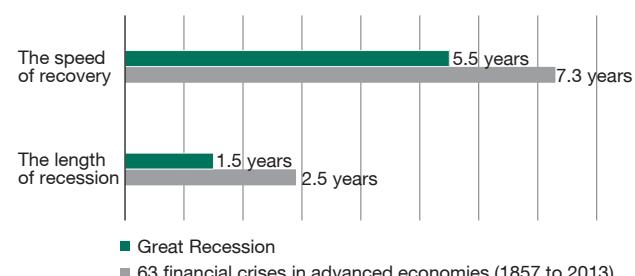
Source: Executive Office of the President of the United States, The Economic Impact of American Recovery and Reinvestment Act.

**Figure 5
Recovery in a comparative perspective: Real GDP change**



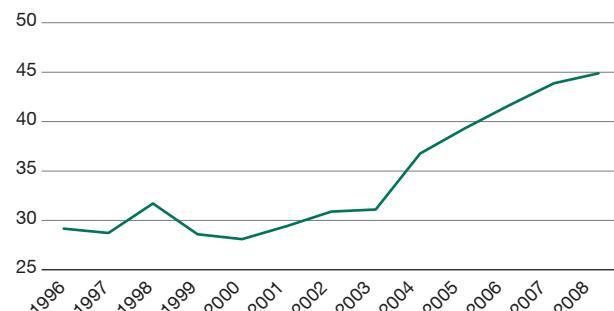
Source: Charting the Financial Crisis: US Strategy and Outcomes, joint report by Hutchins Center on Fiscal and Monetary Policy at Brookings and Yale School of Management Program on Financial Stability.

**Figure 6
Recovery: Great Recession in a historical perspective**



Source: Charting the Financial Crisis: US Strategy and Outcomes, joint report by Hutchins Center on Fiscal and Monetary Policy at Brookings and Yale School of Management Program on Financial Stability.

Figure 7
Concentration: Assets of five largest banks as a share of total commercial banking assets
in %



Source: Federal Reserve Bank of St Louis.

revenue and profits, and households and individuals had become more engaged with and dependent on financial markets as borrowers and investors (Krippner, 2011; Fligstein and Shin, 2007).

The change in economic structure was not simply about the increasing size of finance. There had also been significant qualitative changes *within* finance. Non-bank financial institutions had become more prominent actors, the concentration and connectedness of financial institutions had increased tremendously (Figure 7), and complex instruments of structured finance had proliferated, all fundamentally changing the risk formations within and outside the financial sector.

The state's regulatory approach, however, had not kept up with these developments. The regulatory system had remained bank-centered and left the non-bank institutions largely outside of its focus: it had not monitored or mitigated the risk imposed by large and connected institutions; it had not effectively regulated the instruments of structured finance; nor had it put in place updated rules and regulations that would ensure consumer financial protection despite the fact that individuals and households had become increasingly enmeshed in financial markets as borrowers of credit and investors (through their savings or retirement plans). All in all, there was a regulatory deficit in the government's oversight of financial markets.

The Dodd-Frank Act was the government's attempt to deal with this regulatory deficit. The Act created the Financial Stability Oversight Council (FSOC) to monitor the systemic risk, developed a resolution procedure for large

financial companies, put in place stricter capital requirements and established the Volcker rule, which prohibited commercial banks from engaging in proprietary trading or investing in hedge funds or private equity funds. It also created the Consumer Financial Protection Bureau (CFPB) tasked with ensuring that consumers will be subject to fair and transparent transactions in relation to loans (mortgages, student loans, credit cards to name a few) and other financial products. The Bureau's jurisdiction extended to non-bank entities such as mortgage brokers and payday lenders.

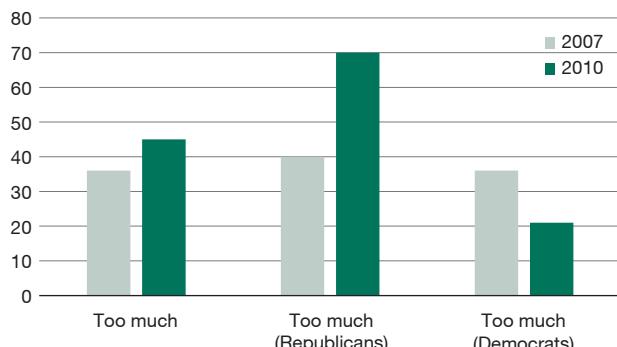
CFPB was the most contested of the proposed measures. Its establishment was noteworthy for at least two reasons. First, with regard to the history of consumer protection in the US, this is the first time the state has come to fully recognize its responsibility in consumer protection in the financial marketplace. In the past, consumer financial protection responsibility was divided among several agencies, none of which regarded this as its primary objective. Second, the establishment of CFPB represented an expansion of the American regulatory state, and as such ran against the small government direction assumed by the American regulatory policy and discourse over the past 30 years (Vogel, 2012). Despite these important regulatory steps, it has been suggested that Dodd-Frank did not go far enough as a reform attempt in terms of the way it addressed the massive downfall and the causes underlying it. This view seems to have two reference points.

The first one has to do with the size of the downfall. This was not, after all, some little economic downturn. It was a massive crisis, which presented a rather large window of opportunity to change the structure and workings of the financial industry.

The other one is rooted in history: the regulatory reform accomplishments of the New Deal Congress. The US Banking Act of 1933, which had been legislated in the throes of another massive economic downfall, had separated commercial banking from investment banking. Dodd-Frank did not break up the big financial behemoths, achieving little at the end with regard to the too-big-to-fail clause. As such, it is argued (Eichengreen, 2016) that its reach ended up being limited to providing an expansion in regulatory oversight – a set of upgraded rules that would govern essentially the same cosmos of bank and non-bank financial institutions.

While polarization in the legislative environment remained instrumental in the dropping of many substantive, far-reaching proposals early on in the Congressional deliberations of the bill, public opinion itself did not seem

Figure 8
Public opinion on regulation of business/industry



Source: Gallup, <https://news.gallup.com/poll/157646/little-appetite-gov-regulation-business.aspx>.

to be in favor of a more radical regulatory overhaul. Despite the financial crisis having bared the weaknesses of the regulatory architecture within which finance operated, from 2007 to 2010 there was an increase in the percentage of the populace that thought there was too much regulation – although, it must be noted, this attitude was clearly divided along party lines (see Figure 8).

The Trump administration

The 2016 presidential election put Donald J. Trump into office, who from the start of his administration, has made the focal point of his policy platform rolling back the regulatory measures put in place in response to the crisis and, more broadly speaking, limiting the regulatory powers of the government. The Economic Growth, Regulatory Relief and Consumer Protection Act that he signed into law on May 24, 2018 did not quite dismantle Dodd-Frank, as some have argued; however, it rolled back some of its key features and loosened the regulatory oversight over financial institutions in several ways. Dodd-Frank had designated banks with more than \$50 billion in assets as systemically important financial institutions and subjected them to higher prudential regulation and capital requirements. The new Act raised the asset threshold for recovery and resolution planning from \$50 billion to \$250 billion, leaving it to Fed's discretion to apply enhanced regulatory standards to financial institutions with assets between \$100 billion and \$250 billion. The new Act also exempted banks and credit unions with less than \$10 billion in assets from the Volcker Rule.

The Trump administration has arguably shrunk the regulatory oversight of FSOC as well. Under Dodd-Frank, FSOC was authorized to determine whether "a nonbank

financial company's material financial distress – or the nature, scope, size, scale, concentration, interconnectedness, or mix of its activities – could pose a threat to U.S. financial stability" (U.S. Department of the Treasury, 2020). Companies designated as systemically important by the Council would be subject to "consolidated supervision by the Federal Reserve and enhanced prudential standards" (U.S. Department of the Treasury, 2020). The Trump Administration moved away from an "institutions-based approach" largely focused on size and connectedness (too big to fail) toward an "activity-based approach," and left it to the primary prudential regulators of those institutions to identify and limit risky activities, essentially defanging FSOC.

The Trump administration also weakened the CFPB. According to a report prepared by the Consumer Federation of America, law enforcement activity at the CFPB has dropped significantly since 2017 (see Table 2). The administration has also challenged the constitutionality of the agency and asked the Supreme Court to limit its independence.

Ten years after the Dodd-Frank Act

The Great Recession revealed the weaknesses of the regulatory architecture within which America's financialized economy had been operating, particularly with respect to systemic risk mitigation and consumer financial protection. It also revealed the weakness of America's social safety net architecture. Millions of Americans lost their jobs, savings and homes, and found the government to be of little recourse to their woes. A decade later, the American economy bears less risk with respect to some of the issues that contributed to the crisis, while it has become more vulnerable in some other ways.

On the one hand, after the regulatory changes made in response to the crisis, banks' capital and liquidity buffers have increased. On the other hand, concentration in the banking sector has not declined, but in fact has slightly increased.¹² Household debt (including mortgage, credit cards, auto loans and student loans) has been increasing since 2013 and is now above the 2008 level. Corporate debt has also been increasing and has reached three-fourths of GDP, which is also higher than it was in 2008. Non-bank financial institutions pose some concerns as well. Several large institutions that were deemed systemically important by the FSOC in the aftermath of the crisis were relieved of that designation, hence enjoying regulatory relief. The weakening of the FSOC is a concern

¹² See <https://fred.stlouisfed.org/series/DDOI06USA156NWDB>, 5-bank asset concentration.

Table 2
Enforcement at Consumer Financial Protection Bureau

Restitution	Cordray	Mulvaney	Kraninger	Directors
Enforcing the equal credit opportunity act				
Number of cases	11	0	0	
Total consumer relief	\$618,726,890	0	0	
Student lending				
Number of cases	15	0	0	
Total consumer relief	\$712,530,184	0	0	
Enforcing fair credit reporting				
Number of cases	24	2	0	
Total consumer relief	\$390,157,992	0	0	
Enforcing mortgage-related cases				
Number of cases	61	2	0	
Total consumer relief	\$2,969,543,550	\$268,869	0	
All cases				
Number of cases	201	11	5	
Total consumer relief	\$11,980,130,720	\$345,094,707	\$12,028,522	

Note: The figure for "all cases" includes categories that are not on this table.

Source: Peterson, 2019.

given that the Council was supposed to watch for and mitigate systemic risk in relation to this sector, whose liquidity level remains lower than that of banks. All of this is all the more concerning given that the prominence of non-bank financial institutions in mortgage markets has increased since the Great Recession.

In sum, the American economy still embodies significant structural vulnerabilities ten years after the end of the Great Recession, which had drastic consequences for the well-being of millions of Americans. There seems to be consensus among political observers that the socio-economic vulnerabilities that the Great Recession brought to fore were instrumental in making room, politically speaking, for populist discourses, and determining the course of the 2016 elections (Judis, 2016).¹³

13 Also see <https://www.gsb.stanford.edu/insights/how-great-recession-influenced-todays-populist-movements>.

From the Great Recession to the Great Lockdown

Presently, the US is heading into the 2020 presidential election facing yet again an economic downturn and uncertainty, this time fueled by a pandemic. The IMF (2020) dubbed the slowdown in economic activity resulting from the public health measures that have been taken to combat the coronavirus – such as quarantines and business closings – the Great Lockdown. Contact-intensive industries have been experiencing a drop in the demand for their products and services. These industries employ about one-third of the American workforce,¹⁴ and therefore it is not surprising that unemployment rose sharply in March and April of 2020. Currently, as of June, the unemployment rate is above 11%, and the four-week moving average of continued unemployment benefit claims is above 20 million.¹⁵ According to the recent projections of the Federal Reserve,¹⁶ the economy is likely to contract by 6.5% by the end of 2020.

It is not surprising that in this juncture, questions pertaining to the government's role in monitoring and managing risks, mitigating socio-economic vulnerabilities and boosting the economy have become salient, once again, subject to electoral calculations, moral considerations and institutional limitations. While the Great Lockdown is fundamentally different from the Great Recession in terms of its nature and causes, it poses similar questions in relation to the government's role in providing relief, helping the economy recover and in monitoring, identifying and mitigating systemic risks.

With respect to relief and recovery, the US government has undertaken a number of steps so far. On March 6, the Coronavirus Preparedness and Response Supplemental Appropriations Act was signed into law. This was followed, on March 18, by the Families First Coronavirus Response Act; on March 27, the CARES Act – the largest stimulus package in US history – and on April 24, Paycheck Protection Program and Health Care Enhancement Act. Together, these governmental interventions provided a number of relief measures including a one-time individual tax rebate, corporate tax relief, expansion of unemployment benefits, small businesses assistance and transfers to state and local governments. On the monetary side, the Federal Reserve has also taken a number of decisive steps to provide liquidity to markets and prevent a credit crisis. Reaching recovery is more

14 See data from Federal Reserve Bank of St Louis, <https://www.stlouisfed.org/on-the-economy/2020/april/impact-social-distancing-ripples-economy>.

15 As of June 6. Please see <https://fred.stlouisfed.org/series/CCSA>.

16 See <https://www.federalreserve.gov/monetarypolicy/fomcpolicy-bl20200610.htm>.

challenging in this case, relative to the Great Recession. Back then, the task at hand was to increase consumer spending and get people back to work, whereas now some sectors of the economy need to remain closed due to public health concerns and cannot be resuscitated with stimulus spending.

As for relief, the limitations of American social welfare policy have once again been laid bare. The one-time \$1200 individual relief checks provided to those eligible are in no way an adequate compensation for the loss of income and benefits that millions of Americans have experienced. When compared with the various employment protection, wage replacement and paid leave programs that are available in European countries, the degree to which American capitalism operates devoid of any substantial safety net becomes obvious.

What is more telling perhaps is the failure of the government to monitor and mitigate systemic risks, for that is what COVID-19 constitutes: a systemic risk. Its spread is due to a multitude of interrelated global causes, its impact is broad and cannot be localized, and combating it requires an integrated and multifaceted approach. The inability of the government to monitor and identify such a large-scale risk to public health, which would inevitably have massive economic consequences, speaks to the shortcomings of the American government as a risk manager, which we had also seen in the context of the Great Recession.

In short, as different as they are, both crises have revealed the limitations of American statecraft. In the aftermath of the Great Recession, those limitations have played a role in the public's turn to anti-establishment politics. This time around, the crisis might inspire a different political response, especially because its toll is evident not only in terms of negative growth rates and rising unemployment, but also in lives lost.

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Will the Future EU-UK Free Trade Agreement Affect Foreign Direct Investment?

This article aims to provide new insight on how Brexit will affect foreign direct investment (FDI) into the UK. By estimating an augmented gravity equation which accounts for the depth of free trade agreements (FTAs) as well as for EU and euro area membership, the article gauges the potential impact that different EU-UK trade scenarios might have on FDI flows and stocks. Results show that under a no-deal scenario, FDI flows from the EU into the UK would plunge by 25.9% - 40.6%, and inward FDI stocks would decrease by 49.2% - 53.9%. However, the depth of the future FTA can mitigate this negative outcome. More generally, the article shows that the FDI costs of leaving the EU would be significantly higher for the euro area countries.

Extensive research has highlighted the benefits from the European Union (EU) and the Economic and Monetary Union in terms of trade and foreign direct investment (FDI). The *acquis communautaire*, common currency and the free movement of goods, services, people and capital appear to have reduced transaction costs and fostered the development of economic activities by multinational enterprises (e.g. Carril-Caccia and Pavlova, 2018; Coeur-dacier et al., 2009; De Sousa and Lochard, 2011; Martínez-San Román et al., 2016; Umber et al., 2014).

There has been a great deal of Euroscepticism in the last few years despite the fact that the EU project seems to have delivered relevant economic benefits to its member states. In the UK, this scepticism resulted in the Brexit vote on 23 June 2016. More than three years later, after significant political convolution and uncertainty, the UK has left the EU. This year, the EU and the UK will negotiate the future trade deal that will condition the future relations between both parties. The economic consequences of Brexit will depend on this deal (Dhingra et al., 2017). While the British government seeks a trade deal similar to the one that the EU signed with Canada (CETA), the EU is after a more comprehensive one (Adler, 2020, March 2).

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Most of the available analysis agrees on the negative consequences that Brexit could have on trade, FDI and welfare (e.g. Bailey et al., 2019; Bruno et al., 2016; Dhingra et al., 2017; Drifford and Karoglou, 2019; Greenaway and Milner, 2019; Mulabdic et al., 2017; Simionescu, 2018). In fact, the uncertainty brought about by the Brexit announcement appears to have already negatively impacted the UK's financial market stability and trade (e.g. Belke et al., 2018; Douch et al., 2018; Korus and Celebi, 2019).

Dhingra et al. (2017) point out that in the hard Brexit scenario, in which no free trade agreement (FTA) is signed and the UK and the EU trade under the World Trade Organization (WTO) rules, British income per capita would plunge by 9.4%. Dhingra et al. (2017) highlight that not only trade but also the potential drop in FDI might be responsible for this outcome. In this case, research highlights the positive effect of FDI on economic growth or productivity in developed countries (e.g. Alfaro et al., 2004; Ashraf et al., 2015).

Theoretically, there are four main channels through which trade may affect inward FDI. First, with horizontal FDI, FDI and bilateral trade are substitutes. Multinational enterprises (MNEs) follow this strategy to serve the foreign market and to avoid trade costs (Horstmann and Markusen, 1987). If this MNEs investment strategy is predominant in the UK, the future new trade barriers between the EU and the UK will foster bilateral FDI.

Second, vertical FDI is positively associated with bilateral trade liberalisation. In this type of investment, MNEs establish production networks across borders that are linked through trade (Hanson, 2005).

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Third, export supporting FDI is also positively moderated by bilateral trade liberalisation. It refers to the investments that seek to enhance the market penetration from exports in a host country (Krautheim, 2013).

Fourth, MNEs may also create export platform subsidiaries in a country with the objective of serving third countries' markets through exports (Ekholm et al., 2007).

Through these FDI strategies, MNEs set subsidiaries to perform specific economic activities and link through trade, and in doing so, configure their global value chains (e.g. Amendolagine et al., 2017; Beugelsdijk et al., 2009; Krugman et al., 1995). If these MNEs' investment strategies are predominant, new barriers to trade brought by Brexit will hamper inward FDI into the UK. In this regard, Bailey et al. (2019) describe the potential negative consequences that Brexit might have on the automotive sector. More generally, Carril-Caccia and Pavlova (2020) show how global value chains participation and the capacity of exporting to (and importing from) a wider number of countries has a positive impact on the capacity of attracting cross-border mergers and acquisitions.

This article presents a study on how the depth of FTAs affects bilateral FDI, a topic rarely considered by previous literature. Indeed, FTAs have been extensively included as a determinant of FDI (e.g. Carril-Caccia and Pavlova, 2020; Garret, 2016; Hyun and Kim, 2010; Jang, 2011; Paniagua and Sapena, 2014), but FTAs are often assumed to be homogeneous by only considering whether a pair of countries have signed one or not. Nevertheless, countries sign FTAs with varying numbers of provisions that cover different policy areas like anti-dumping, competition, tariffs, intellectual property rights or data protection. In this way, the depth of FTAs is determined by their coverage in terms of policy areas.

Based on the relationship between FDI and the depth of bilateral trade integration, this work also extends the literature, which gauges the consequences of Brexit on FDI (e.g. Bruno et al., 2016). In particular, it sheds new light on the potential consequences that Brexit might have on FDI in different EU-UK trade agreements scenarios, and more generally disentangles the effect of leaving the EU for those countries that belong to the euro area (EA) and those that do not. Three different scenarios are considered: WTO rules (no FTA), an agreement similar to that between the EU and the European Free Trade Association (EFTA) and an agreement like the EU-South Korea FTA.¹

¹ Ideally we would like to include in the analysis the CETA-EU agreement, but the signature of this agreement is too recent (2019) to be available in the data used in the present article.

The results are in line with the literature that indicates the complementarity of FDI and trade and adds to the depth of the FTA as a relevant dimension when considering the FDI-FTA relationship. Furthermore, this article illustrates how the future FTA between the EU and the UK may affect bilateral FDI. If no FTA is signed, the UK could face a 25.9% - 40.6% plunge in terms of FDI flows from the remaining EU members. Alternatively, if an FTA like the EU's with South Korea is signed, the drop would be between 13.3% and 22%. In case an agreement is signed like the one between the EU and the EFTA, FDI into the UK would fall by between 4.2% and 7.2%. Estimates for FDI stocks corroborate these findings, showing that in the best-case scenario (i.e. an EFTA-like agreement is signed), EU FDI stock in the UK would decline by 9.2%-10.5%.

Data and methodology

The data sources are the OECD bilateral FDI flow and stock BMD3 and BMD4 data, World Bank's FTA database, World Bank's Development Indicators, and UNC-TAD's International Investment Agreements database. The World Bank's FTA database covers 279 agreements signed by 189 countries between 1958 and 2015. The database includes not only the date of FTA signature but also their content; it provides each agreement coverage in terms of provisions that target distinct policy areas (see Hofmann et al., 2017).

The analysis covers the 68 host and source countries² during the period 1985-2015.³ As proposed by Silva and Tenreyro (2006), we use the Poisson pseudo-maximum likelihood to estimate the following gravity equation:

$$FDI_{ijt} = e^{(\beta_1 GDPsum_{ijt} + \beta_2 diffGDPpc_{ijt} + SIM_{ijt} + \beta_3 BIT_{ijt} + \beta_4 depthFTA_{ijt} + \beta_5 depthFTA_{ijt} \times EU_{jt} + \beta_6 depthFTA_{ijt} \times EUvEA_{jt} + \lambda_j + \lambda_t)} + \varepsilon_{ijt}$$

² The FDI statistics cover the complete bilateral relationships between 36 economies, and the inward (or outward) investment from these 36 countries to (or from) 32 other countries. Countries in the sample include (full bilateral FDI data available for countries in italics): Albania, Argentina, Australia, Austria, Belgium, Bosnia and Herzegovina, Brazil, Bulgaria, Canada, Chile, China, Colombia, Croatia, Cyprus, the Czech Republic, Denmark, Egypt, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, India, Indonesia, Iran, Ireland, Israel, Italy, Japan, Kuwait, Latvia, Lithuania, Luxembourg, Macedonia, Malaysia, Malta, Mexico, the Netherlands, New Zealand, Nigeria, Norway, Pakistan, Peru, the Philippines, Poland, Portugal, Romania, Russia, Saudi Arabia, Serbia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Thailand, Turkey, Ukraine, the United Arab Emirates, the United Kingdom, the United States, Venezuela.

³ In order to be able to cover the period 1985-2015 and the FDI to and from non-OECD countries, the BMD3 and BMD4 inward and outward FDI statistics are combined. Although there are slight differences in the used methodology for measuring investment between both series, during the period they overlap, (BMD3 and BMD4 statistics have a correlation of 0.86).

in which FDI is the investment flow from country i to country j in year t . $GDPsum_{ijt}$ is the combined economic size of the source and host country, $diffGDPpc_{ijt}$ is the difference in GDP per capita between both countries, and SMI_{ijt} represents the economic size similarity between country i and country j in t .⁴ BIT_{ijt} is a dummy variable that takes the value 1 whenever a pair of countries have signed a bilateral investment treaty (BIT). Country pair fixed effects (λ_{ij}) are included in order to avoid the potential endogeneity between bilateral investment and the likelihood of signing an FTA or BIT (Baier et al., 2008; Bergstrand and Egger, 2013). Furthermore, country pair fixed effects account for the multilateral resistance, that is to say, the relative attractiveness of countries to FDI (Anderson and van Wincoop, 2003). The year fixed effects (λ_t) control for the world's macroeconomic trends.

Finally, as in Mulabdic et al. (2017), $depthFTA_{ijt}$ is the number of provisions included in the FTA signed between country i and j in year t divided by the maximum number of provisions of the deepest FTA in our sample. $depthFTA_{ijt}$ is interacted with a dummy variable that takes the value 1 when a country becomes an EU member (EU_{jt}) and by a dummy that represents those countries that become EU members but do not belong to the EA yet ($EUnvEA_{jt}$). The objective of these interactions is respectively to quantify how the depth of the FTA affected the EU member states inward FDI and see whether the impact is different for those that did not adopt the euro. The significance of the sum of coefficients is tested with:

$$t = \frac{(\beta_r + \beta_k)}{\sqrt{\sigma_r^2 + \sigma_k^2 - 2 \times \text{Cov}(\beta_r, \beta_k)}}, r, k = 4, 5, 6.$$

Different potential future FTA scenarios

The EU membership implies signing an FTA consisting of 42 provisions that include not only trade in goods, but also trade in services and dimensions such as intellectual property rights, competition policy and environment or capital movement. Post-Brexit FTA scenarios include EU-UK trade under the WTO rules (no FTA is signed), an agreement similar to the EU-South Korea FTA (which includes 22 provisions) and an agreement like EFTA (which includes 36 provisions). These hypothetical scenarios range from the most benign to the most trade-restrictive future trade relations, with numerous intermediate situations possible from trading under the WTO rules to the EU membership (see for instance Lydgate and Winters, 2018).

⁴ As in Jang (2011).

Table 1
FDI and FTA depth

	FDI flow			FDI stock		
	(1)	(2)	(3)	(4)	(5)	(6)
$GDPsum_{ijt}$ (β_1)	1.392*** (0.17)	1.439*** (0.17)	1.442*** (0.17)	0.928*** (0.19)	1.069*** (0.19)	1.077*** (0.18)
$diffGDPpc_{ijt}$ (β_2)	0.478** (0.19)	0.510*** (0.19)	0.483** (0.20)	0.598*** (0.21)	0.708*** (0.21)	0.702*** (0.21)
SMI_{ijt} (β_3)	0.243 (0.27)	0.254 (0.27)	0.235 (0.27)	0.214 (0.32)	0.224 (0.32)	0.213 (0.31)
BIT_{ijt} (β_4)	0.233 (0.17)	0.275* (0.17)	0.278* (0.17)	0.049 (0.16)	0.140 (0.17)	0.142 (0.17)
$depthFTA_{ijt}$ (β_5)	0.321*** (0.12)	0.061 (0.18)	0.068 (0.18)	0.256** (0.13)	-0.285 (0.18)	-0.282 (0.18)
$depthFTA_{ijt} \times$ EU_{jt} (β_6)		0.460*** (0.18)	0.811*** (0.23)		1.059*** (0.20)	1.225*** (0.30)
$depthFTA_{ijt} \times$ $EUnvEA_{jt}$ (β_7)				-0.579*** (0.22)		-0.265 (0.25)
Fixed effects					λ_{ij}, λ_t	
Observations	50684	50684	50684	44925	44925	44925
R^2	0.501	0.502	0.502	0.789	0.793	0.793

Notes: Robust standard errors in parenthesis. Estimation method: PPML with country pair and year fixed effects. *** p<0.01, ** p<0.05, * p<0.1.

Source: Author's own calculations.

Results: FDI and FTA depth

Table 1 shows the regression result. Columns 1-3 refer to bilateral FDI flows and columns 4-6 refer to stocks. In line with previous research, FDI flows and stocks are positively moderated by the combined economic size from the home and host country ($GDPsum_{ijt}$) and go from capital-abundant to labour-abundant countries. In addition, signing a BIT appears to boost bilateral FDI flows, but is insignificant in the case of stocks.⁵ Furthermore, in both cases, economic size similarity (SMI_{ijt}) is insignificant.

Column 1 shows that the depth of FTAs has an overall positive impact on bilateral FDI flows. According to the estimate of β_4 , the deepest signed FTA in our sample (the EU with 42 provisions) would have increased bilateral FDI flows by 38%.⁶ Alternatively, a shallower FTA like the one between the EU and South Korea, which has 22 provisions, results in only a 20% higher FDI.

⁵ The resulting lack of significance of BIT is not surprising. The literature highlights that the sign and significance associated with BIT is prone to depends on the sector of investment, the level of development of the signing countries or the existing intensity of bilateral FDI (e.g. Berger et al., 2011; Colen et al., 2011; Paniagua et al., 2015).

⁶ The effect from the depth of FTA are calculated by $e^{\beta_4 \times \frac{\text{No. of provisions in the FTA}}{42} - 1}$, with 42 being the number of provisions of the deepest FTA in our sample.

Table 2
FDI flows scenarios

Scenarios	No provi-sions	Leaving the EU	Leaving the EU if the country is non-EA	Leaving the EU if the country is EA
EFTA	36	-7.2%	-4.2%	-11.8%
South Korea	22	-22.0%	-13.3%	-34.2%
WTO (no FTA)	0	-40.6%	-25.9%	-58.5%

Notes: The shock of the EFTA and South Korea scenarios are calculated following Mulabdic et al. (2017). For example, on average for the EU, $EFTA = e^{((0.061+0.460) \times 36/42)/e}((0.061+0.460) \times 42/42) - 1 = -0.072$.

Source: Author's own calculations based on estimates in columns 2 and 3 from Table 1.

In column 2, the positive significance of β_6 suggests that in comparison with the rest of the world, the depth of FTAs is particularly relevant in explaining FDI into the EU. According to this estimate, joining the EU has increased FDI flows from its member states by 68% ($e^{\hat{\beta}_5 + \hat{\beta}_6} - 1$).

In line with the literature that highlights the benefits from the euro (Coeurdacier et al., 2009; De Sousa and Lochard, 2011), β_7 from $depthFTA_{jt} \times EUnvEA_{jt}$ is significant and negative. This indicates that the gains on FDI from the depth of the FTA are lower for those countries that have not adopted the euro yet. Accordingly, euro area member countries have seen an increase in FDI flows from other member states of 141% ($e^{\hat{\beta}_5 + \hat{\beta}_6} - 1$), while the figure for those not in the euro area is 35% ($e^{\hat{\beta}_5 + \hat{\beta}_6 + \hat{\beta}_7} - 1$).

Estimates of the depth of FTAs on FDI stocks are in line with the findings for FDI flows. The FDI stock estimates represent the long-term effects of FTAs. Overall, the EU membership increased the FDI stock among its members by 116.8%. The increase amounts to 156.8% for countries that adopted the euro and 97% for those that did not.

The consequences of leaving the EU

Based on the estimates from columns 2 and 3, for FDI flows, Table 2 approximates the consequences of leaving the EU under different FTA scenarios. On average, under a no-FTA scenario, a country that leaves the EU could expect a 40% drop in FDI flows from the remaining members, the fall being higher if it adopted the euro (58%) than if it did not (26%).⁷

⁷ In line with Bruno et al. (2016), it is assumed that leaving the EU would have the same impact as joining it.

Table 3
FDI stocks scenarios

Scenarios	No provi-sions	Leaving the EU	Leaving the EU if the country is non-EA	Leaving the EU if the country is EA
EFTA	36	-10.5%	-9.2%	-12.6%
South Korea	22	-30.8%	-27.6%	-36.2%
WTO (no FTA)	0	-53.9%	-49.2%	-61.1%

Notes: The shock of the EFTA and South Korea scenarios are calculated following Mulabdic et al. (2017). For example, on average for the EU, $EFTA = e^{((-0.285+1.059) \times 36/42)/e}((-0.285+1.059) \times 42/42) - 1 = -0.105$.

Source: Author's own calculations based on estimates in columns 5 and 6 from Table 1.

It is likely that the impact of Brexit on FDI into the UK will be closer to the average expected impact of those countries that never adopted the euro. Nonetheless, the UK has been an EU member for 40 years and it is one of the world's main FDI stockholders. Thus, the average impact of leaving the EU is considered to be the upper bound.

The negative impact of Brexit on FDI flows could be significantly lower if an FTA is signed. If an agreement is reached like the one between EFTA and the EU, the drop would be of only 4% - 7%. Instead, if a shallower FTA is signed, like the one between the EU and South Korea, the decrease in FDI would be between 13% and 22%.

Table 3 reports the different scenarios for the case of FDI stocks. Leaving the EU will have sizable effects on the stock of FDI from the remaining member states in the UK. Even if the future EU-UK trade agreement is EFTA-like, the investment stock from the remaining states is likely to fall by between 9.2% and 10.5%. If the WTO scenario is reached, the FDI stock in the UK from the remaining EU members is likely to be reduced by half.

Conclusions

Today, the future of the EU-UK relations is uncertain. The EU hopes to sign a more comprehensive FTA than the one that the British government seeks, and a no-deal scenario, in which both parties trade under WTO rules, is not fully unlikely. This article quantifies the consequences that different EU-UK FTA agreements could have on bilateral FDI.

Results show that there is a complementary relationship between bilateral FDI and trade liberalisation. Consequently, findings suggest that the new trade barriers be-

tween the EU and the UK will reduce the EU's FDI in the UK. This negative effect may be caused by the disruption that Brexit will cause on MNEs' existing global value chains and their decision to set new ones.

The depth of the future FTA can significantly moderate the negative shock of Brexit on FDI. In the most benign scenario, the UK would be facing between a 4.2% and 7.2% drop in FDI flows from the remaining members. If the UK leaves the EU and no FTA is signed, the EU's FDI into the UK would significantly drop. In the long run, the UK's inward FDI stock from the EU member states is likely to reduce by half. Given that EU member states' FDI stock in the UK is currently nearly 45% of the total inward FDI stock in the country, this would translate into the total FDI stock in the UK plunging by 22.5%.

More generally, this work highlights the relevance of accounting for the depth of FTA for explaining FDI. According to our results, signing a deep FTA may have sizable benefits on a country's inward FDI. But this analysis is only a first step. Future studies should identify the relevance of the different provisions that an FTA might have when explaining FDI.

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Early Care and Education: Necessary Infrastructure for Economic Recovery

The coronavirus pandemic has brought into bold relief the essential nature of care work for families and the economy. As feminist economists have long argued, care jobs that in the U.S. are done by predominantly female and disproportionately Black, Latinx and immigrant workers are the backbone that sustains our communities and undergirds our economic prowess. COVID-19 has revealed wide racial, ethnic and class disparities in access to health and other care services that can no longer be ignored. Americans cannot deny the low pay and unsafe working conditions facing workers we now salute as heroes. In the U.S., the reckoning with our history demanded by the Black Lives Matter movement means we cannot pretend we do not see the origins of these inequities in slavery. Enslaved Black women were made to care for their owners' homes and family members, including their white children.

After slavery ended, Black women had few employment options and continued to do domestic and care work. The Depression-era law that established minimum wage and other worker protections excluded occupations that employed large numbers of Black workers, including those doing child care. The jobs were viewed as requiring no special expertise and were low paid. Later, when the care of young children moved from the home to more formal settings, and as Black women were joined by immigrant care workers, slavery-era attitudes toward this work and the women who perform it persisted.

Child care centers and family child care homes are among the organizations that have suffered the greatest revenue losses as COVID-19 shut down businesses and halted much economic activity. The pandemic led to the widespread closings of facilities that care for young children. A survey from the National Association for the Education of Young Children conducted during the first week of April found that nearly half of these facilities were completely closed. The Bureau of Labor Statistics reported a decline in employment in child daycare services from 1.02 million workers in March 2019 to 688,000 in April 2020 before recovering somewhat to 765,000 in June, a 25% decline from its pre-pandemic level. Early evidence suggests that the stay-at-home orders mainly affected employment in for-profit and nonprofit facilities where care is paid for by parents, with subsidies for very low-income households. Government-sponsored programs were not affected. The situation may be even more dire. There are 900,000 grandparents, family members and nannies who provide informal care that may not be able to continue due to COVID-19.

A sharp decline in child care slots in a system that was already inadequate threatens the return of millions of workers, mainly women. In December 2019, women made up more than half the workforce; now, for the first time in a recession, women have lost jobs at a more rapid rate than men. Their return to employment is essential if the U.S. economy is to recover from the pandemic. Public financing to restore the pre-pandemic level of childcare services is the first step in assuring that all workers – including the nearly two-thirds of mothers with a child at home under the age of six who were in the labor force in 2019 – can return to work.

Economists Rebecca Ullrich and Aaron Sojourner have estimated the costs of maintaining existing formal child care infrastructure during the pandemic. Funding facilities that closed would cost \$3.9 billion per month. The monthly cost to support child care providers who remained open is \$6.3 billion, a total of nearly \$10 billion monthly or \$50 billion for five months. The \$2 trillion government bailout in March provided \$500 billion for industry, including \$46 billion earmarked

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for airlines. The child care industry, which requested \$50 billion, was allocated just \$3.5 billion. On July 16, Senate Democrats introduced a bill to reprogram \$200 billion of still unspent bailout funds to meet demands for economic justice, with \$50 billion to stabilize child care providers.

Investment in infrastructure serves as both economic stimulus in the short run and a boost to productivity growth in the long run. Infrastructure investment is identified broadly with investment in physical structures – roads, bridges, airports, waste management facilities and so on. But investment in social infrastructure shares many of the characteristics that make physical infrastructure valuable. It is job creating, job enabling and provides a solid foundation for the subsequent success of children and their future economic contributions.

A recent study by Jerome De Henau and Susan Himmelweit examined the *job creating* potential of investing in care infrastructure. The researchers found that investments in the care of young children and in long-term care of the elderly created far more jobs than investing in construction. This is due to the fact that care industries are much more labor intensive than construction, which makes far greater use of capital goods to produce output. Of course, care jobs are more likely to be part-time than construction jobs and to pay much lower wages. The researchers accounted for that by considering a situation in which the care jobs were good jobs, paying much higher wages than is currently the case. In Sweden, wages of child care and long-term care workers are 87% of construction worker wages; in the U.S., reflecting the historical origins of this work, they are just 44%. By comparison, in Germany they are 67% of construction worker wages, in Italy they are 70% and in Spain, 72%. Researchers carried out their analysis assuming that wages of care workers in the U.S. were 87% of U.S. construction worker wages. They found that a similar amount of spending in the construction and care industries would lead to an increase in employment that was 40% higher in care than in construction. For every 100 jobs created by such spending on construction, 140 jobs were created by spending on care. Most of the increased employment occurs directly in care work. But the spending also increases employment indirectly in industries that supply the care sector with goods and services and in consumer goods industries as these workers spend their incomes on consumption. Thus, job creation per dollar spent is higher in care than in construction, making it a more effective stimulus.

An expanded system of early care and education is also *job enabling*. By providing increased access to good quality child care staffed by workers who are paid fairly, more mothers of young children will be able to seek and hold jobs. Currently, 64% of mothers with children under the age of six are in paid employment. Among women with children ages 6 to 17, 74% are employed – with the higher employment rate due in large measure to access to public education for children six and older. If an expanded early childhood education system leads to an increase in the share of employed mothers of young children from 64% to 70%, this would add a million workers to the workforce. Some mothers who work part-time because they cannot arrange care of young children or after-school care for older children could increase their hours to full time. If half did this, it would have the same effect as adding another 1.2 million women to the labor force. An increase of 2.2 million workers would result in an annual increase of about \$27.4 billion in real GDP.

Finally, investment in quality education for children 0 to 5 years of age *yields a significant positive rate of return*. This is especially true of high-quality programs that enroll young children from economically disadvantaged families. Research (most notably, the evidence from the Perry Preschool Project) has found that every dollar invested yields \$7 to \$12 back to society.

In a welcome move, on July 21, presidential candidate Joe Biden released his early childhood education plan. Highlights: it provides care for children 0 to 5 years of age with pre-kindergarten education for 3- and 4-year-olds, caps parents' fees at 7% of income, increases subsidies for low-income families; raises pay and access to training for workers, builds new facilities, and creates 1.5 million new early childhood education jobs.