

Intereconomics

Review of European Economic Policy

FORUM

Up to the Task? Post-Pandemic European Social Policy

Anton Hemerijck, Erik Canton, Caroline de la Porte, Trine Larsen, Holger Bonin

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The Art of Policy Advising

The countries of the European Union and indeed most developed countries are facing a major transformation resulting from the need for decarbonisation, as well as from the effects of demographic change and digitalisation. In addition to this, most countries have been disrupted by crises such as the coronavirus pandemic, the Russian war of aggression against Ukraine and the resulting energy price crisis. These framework conditions have recently presented political decision-makers with extraordinary challenges.

Politicians rely on the advice of scientific experts, whose counsel is central to shaping their opinions and supporting their policy decisions. Since the aforementioned challenges affect all areas of social life, policy decisions must be underpinned by correspondingly diverse expertise from wide-ranging scientific fields. Politicians are left with the difficult task of reconciling the varying views and insights and extracting the most appropriate policy decisions from them. Scientific analysis for the purpose of policy advice must be, above all, based on scientific standards and ethical principles and not be driven by personal opinion. The numerous knowledge transfer channels through which scientific experts can influence policymakers and their political decisions include hearings in committees, expert reports, contributions to journals (like *Intereconomics*), interviews, conferences, personal discussions, television appearances or contributions on social media.

In this context, the importance of evidence-based policy advice has long been recognised. Furthermore, counterfactual analyses are of great importance, as they can illustrate what would happen if politicians do not implement a certain political reform. In addition to the appropriate methodological approach, data availability is essential to enabling academics to provide the best possible advice (Zimmermann, 2014). But the availability of data varies considerably across topics and countries. While some countries offer a rich selection of data for scientific purposes (e.g. the UK, Denmark or Austria), others, such as Germany, are reluctant to do so. Data availability also depends on the research area. Therefore, collecting and preparing the relevant data can sometimes be difficult and time-consuming. In some cases, there may be no data available at all.

The establishment of research data centres is a positive development that can significantly facilitate work with data. However, access to these research data centres is still limited in some countries. The European Union is very active in the area of data sharing and availability and has recently passed several laws to facilitate and expand data use. These include the Data Governance Act and the European Data Act. In particular, the Data Governance Act offers the opportunity to revise existing structures, thereby making the data accessible to science, business and society (Riphahn, 2023).

Evidence-based policy advice is not solely characterised by empirical methods and large amounts of data. Its purpose is to demonstrate how conclusions are backed by empirical evidence: political advisors deal openly with the data used, the assumptions made as well as any form of uncertainty related to this, and explain these points transparently (Schmidt, 2015). Although König et al. (2010) show that the clearer the recommendations of experts to policymakers are, the greater their influence is on the implementation of political reforms, advice has to find a balance between clarity and assessment of relevant uncertainty.

A policy measure can also be evaluated *ex post* in an evidence-based manner. For this purpose, the objectives of a policy initiative have to be defined, indicators for the achievement of

the objectives have to be set and the impacts of the measures have to be monitored. Finally, the policy measures can be evaluated and adjusted – or cancelled accordingly. Evidence-based policy is like a continuous learning exercise in which scientific analyses accompany and support the policy process. One example is the evaluation of the G20 financial market reforms after the global financial crisis. In 2017, the Financial Stability Board established a framework for *ex post* evaluation and subsequently conducted evaluation projects (Deutsche Bundesbank, 2018). In the UK and the Netherlands, evidence-based policy evaluation already plays an important role. In other countries, such as Germany, it still needs to be implemented to a greater extent in the political decision-making process (Buch et al., 2018).

Overall, the framework conditions on both sides of the counselling process make policy advice a complicated endeavour. Political decision-makers are forced to find compromises with representatives of opposing parties; therefore, in order to push a sensible measure through, policymakers may have to accept that less sensible regulations will also be introduced. Often, the effects of their decisions are difficult to assess. Furthermore, the political agenda increasingly includes solutions to problems that offer only short-term success. Politicians are always focussed on the continuous election cycle and securing their own position. Policy measures often need to be implemented as quickly as possible, making detailed consultation and subsequent evaluation difficult. Finally, lobby groups strongly influence political decisions by pushing for the legislation that they favour.

Economists, on the other hand, with any given economic policy problem, attempt to prove causalities with the data. The results depend on the data availability, the assumptions made and the methods used, and can vary greatly. Basically, it is very unlikely that clear statements will emerge. Therefore, it is not surprising that complaints are heard from both sides in the counselling process. Economists often complain that policymakers do not accept their advice or that their proposals are even rejected. Sometimes experts will withdraw from the advisory process in frustration. Politicians are also often unsatisfied with the advice they receive from economists. They may complain that economists' statements are too ambiguous or criticise unambiguous statements for not being sufficiently differentiated. In addition, economic models are criticised for being too distant from reality, so that no clear policy recommendations can be made based on their results. The legal framework and requirements also play an important role in determining to what extent and in what way policy measures can actually be implemented. Scientific advisors are obliged to familiarise themselves with these legal frameworks prior to making recommendations.

Policy advice from academics is very important and should always be a central component in the policymaking process. However, successful policy advice depends on appropriate framework conditions: data availability and access, independence and scientific excellence of the advisors as well as the willingness of policymakers and advisors to engage in dialogue.

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Up to the Task? Post-Pandemic European Social Policy

Having had little time to absorb the economic and social shock of the COVID-19 pandemic, the European Union is confronted with staggering increases in the cost of living. While household burdens vary significantly across and within countries, most European countries are struggling to cushion the blow of rising prices on low-income households and assist those that are at risk of poverty. But are current social policies up to this task? What can we learn from European countries that supposedly get it right? Can governments avoid shifting to a welfare state that is focused on here-and-now redistribution rather than social investment? This Forum examines current examples and offers concrete lessons to shape future policy decisions.

Towards a European Union of Social Investment Welfare States

Anton Hemerijck, European University Institute, San Domenico di Fiesole, Italy.

A Social Contract for the New Growth Agenda: The Role of Trust

Erik Canton, European Commission, Brussels, Belgium.

The Nordic Model: Capable of Responding to the Social Side of Crises and Sustaining Social Investment?

Caroline de la Porte, Copenhagen Business School, Denmark.

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Social Investment in Immigrants: Why and How?

Holger Bonin, Institute for Advanced Studies (IHS), Vienna, Austria; and Institute of Labor Economics (IZA), Bonn, Germany.

Anton Hemerijck*

Towards a European Union of Social Investment Welfare States

Looking back on the long decade of the Great Recession and the COVID-19 health shock, it is undeniable that far from crowding out scarce resources, well-funded and active welfare states are a *sine qua non* to the resilience of liberal democracies, knowledge economies and ageing societies. Since the Russian invasion of Ukraine, the EU is confronted with a cost-of-living crisis that places a heavy burden on low-income households. There is much uncertainty, about the pace of climate change, breakthroughs in artificial intelligence and their impact on jobs, and geopolitical strife between the US and China. Yet throughout, it is imperative not to forget about the “known knowns” of adverse demography and increasingly tight labour markets. These predicaments call for generous welfare provisions that both protect income and foster employment. Drawing on four chronologically ordered lessons from the recent past, I warn against juxtaposing here-and-now social protection versus future-oriented social investment. The former reinforces the latter, and vice versa. I conclude by making a modest proposal for the EU polity to upgrade the carrying capacity of an effective welfare state in turbulent times.

Lessons from the recent past

Lesson one: Inclusive buffers are indispensable

In times of turbulence and transformation, policymakers and academics are often confronted with the uncomfortable truth that past theories no longer pertain. This is not to be taken lightly, because the hardest part of any learning process is the unlearning of old beliefs. In her address to the World Economic Forum in Davos on 24 January

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2013, then German Chancellor Angela Merkel dramatised Europe’s predicament vis-à-vis the Great Recession by reminding everyone that the continent “represents 7% of the world’s population, 25% of the world’s GDP and 50% of the world’s social spending”, implying that in an era of intensified global competition such largesse was unsustainable. As costly bank bailouts drained the public purse, she inferred that fiscal consolidation had to gain primacy in tackling the aftershocks of the global financial crisis, requiring across-the-board cuts in welfare benefits and social services.

Merkel’s critique was nothing new. The economic and monetary union (EMU) fiscal rules restricting public deficit below 3%, and debt below 60% of GDP, were enshrined in the Stability and Growth Pact and underwritten in the no-bailout clause (European Union, 1992). The thinking behind the fiscal limits on public spending was premised on the idea that they were key to keeping “wasteful” welfare states in check. Since the stagflation crisis of the 1970s and 1980s, generous welfare provision was believed to crowd out private initiative and to set the scene for stagnant growth, high levels of unemployment and permanent wage inflation (Blanchard and Summers, 1987).

Looking back on the long decade since the global financial crisis, it is undeniable that many of Europe’s most generous and inclusive welfare states are also among the most competitive economies in the world, including Germany, which under Merkel, preserved social spending while ratcheting up social services for working families with children (Hemerijck and Huguenot-Noel, 2022). What made the Great Recession a “recession”, and not a “depression” as in the 1930s, was that it was not allowed to persist. Policymakers swiftly launched counter-cyclical monetary and fiscal policies. Compared to the United States, European policymakers were slow to recognise the severity of the credit crunch (Tooze, 2018). On the other hand, many EU member states presided over far more generous automatic stabilisers in the form of unemployment insurance and minimum income protection transfers, absorbing close to 50% of the unemployment shock, compared to the United States, where figure was just over 30% (Hemerijck and Matsaganis, 2023). In hindsight, Europe’s comprehensive and expensive welfare states, including Finland, France, the Netherlands and Sweden, buffered the Great Recession (and the eurozone crisis) the best. For these countries, income-support mechanisms

Figure 1
Social protection spending vs poverty and competitiveness



Source: Own calculations based on Eurostat and World Bank.

created for demand-deficient recessions with high unemployment really did kick in: as earnings fell, social benefits were there to mitigate poverty and cushion the macroeconomy. On the other hand, the countries hardest hit by the Great Recession (Greece, Ireland, Italy, Portugal and Spain) retrenched social spending pro-cyclically – more in health and education than in pensions – as the economy contracted and unemployment grew (Plavgo and Hemerijck, 2021). These member states were also more constrained by the fiscal rulebook of the “incomplete” single market and currency union, to which I return below.

Overall, my first lesson is that comprehensive and inclusive social safety nets proved their worth, precisely as John Maynard Keynes (1936) and William Beveridge (1944) had anticipated in the 1930s and 1940s. As Figure 1 indicates, high spending on unemployment insurance and social assistance in 2007-2012 was strongly correlated not only with lower levels of poverty (which is unsurprising), but also with higher levels of competitiveness (which to some might seem counterintuitive).

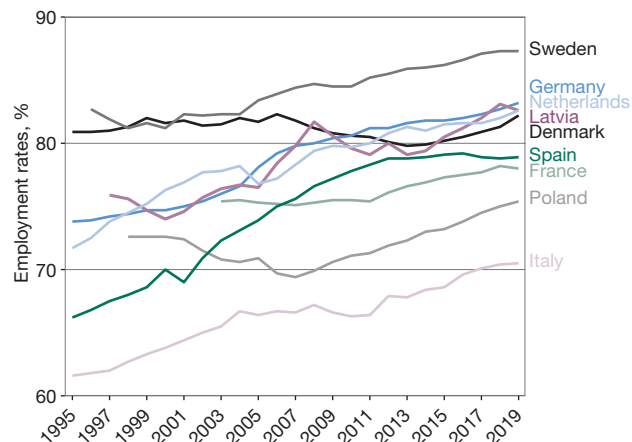
These observations beg the question why Merkel, like the original architects of the EMU, failed to see the relevance of income buffers and automatic stabilisation. My hunch is that, since the 1980s, policymakers, but also many academics, had bought into the narrative of fail-safe economic internationalisation and European integration, at the expense of seriously examining looming policy vulnerabilities and institutional weaknesses in EU market making. With the passing of time, the important lessons of the 1930s

Great Depression were unlearned and/or forgotten, and the welfare state came to be narrowly defined in terms of redistributive economics and politics. This intellectual turnaround began in 1975 with Arthur Okun’s idea of a “big trade-off” between equity and efficiency, arguing that the pursuit of lower inequality could only be achieved at the expense of lower economic performance. Political scientists, on the whole agnostic on the equity-efficiency trade-off, have, since the 1990s, come to rely on assumptions of zero-sum welfare politics under fiscal conditions of “permanent austerity” (Pierson, 2001). Strikingly, this emphasis on distributive economics and politics differs significantly from the productive and problem-solving understanding of welfare provision held by the post-war social engineers and political thinkers. For Beveridge and Keynes, the modern welfare state held out a promise of full employment (admittedly only for men), comprehensive social safety nets, and universal access to good quality health care and educational opportunities. Over the past decade, in a return to that older way of thinking about the welfare state, the latter function of “capacitation” through social investment, promising advances in both social cohesion and economic dynamism, has gained greater prominence in Europe’s knowledge economies and ageing societies.

Lesson two: Social investment is key

The evidence shows that what really matters is not the *level* of social spending but its *composition* and *efficacy*. This is where I would like to raise a second cheer in support of social investment. Beyond shock absorption in a

Figure 2
Full-time equivalent employment rates, 1995-2019



Source: OECD.

crisis, when it comes to bouncing back, the active welfare states of northern Europe did much better in terms of lower unemployment and higher employment than their more passive and fragmented southern counterparts. Not suffering from an austerity panic attack, it was the countries like Denmark and the Netherlands, with their strong dual-earner family services, that were able to reinforce high levels of employment in hard times, as shown in Figure 2.

In the new millennium, the notion of “social investment” gained purchase as a policy compass for welfare state recalibration. Today, international organisations, from the European Union and the Organisation for Economic Cooperation and Development (OECD) to the World Bank, associate social investment reform with strategies of “inclusive and sustainable growth” (European Commission, 2013; OECD, 2015, 2018). The objective of social investment-oriented policies is to enhance individuals’ opportunities and capabilities to address *ex ante* social risks typical of post-industrial economies, while ensuring the high levels of (quality) employment necessary to sustain the “carrying capacity” of the welfare state. Early childhood education and care, vocational training over the life course, active labour market policies, work-life balance policies such as (paid) parental leave and long-term care – all these policies embrace and transcend the compensatory logic of post-war social security. For a better understanding of the social investment logic, we need to adopt a life-course perspective. Across the life course, there are moments of transition that can potentially cause (cumulative) disadvantage. In an attempt to overcome the

unwarranted opposition between passive, *ex post* compensatory social policies and active, *ex ante* capacitating social policies, I have developed a conception of the welfare state comprising three key functions: first, fostering lifelong development of human capital “stock”; second, easing the “flow” of family life course and labour market transitions; and third, sustaining inclusive social protection “buffers”. Based on the available evidence, it is possible to postulate a life-course multiplier mechanism, whereby social investment returns reaped over the life course generate a positive cycle of well-being returns, in terms of employment opportunities and gender equality, with positive results for intra- and intergenerational poverty mitigation (see Figure 3) (Hemerijck et al., 2023).

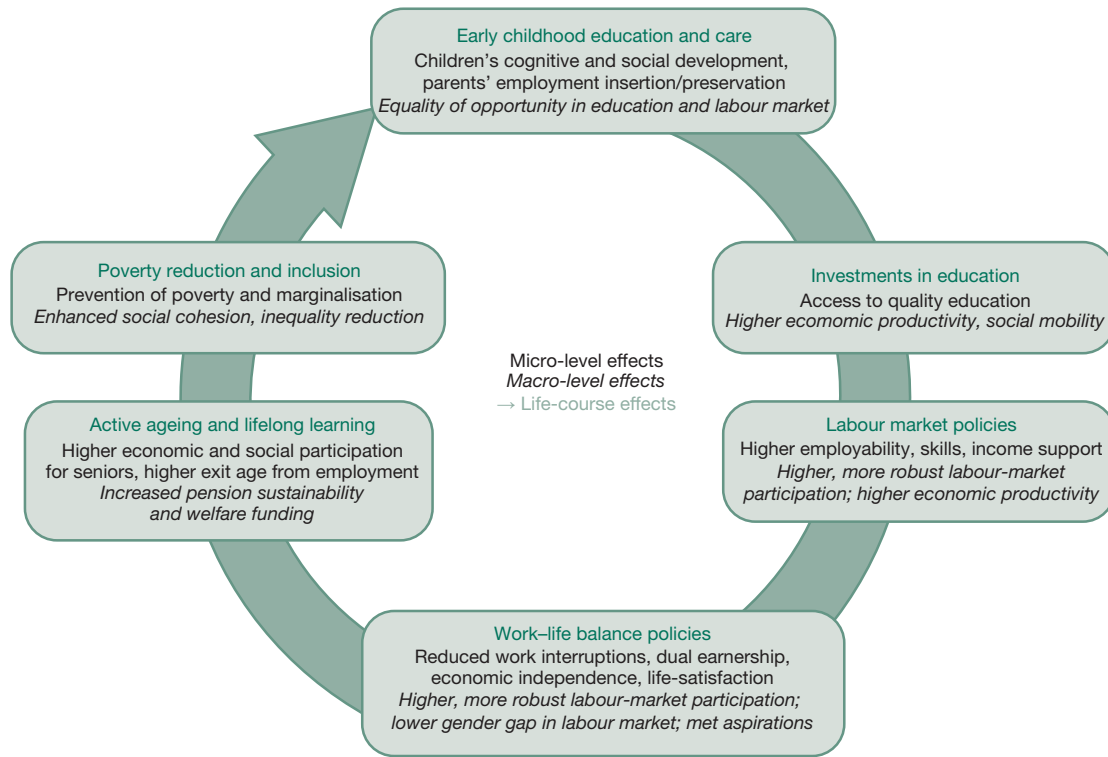
The social investment multiplier features prominently in the recent report by the High-Level Group on the future of social protection and the welfare state, of which I was a member (European Commission, 2023). At the micro level of individuals and households, this multiplier suggests how social investments, from early childhood on, improve material household well-being (employment and income) and help mitigate social risks later in life through opportunities for skills acquisition and the easing of (gendered) labour-market transitions. At the macro level, the multiplier suggests cumulative societal benefits, ranging from improved productivity, higher employment and reduced gender gaps to lower poverty, longer careers and later retirement, all of which are crucial to economic growth and the fiscal sustainability of the welfare state in knowledge economies and ageing societies. The fundamental lesson is that social investment welfare provision potentially contributes to achieving a “double dividend” of greater and more gender-balanced employment and productivity gains, able to sustain fair and adequate social protection. This indeed is worthy of a second cheer for the active welfare state. Good quality and affordable childcare make it attractive for young couples to have children, while active labour market policies, lifelong learning and public health policies enable workers to pursue longer careers.

Lesson three: A mature currency union to break the spell of unemployment

Despite the growing evidence on the efficacy of social investment, up to the mid-2010s fiscal austerity carried the day. The eurozone debt and currency crisis laid bare the shortcomings of the architecture of the internal market and monetary union: without a lender of last resort and/or fiscal facility, it proved difficult to keep the eurozone together (De Grauwe, 2011). The Great Recession interrupted the convergence among eurozone countries – both nominal (interest, inflation and exchange rates) and real (per capita GDP growth and unemployment) – and

Figure 3

The social investment life-course multiplier at a micro and macro level



Source: Hemerijck et al., (2023).

hindered the steady catch-up in employment, wages and economic performance of the new member states in Central and Eastern Europe.

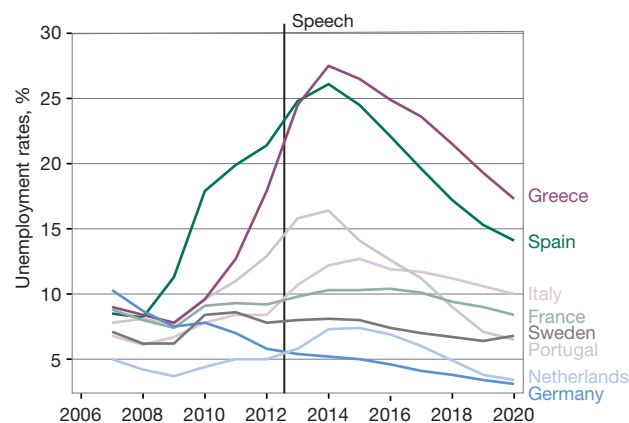
The original theory of the currency union assumed that the European Central Bank's mandate for price stability, together with fiscal discipline enforced by the Stability and Growth Pact, would raise pressures on the member states for structural reform. After the Mediterranean countries had secured entry into the EMU, however, the incentive to reform waned as public borrowing became excessively cheap. Paradoxically, the euro acted as a reform tranquiliser reducing, rather than reinforcing, pressures to balance the books and make welfare provision more inclusive and capacitating. Moreover, the Brussels-Frankfurt obsession with *public* budgetary discipline caused eurozone policymakers in Ireland and Spain (and the Netherlands) to ignore the destabilising effects of accumulating *private* sector debt (Hemerijck, 2013).

By the summer of 2012, as contagion spread from Greece to the already weakened southern periphery of the eurozone, Mario Draghi, then President of the ECB, broke the spell with his "whatever it takes" vow to fight rising spreads and deflation. Nevertheless, the introduction of

quantitative easing could not fully compensate for fiscal austerity. By the spring of 2018, Draghi admitted that the monetary union remained incomplete (Draghi, 2018). He felt that the eurozone needed an additional fiscal instrument to maintain macroeconomic stability during large shocks, without overburdening monetary policy. Draghi conceded that such a fiscal layer for macro-stabilisation would be difficult to design consistent with the Treaty, but eventually an instrument of budgetary solidarity would have to play its part in delivering financial stability and economic convergence across the eurozone.

Draghi's pledge to do whatever it takes to save the euro resulted in a more benign and stable macroeconomic environment, and a fall in unemployment, as observed in Figure 4. This allowed EMU member states to expand the policy space to more capacity-building and solidaristic reforms. In the troubled economies of Greece and Italy, national minimum income schemes were introduced for the first time ever. Germany, and to some extent France and the Netherlands as well, stepped up efforts to integrate hitherto excluded vulnerable groups within their social protection systems (Hemerijck and Plavgo, 2021). In addition, family services were extended in many more countries.

Figure 4
Unemployment in the wake of Mario Draghi's
“whatever it takes” speech



Source: Eurostat.

Lesson four: EU fiscal solidarity to broker social investment reform

By the second half of the 2010s, it became obvious that the original austerity reflex was both economically flawed and politically untenable. László Andor, the Social Affairs Commissioner in the second Barroso Commission, was the first to reopen the window for a European Union social investment strategy as a promising, evidence-based, corrective path (European Commission, 2023). However, mere lip service to social investment, in combination with fiscal rectitude, proved to be an incoherent mix. Social investment reform remained a privilege only for countries with deep fiscal pockets. Barring social investments where they were needed the most, moreover, did little to counter economic divergence within the eurozone.

There were silver linings too. The weakening of the expansionary austerity paradigm gave new impetus to “social Europe”. Raising the stakes for a triple-A-rated social Europe, the Juncker Commission launched the European Pillar of Social Rights in 2017, setting out 20 key principles that struck a fine balance of protective and social investment policies for well-functioning labour markets and welfare systems (European Commission, 2017).

Then COVID-19 broke out. The early days of the pandemic brought back haunting memories from the eurozone crisis and the migration crisis of the early to mid-2010s, when solidarity among member states was in high demand but short supply. While in hindsight the welfare state was the unsung hero of the Great Recession, the pandemic ushered in the unthinkable: a truly assertive reappraisal of the European welfare state for the twenty-first century. My

first lesson resurfaced with zest. Inclusive welfare states providing broad and well-organised access to sickness and unemployment benefits and to short-time working arrangements for all their citizens – regardless of their employment contract or status, the type of job they do or the sector in which they work – swiftly bounced back into good health (Hemerijck and Matsaganis, 2023).

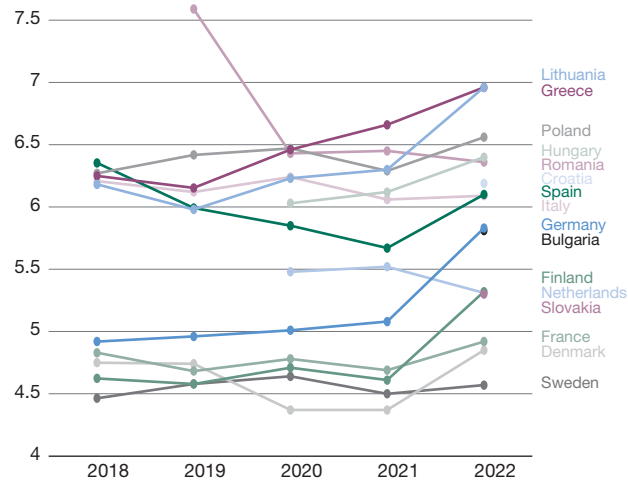
Also at the EU level, the COVID-19 policy response was truly assertive and well coordinated. In March 2020, the Commission activated the “general escape clause” of the Stability and Growth Pact to allow member states to depart from medium-term budgetary objectives. In April, a new quasi-automatic fiscal stabiliser (Support to mitigate Unemployment Risks in an Emergency – SURE) was created to support member states with short-term work schemes. Finally, in July 2020 the European Council reached agreement on the NextGenerationEU, including a Recovery and Resilience Facility, to mitigate the socio-economic consequences of the COVID-19 health shock. This €800 billion facility marked an unprecedented leap in EU fiscal solidarity, paving the way for a more inclusive, investment-led recovery from the pandemic. This paid off. Employment rose and unemployment quickly fell below pre-pandemic levels. In particular, Mediterranean eurozone economies grew admirably, with debt coming down much faster than across the Great Recession, precisely because of favourable growth dynamics.

Compared to the euro crisis, an important political difference was that the nature of the pandemic could not be framed in terms of sinful debtors and virtuous creditors. It is my contention, however, that the effectiveness of the policy response to the pandemic cannot be understood simply in terms of a symmetric health shock being unlike the asymmetric debt crisis. My argument is that, in effect, the hard lessons learned from the long decade of the Great Recession critically informed the rapid, assertive and progressive response to the COVID-19 crisis. From this perspective, while the pandemic was the existential tipping point, the experiential game changer was rooted in the macroeconomic, social and political aftershocks unleashed by the Great Recession.

Early childhood social investment now

Two cheers for the welfare state, praise for the ECB’s courage to engage in heterodox monetary policy, and a final compliment for the European Commission and the member states for mustering EU fiscal solidarity at long last. Besieged by two major shocks – the Great Recession and the pandemic – it is safe to say that adversity has strengthened the policy salience of the European social investment welfare state. Ultimately, EU fiscal solidarity,

Figure 5
Average support for solidarity (0-10), 2018-2022



Source: Hemerijck et al., (2022).

leveraged by SURE and NextGenerationEU, underpinned by the normative principles of the European Pillar of Social Rights, brought into being a “holding environment” where active welfare states can flourish (Hemerijck, 2019). This is a far cry from the erstwhile “disciplining environment” to keep “wasteful” welfare states in check, anchored in the Maastricht Treaty of 1991 (Hemerijck, 2013).

As always, in politics and public policy many issues remain unresolved. Faced with high deficits and debt levels, inflation and rising interest rates, governments will have to increase taxes to foot the bill for health care and social security expansion, against the background of Russia’s invasion of Ukraine, related inflationary pressures and higher defence spending. Most of the new EU instruments are temporary: the general escape clause of the Stability and Growth Pact will be in place until the end of this year, the SURE sunset clause has already been reached, while the Recovery and Resilience Facility experiment will run until 2026. But even as temporary instruments, I consider them part and parcel of the EU’s new policy toolbox, as they can easily be reactivated in future emergencies.

The most important lesson is that the cognitive mindsets and political orientations have been transformed in a manner that makes it difficult to turn back the clock. In addition, this reorientation gathered momentum not only among policy elites but also across European publics, as evidenced by the EUI-YouGov survey that we have been running now for six years (Hemerijck et al., 2021). When my colleague Philipp Genschel and I started our survey with YouGov in 2018, there was a strong cleavage be-

tween northern and southern member states. In the wake of Brexit, the pandemic and the war in Ukraine, EU solidarity and trust in EU institutions has progressively grown stronger and the North-South divide has subsided. Figure 5 indicates that European citizens have over the years come to appreciate a more assertive and political crisis management style on the part of EU institutions.

Overall, there is room for optimism. There is a common understanding now that it is better to *improve* rather than *retrench* welfare systems and that durable economic growth is a crucial ingredient for debt sustainability. Twenty-first-century evidence shows that generous, inclusive and capacitating welfare policies are fully compatible with economic growth, high employment and fiscal balance over the economic cycle (Hemerijck and Matsaganis, 2023). This positive re-appreciation of social policy as a formidable “productive factor”, I believe, should take pride of place in the debate on the future of EU fiscal and monetary governance. In essence, there is a need to agree on a stable and equitable inter-generational welfare contract that assures the well-being of the elderly in ageing societies *without* crowding out productive resources for the young to prosper in the dynamic knowledge economy.

If the main success of mid-twentieth-century welfare provision was to guarantee economic security in old age, the overriding objective of twenty-first-century welfare provision is to foster strong life chances for the young. According to Eurostat, in 2021, 19.5% of children were at risk of poverty, compared with 19% of the working-age population, while 16.5% of 20- to 34-year-olds were not in employment, education or training. Former EU Commissioner and former Italy’s Prime Minister Mario Monti has allegedly called the European Union “the trade union of the next generation”, which he meant as a compliment. Well, on that score, the EU is not doing a great job.

The political conundrum is that discretionary spending on social investments is often sacrificed on the altar of popular transfers for adults and pensioners. Political cynics maintain that as the returns on social investment only materialise in the long run, they inevitably clash with short-sighted electoral competition. Nonetheless, unless we invest in high-quality and affordable education and care, governments will soon need to tax shrinking labour forces to fund ailing pension and health care systems. At some point, young dual-earner couples will, against their wishes, effectively give up starting a family – as is already happening in southern Europe and Poland.

Essentially, there is a need for a special EU financing vehicle for public investment with a triple-A rating, and

strong positive effects on long-term growth and debt sustainability. If there ever was merit in having a “golden rule” in EU fiscal governance, early childhood investment is a no-brainer: it is cheap, it immediately creates jobs, it directly reaches out to young families, and it is where the social investment multiplier is highest – 13% per year, on Nobel Prize winner James Heckman’s estimation (The Heckman Equation, 2016). It is crucial that early childhood investment should not compete with current expenditures, and this should be anchored in EU fiscal governance, on the logic of funding tied to fundamental reforms. An EU early childhood social investment facility should also not be seen as a pro-natalist proposition, but in terms of the normative objective for citizens to pursue fuller and more satisfying lives, which includes facilitating genuine fertility aspirations, in line with the European Pillar of Social Rights. European University Institute research reveals higher levels of subjective well-being in countries with good quality and affordable early childhood education and care (Lehmus-Sun, 2023).

In conclusion, the notion that the EU can advance as a project of market integration and fiscal austerity has now been abandoned. In his 1599 play *As You Like It*, William Shakespeare came up with the marvellous line “Sweet are the uses of adversity”. Over the past 15 years, European welfare states have had more than their fair share of adversity. As a result, we are wiser now. Hopefully, we will no longer hear the false claim that the welfare state is a luxury we cannot afford in hard times. Inclusive and active welfare states make European societies less unequal, their economies more dynamic, and their democracies stronger. This is no time for complacency: on early childhood social investment, European policymakers must act now!

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Erik Canton

A Social Contract for the New Growth Agenda: The Role of Trust

The new growth agenda in the EU places stronger emphasis on well-being, inclusiveness and sustainability. These are complex societal challenges that can only be addressed through a more active policy stance. Countries with strong social contracts are in the best position to do so. This article investigates the role of reciprocity to elicit cooperative behaviour and to gain popular support for a social contract between the state and its citizens. Social contracts require trustworthy public institutions. However, trust levels among citizens vary widely across EU countries. Citizens' trust in authorities can, *inter alia*, be eroded by a malfunctioning government. Low levels of trust make it more difficult to invoke reciprocity and progress on the new growth agenda.

Economic growth and beyond

While economic growth is still a central policy objective, the EU's new growth agenda also emphasises other crucial objectives to measure the performance of welfare states, such as inclusiveness, sustainability, resilience, open strategic autonomy and preparedness (see, for example, European Commission (2022a) and the May 2023 conference¹ organised by the European Parliament on beyond growth). Whereas there is a lively discussion on measurement issues as regards this new growth agenda (as witnessed by a proliferation of dashboards and scoreboards to monitor and compare performance according to the latest narrative), there is less attention paid to the fundamental question of whether welfare states are capable of organising the necessary collective action for achieving these broader objectives. Indeed, the adaptation of our welfare states in light of the expanding set of

policy objectives likely calls for more, rather than less, policy intervention (WEF, 2021; Ghosh, 2022), requiring a stronger political mandate. A series of rather drastic reforms of labour markets, tax, pension and social security systems, product markets, research and innovation systems, education and training systems, public administrations, and international trade systems would be needed to achieve these objectives.

Let us, for example, look at inclusiveness. There is an increased attention to income (and wealth) inequality, not only in national debates but also in international organisations. The European Commission's monitoring of structural reform progress in EU countries through the annual cycle of economic policy coordination (the European Semester) includes an analysis of inequality developments in the country reports, and the International Monetary Fund and the Organisation for Economic Co-operation and Development (OECD) are also intensifying their work on inequality. There can be various reasons for this renewed attention, e.g. the popular interest in the topic spurred by Thomas Piketty and Mariana Mazzucato, evidence that the benefits from economic growth are spread unevenly among the population, the rise of populism, trends such as skill-biased technological change and globalisation, and new empirical work on the relationship between income inequality and economic performance.²

Traditionally, welfare states are classified in terms of their position in the inequality-efficiency landscape. The common (somewhat caricatural) conjecture is that there exists an inequality-efficiency trade-off, where the US have opted for a combination of high efficiency and high inequality, whereas European welfare models feature lower efficiency and lower inequality.³ There is indeed evidence of a "transatlantic divide" in the sense that the US takes a

¹ For more information, see <https://www.beyond-growth-2023.eu/>.

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* The views expressed in this article are those of the author and not necessarily those of the European Commission.

² For example, Teichgraber and Van Reenen (2022) talk about the "lost Einsteins" and "lost Marie Curies" because of discriminatory barriers to talented people becoming inventors, which are detrimental to both equality and economic growth.

³ Several explanations for the relative generosity of European welfare states vis-à-vis the US have been proposed in the literature. Alesina et al. (2001) attribute the differences to the result of racial heterogeneity in the US. Redistribution to the poor, who are disproportionately black, is unappealing to many voters due to racial animosity. In European countries socialist parties have more political power. Bénabou and Tirole (2006) link it to beliefs in the long-run rewards of effort, where their model's "American" equilibrium is characterised by a high prevalence of just-world beliefs and a laissez-faire public policy, whereas the other, "European", equilibrium features more pessimism, a more extensive welfare state and lower income.

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different position in the equity-efficiency landscape than European countries. Such a trade-off may exist, for example, when the tax system to support income redistribution weakens the financial incentives for workers and entrepreneurs. However, in the policy debate it is often emphasised that there are complementarities between equity and efficiency, and that these complementarities are a key feature of European welfare states. This is expressed in the agenda of the European Commission, in particular in the priority “An economy that works for people; Ensuring social fairness and prosperity”. The narrative here is that individuals and businesses in the EU can only thrive if the economy works for them. This priority also mentions that the EU’s unique social market economy allows economies to grow and to reduce poverty and inequality, thus pointing at complementarities between the objectives of equity and efficiency.⁴

At the same time, European countries show large diversity in achieved equity-efficiency combinations (sometimes referred to as social diversity). The Nordic and Continental welfare model has relatively efficient public administrations, high equity, provision of high-quality public goods and services (such as education and health), high levels of trust to support the social contract, and high well-being. Mediterranean and Central and Eastern European welfare states are more likely to cope with less efficient public administrations, lower equity, weaker public service provision, lower levels of trust, and lower well-being.⁵ One thus cannot speak about *the* European social model. The more advanced welfare states all have an important role for the government, where citizens are generally supportive of the idea of a social contract, and public administrations are functioning relatively well.⁶

The aim of this contribution is to investigate a society’s capacity to build and maintain a social contract, with a dive into human behaviour and its interaction with the trust-enhancing or trust-reducing institutional environment.

4 For more information, see https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/economy-works-people_en.

5 See, for example, Marozzi (2015), who reports that citizens in Denmark, Norway and Finland have the highest trust in public institutions, whereas in former communist, Iberian and Mediterranean countries the population is much less trustful.

6 Evaluation of the performance of welfare states could be based, for example, on subjective welfare measurement, such as the well-being of EU citizens coming from the EU-SILC data collections. The average life satisfaction was consistently at the higher end of the scale in Austria, Finland, the Netherlands, Sweden, Denmark, Luxembourg and Ireland. For Bulgaria, Hungary, Latvia, Cyprus, Croatia, Greece, Portugal and Lithuania, the results were consistently at the other end of the scale.

Social contracts

A social contract is an implicit agreement among the members of a society to cooperate for social benefits, for example by sacrificing some individual freedom for state protection. Such a social contract is based on the notion of fairness, and assumes some form of reciprocity in the population to get a political mandate; for example, Fong et al. (2006) make a case that people support the welfare state because it conforms to norms of reciprocity and they reject the widely accepted median voter model to study redistribution.

A considerable part of the population shows reciprocal behaviour. From the behavioural economics literature, going back to e.g. Akerlof (1982) and Frank (1987), we know that people tend to cooperate voluntarily. Reciprocity is a response to friendly actions even if no material compensation is offered, and it differs from cooperative behaviour in repeated interactions induced by the prospect of future benefits (Fehr and Gächter, 2000) and intrinsic motivation (Canton, 2005). Reciprocity is closely linked to fairness.⁷ According to Fehr and Gächter (2000, 159-160), “reciprocity means that in response to friendly actions, people are frequently much nicer and much more cooperative than predicted by the self-interest model” and “the power to enhance collective actions ... is probably one of the most important consequences of reciprocity.”

Reciprocity is essential to generate democratic support for the welfare state, based on a social contract. Reciprocity is, however, a *conditional* kindness, and this article explores mechanisms through which voluntary cooperation is put at risk. Indeed, the conditionality attached to reciprocal behaviour underlines the importance of studying its interaction with the economic environment and institutional framework.

Trust and the importance of trustworthy public institutions

The thought experiment developed in this article is that in a high-trust environment, social contracts based on reciprocity can emerge, welfare states can thrive, and reciprocal behaviour enhances voluntary cooperation. In a low-trust environment, it is unlikely that the social contract will receive popular support.

In their impressive work on measuring preferences, Falk et al. (2015) find a grouping of positively correlated traits

7 Expressions with similar meaning include “quid pro quo”, “a favour for a favour”, “tit for tat”, and “you scratch my back, and I’ll scratch yours”.

Table 1
Pairwise correlations between preferences at the country level, global evidence

	Positive reciprocity	Negative reciprocity	Altruism	Trust
Positive reciprocity	1			
Negative reciprocity	-0.154	1		
Altruism	0.711***	-0.132	1	
Trust	0.363***	0.160	0.272**	1

Notes: Reported coefficients are pairwise Pearson correlations between average preferences. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Source: Falk et al. (2015).

involving pro-sociality, namely positive reciprocity, altruism and trust. Table 1 reports the pairwise correlations.

According to Falk et al. (2015, 15), “it is hard to imagine stable and high levels of trust in environments absent positive reciprocity, i.e. trust rewarding behaviors.” The role of trust links naturally with reciprocity, as expressed, for example, during general elections. Recalling that reciprocity is a form of conditional cooperative behaviour, such support will depend on citizens’ trust in the capacity of the government to implement and maintain the social contract.

Trust in hierarchy more generally is contested when bureaucracies malfunction. To recall, reciprocity is about conditional kindness. Societies in which individuals attach normative properties to the collectively enforced social arrangements manage to introduce and sustain a social contract (see, for example, D’Agostino et al., 2011). This social contract thus enables the development of a welfare state reminiscent of the ones in the Netherlands, Denmark and Sweden. According to Falk et al. (2015), individuals in northwestern Europe are more social. This social attitude can be connected with the normative property of collective action. When collective action has normative properties, individuals are more inclined to support this collective action and are more likely to report a social attitude. A consequence of this claim is that governments are themselves responsible for pro-social attitudes in society. When these normative properties become the subject of debate, popular support for the social contract may diminish and public action becomes more difficult to organise.

An implication would be that governments must be careful to invoke the principles of reciprocity and mutual obligations in the design of the welfare state, for example by attaching conditionality to be eligible for social security

such as the search effort to find another job (van der Ploeg, 2004). Flaws in the design of the collective arrangements are costly to society (moral hazard) and undermine reciprocity-induced popular support for the social contract.

Another example of costly bureaucracy would be related to the incidence of corruption.⁸ Corruptive practices such as government officials accepting bribes in return for granting certain benefits to citizens are not only costly in terms of the waste of public resources, but also corrode the above-mentioned normative properties of collective action and trust in public institutions. Indeed, social arrangements may never be introduced when a country suffers from the presence of extractive political institutions (in the terminology of Acemoglu and Robinson, 2012). As Rothstein (2010, 20) puts it: “countries tend to cluster so that countries with large and mostly universal welfare state programs also have low levels of corruption, a high degree of social trust, and high levels of happiness and social well-being. And vice versa, why countries with smaller welfare systems tend to be higher on corruption, have lower levels of social trust, and lower levels of social well-being.”

An environment suffering from corruptive practices is clearly short of the necessary checks and balances to make institutions trustworthy. Hardin (2002) defines trust in terms of “encapsulated interest”: person A trusts person B because person A knows that person B has the interest of person A at heart to some extent. Therefore, according to Hardin, trust must be cognitive (it requires knowledge about other persons’ trustworthiness) and relational (it refers to trust in a specific person). Trustworthiness is thereby not an inherent personal property, as person A could trust person B, while person C may not trust person B. The interpersonal aspect implies that one cannot have trust in institutions, since we cannot possibly know all the people in these institutions. Hardin refers in this context to quasi-trust, i.e. when there are checks and balances that either mimic or substitute for trust (such as a critical and independent press, an effective and efficient justice system, professional societies, an active Ombudsman). People finding out about each other’s trustworthiness create a network, ultimately generating social capital.

Vertical and horizontal trust

The literature distinguishes between vertical and horizontal trust. Vertical trust refers to trust of citizens in the hier-

⁸ Corruption is defined as the misuse of public office for private gain (Becker and Stigler, 1974). There is also a literature on corruption, trust and economic growth (see for example Serritzlew et al. (2014) for a review).

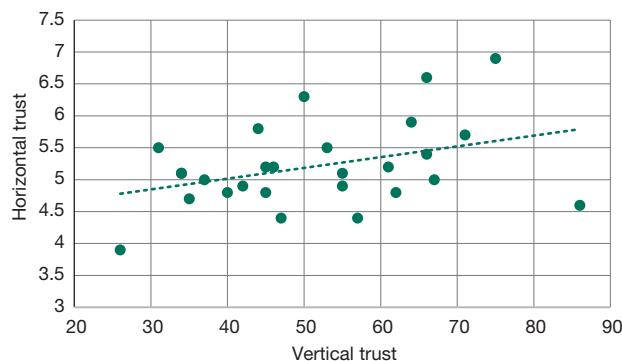
archy (e.g. their employer, public and political institutions), while horizontal trust is about trust in fellow citizens. Popular support for the social contract breaks down when vertical or horizontal trust is diminished. This could be the case when public officials or politicians engage in corruptive practices (reducing vertical trust). Popular support for the social contract can also be at risk, for example, when social security provisions are (widely) abused (reducing horizontal trust). Horizontal trust can only emerge in the presence of vertical trust (Rothstein and Eek, 2006).

This empirical finding of a causal relationship from vertical to horizontal trust, but not vice versa, places special emphasis on the importance of trustworthy public institutions. Reciprocity-driven popular support for a social contract becomes more difficult when trust in these institutions is fading away.

A recent Special Eurobarometer reports that trust in people (horizontal trust) varies across member states and is especially high in Denmark and Ireland (European Commission, 2023). A high level of trust in national public administrations (vertical trust) is observed for example in Luxembourg, Denmark and Finland (European Commission, 2022b). The Nordic countries are often mentioned as countries with high levels of trust, and the reasons for this have been extensively studied in the literature. For example, OECD (2021) reports that the high quality of public services in Finland is expected to contribute to high institutional trust, as these services are a tangible aspect of what people get in return for their tax payments.⁹ The police in Finland is the most trusted institution, which could be explained by high-quality education and continuous training for police officers, the perception of high ethical standards, and almost non-existent incidents of corruption involving police personnel. Denmark and Finland are the best-performing countries according to the Corruption Perception Index 2022 of Transparency International. On the other hand, countries where citizens have lower levels of trust in public institutions tend to be countries with more frequent incidences of corruption and weaker checks and balances. This can manifest itself in the form of political interference against independent media. Whereas trust levels in the Netherlands are generally high, vertical trust in the Netherlands has plummeted by 14 percentage points in the survey conducted in summer 2022 since the previous measurement in

⁹ This would illustrate the principle of reciprocity as a conditional kindness.

Figure 1
Correlation between horizontal and vertical trust in the EU



Notes: Each dot represents an EU country. Horizontal trust is measured by asking respondents to what extent they agree with the statement “You assume that people have only the best intentions” (on a scale from 0 to 10, where 0 means “does not describe you at all” and 10 means “describes you perfectly”). Vertical trust is measured by asking respondents how much trust they have in their public administration (% tend to trust).

Sources: European Commission (2022b) for vertical trust; European Commission (2023) for horizontal trust.

winter 2021-2022.¹⁰ This serves as a reminder that trust cannot be taken for granted and needs to be cherished and carefully maintained. Figure 1 shows the dispersion of these trust levels across EU countries, and the positive correlation between vertical and horizontal trust.

Policy implications

This article makes the point that progress on the new growth agenda in the EU can only be achieved if national governments manage to organise the mandate to do so, and this requires that their institutions be trustworthy. It has investigated the role of reciprocal behaviour in the

¹⁰ The Eurobarometer survey does not contain questions about the reasons behind the change in trust levels. Nonetheless, this reduction in vertical trust in the Netherlands is possibly related to the turmoil triggered by a number of political scandals, in particular the childcare benefits scandal (“toeslagenaffaire”) and the Groningen gas crisis. The childcare benefits scandal revealed false allegations of fraud made by the Tax and Customs Administration (with the use of discriminatory artificial intelligence algorithms), while attempting to regulate the distribution of childcare benefits. Many citizens encountered severe financial damage, and there were substantial delays in the provision of compensation. The Groningen gas crisis was related to problems in the implementation of compensation schemes for citizens who suffered from earthquakes and tremors linked to gas extraction in Groningen, causing substantial damage to buildings. The causality between the gas extraction and these earthquakes and tremors, as well as the causality between the earthquakes and tremors and the damage to the buildings has often been contested, which has led to delays in the phasing out of the extraction activities and in the roll-out of the support schemes. Interestingly, trust levels in the EU remained fairly stable in the Netherlands in the same period (a two percentage point drop in “tend to trust” from winter 2021-2022 to summer 2022).

organisation of collective action. The property of conditionality implies that reciprocal behaviour cannot be taken for granted, and positive reciprocity can turn into negative reciprocity (such as retaliation) when circumstances change. The somewhat inconvenient example would be dysfunctional bureaucracies and in particular the involvement of public officials in corruptive practices. This would put the trustworthiness of public institutions at stake and is likely to erode reciprocity-induced popular support of the social contract.

A more general conclusion that can be drawn is about reform sequencing. The existence of trustworthy public institutions is an essential condition for a country to advance the welfare state. Trustworthy public institutions help to foster popular acceptance of the social contract. Genuine efforts to restore or strengthen trust should therefore be on top of the reform agenda in countries where citizens have low levels of trust. Some of these reforms are relatively straightforward and not very costly. Others may take substantial time to bear fruit and be politically difficult to implement, because it is hard to give up vested interests and there are strong path dependencies in institutional settings.

For example, trustworthy institutions have systems of checks and balances in place, such as networks of experts providing independent advice (e.g. National Productivity Boards and advisory bodies on climate change for evidence-informed policymaking), an Ombudsman, protection of whistle-blowers, citizen engagement practices, and an open policy towards the press and the media. These checks and balances can be organised relatively quickly, though capacity and reputation building to act more effectively can take longer. Strong checks and balances help to discipline the public administration and can improve the quality of the political choices and implementation processes, thereby contributing to public institutions' trustworthiness.

More generally, trustworthiness is related to the quality of the institutional framework. Substantial work has been done on the quality of public administration and public governance (see, for example, European Commission, 2017; World Bank, 2022). This work identifies the conditions to be fulfilled for being a modern, democratic state, such as accountability, political stability and the absence of violence, government effectiveness, regulatory quality, rule of law, and the control of corruption.

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Caroline de la Porte and Trine Larsen

The Nordic Model: Capable of Responding to the Social Side of Crises and Sustaining Social Investment?

Among scholars and practitioners, Nordic countries are known for their comprehensive welfare states with universal high-quality services and an industrial relations model that fosters competitiveness, high wages and good working conditions. This explains why Nordic solutions are often highlighted as examples for European Union countries, especially in social and labour market policy (de la Porte and Palier, 2022). Yet, the Nordic countries also face short-term crises – like the COVID-19 pandemic, whereby sectors of the labour market were adversely affected – and longer-term challenges such as declining fertility rates – potentially undermining the quality of public welfare services. The key question is whether the Nordics have been able to successfully address these challenges, while maintaining a high level of growth, welfare and labour market integration. This paper examines how Nordic countries responded to challenges posed by the adverse labour market effects of the COVID-19 pandemic, as it stress-tested the welfare states. After that, we discuss whether there is (still) scope for social investment, focusing on early childhood education and care. We then assess whether the Nordic welfare model is resilient and if there are lessons to be learned for other countries in terms of governance and policy (see also de la Porte et al., 2023a).

The Nordic economies and the COVID-19 pandemic

The recent COVID-19 pandemic stress-tested the Nordic model with historical drops in GDP and rising unemployment figures, where many workers lost their jobs or were temporarily laid off. This resulted in rising unemployment in the first two quarters of 2020, as illustrated in Figure 1 (see also Larsen and Ilsøe, 2022).

There was significant variation in the governance of tackling the public health crisis regarding the COVID-19 pan-

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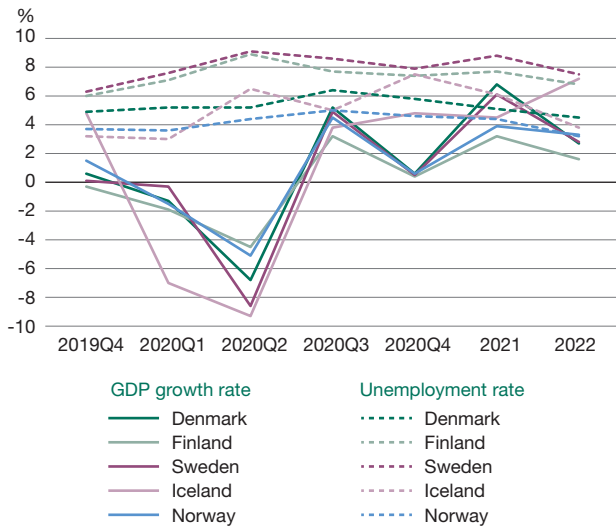
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demic (Christensen et al., 2023). However, with regards to the response to the loss of income and jobs, the Nordic countries reacted swiftly. This is partly due to the active role of government in close collaboration with social partners. For example, the Finnish government called upon social partners to discuss emergency measures to safeguard jobs during the COVID-19 pandemic at their press conference on 16 March 2020, and the first wave of policy responses was largely based on the joint proposals by Finnish social partners (Finnish government, 2020; STTK, 2020; Larsen and Ilsøe, 2021). Across the Nordics, the relief packages were typically the result of tripartite consultations involving trade unions, employers' associations and national governments and resembled tripartite agreements, echoing the Nordic industrial relations traditions (Greve et al., 2021; Larsen and Ilsøe, 2022; Andersen et al., 2014). There was also broad support for the relief packages in the Nordic parliaments. More specifically, more than 130 relief packages were passed to assist crisis-ridden companies and workers (Larsen and Ilsøe, 2022; Greve et al., 2021). The various policy measures were accompanied by increased social protection spending, notably in labour market policy, especially on unemployment benefits.

Through multiple relief packages, the Nordic countries increased benefit levels, temporarily expanded income protection to groups typically struggling to qualify for support and introducing novel measures (Larsen and Ilsøe, 2022; Trygstad et al., 2023). The eligibility criteria for unemployment benefits, including obligations for job-search and participation in various activation programmes, were temporarily suspended or relaxed in all five Nordic countries, enabling access to income security in case of job loss for a large number of part-time workers, fixed-term workers and other atypical workers (Larsen and Ilsøe, 2021). Specific and often novel measures were also introduced to support freelancers, entrepreneurs, artists and solo self-employed in all five Nordic countries, i.e. groups that are often excluded (Norway) or are only partially (Denmark, Sweden, Finland, Iceland) covered by the “ordinary” income protection systems (Larsen and Ilsøe, 2022; Hedenus and Nergaard, 2020; Hotvedt, 2020; Kolsrud, 2018). To safeguard jobs, the Nordic governments, together with social partners, also broadened the coverage of their temporary lay-off schemes (all five Nordic countries) and introduced novel temporary lay-off schemes (Denmark, Iceland) along with specific measures to keep businesses afloat and to stimulate innovation and employability (Larsen and Ilsøe, 2021; Berglund, 2021; Sip-

Figure 1
Real GDP growth and unemployment rate per quarter and annually, volume percentage change (2019Q4-2022)



Source: Eurostat (2021a; 2023a).

polä, 2021; Svalund, 2021). These initiatives embody path-breaking reforms in that they relied on targeted measures to supplement and thus strengthen the income protection system, but in a way that protects the most crisis ridden – but not necessarily the poorest – groups (Larsen and Ilsoe, 2022).

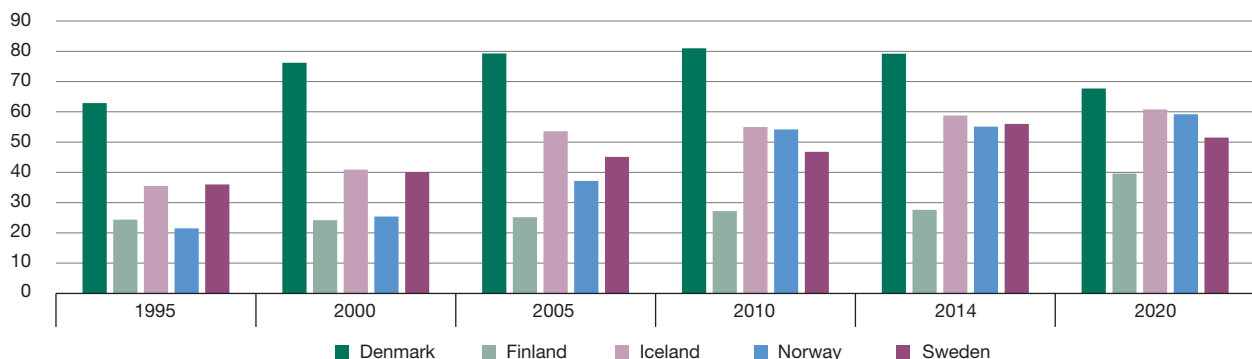
In most Nordic countries, the budgetary effort was considerable; yet it was possible because public finances prior to the COVID-19 pandemic were in balance, with very low levels of public debt overall (except for Finland). As the effect of the pandemic on labour markets started to ease off, the unemployment rate decreased after peaking in the second quarter of 2020. However, the unemployment rate remains higher in Finland and Sweden than before the COVID-19

pandemic, while the unemployment figures for Denmark, Iceland and Norway are slightly lower than in the pre-pandemic years (Figure 1). The social protection spending, including labour market spending, has been curbed between 2020 and 2021 (Eurostat, 2023b). However, this has been without jeopardising the social investment component of Nordic income protection. Active labour market policy spending has been fairly stable over the past decade and remains comparatively high in the Nordic countries, ranging from 1.78% of GDP in Denmark to 0.95% of GDP in Sweden, 0.83% in Finland and 0.42% of GDP in Norway, complementing unemployment benefits (OECD; 2023; Bredgaard and Rasmussen, 2022). The social investment component in Nordic active labour market policies appears fairly resilient, remaining an important instrument to secure a highly skilled workforce in the Nordic countries. Beyond the labour market, it is relevant to investigate what has happened in other areas of social investment. In the following, we explore the developments in early childhood education and care (ECEC) in the Nordics, which is one of the cornerstones of the social investment state (Morgan, 2022).

Early childhood education and care in the Nordics: Still the golden standard?

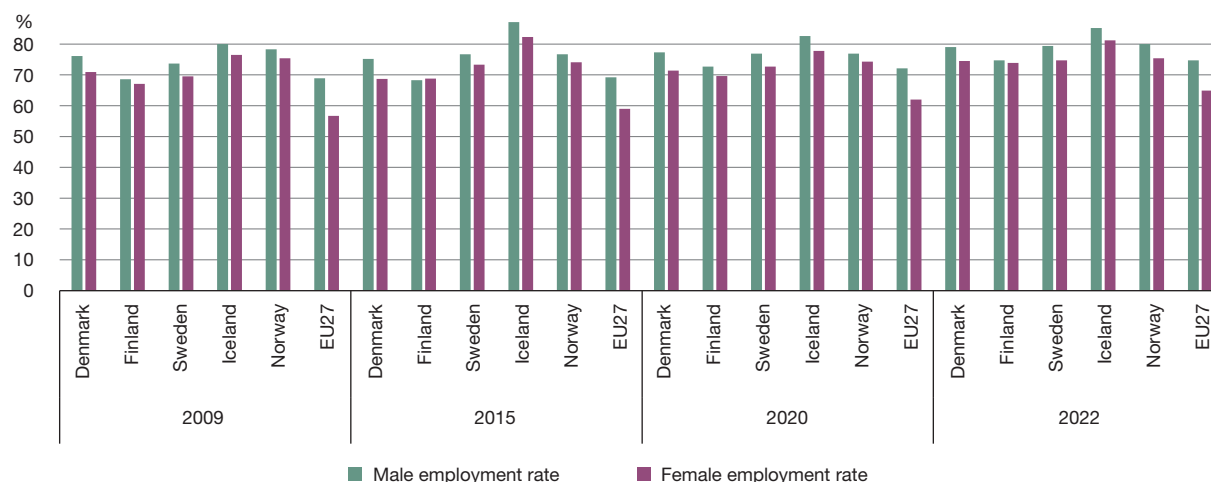
High quality ECEC – for children up to the age of three – enables women and men to participate in the labour market during periods of childrearing while investing in children’s ability to learn and to play (Borchorst, 2012; Lundqvist, 2017; Morgan, 2022; Scherer and Pavolini, 2023). ECEC in the Nordic countries is considered a flagship of the social investment state – focusing on skills development throughout the life-course – due to its rights-based universal availability, with guaranteed placement for all children and high quality of integrated care and education services. Furthermore, ECEC is heavily subsidised in the Nordic countries, with a low maximum threshold of parent contribution, making it affordable for

Figure 2
Children aged less than three years attending formal day care in the Nordic countries
 in % of all children in that age group



Source: EU-SILC (2021).

Figure 3

Male and female employment rate (aged 15-64) in the Nordic countries, compared to the EU27 average

Source: Eurostat (2023).

families with differing levels of income. In addition, there are extra reductions for low-income families via means testing. This signifies that ECEC is de facto a universal right across social classes in the Nordic countries. Recent analyses confirm that the use of ECEC is not stratified across social class in the Nordics (Ferragina and Magalini, 2023). Figure 2 shows that the use of ECEC among the Nordics has been increasing steadily during the past two decades. A facilitating feature, which has enabled the wider use of ECEC, is the support of most political parties, as well as key stakeholders, including unions and employers (de la Porte et al., 2023b; Larsen and de la Porte, 2022).

Although ECEC is considered of high quality in the Nordics, ageing populations put pressure on welfare states. This is accentuated during financial crises, where the quality of ECEC is compromised due to cost cutting. This can be seen, for instance, when we look at adult-to-child ratios or class sizes. This development, in turn, leads to mobilisation among grassroots organisations to improve the quality of ECEC. In Denmark, this mobilisation led in 2020 to a decision by the minority social democratic government to have an average staff-to-child ratio of 1:3; while in Sweden, it led in 2016 to a cap on group sizes for small children between the ages of one and three of 6-12 children per group. In both countries, the decisions on the quality of ECEC were made through an inclusive regulatory model, where stakeholder influence is tangible. This example illustrates that incrementalism that characterises the policy process – that is, decisions are made to address challenges as they surface (de la Porte et al., 2023).

ECEC is also aimed at labour market participation. As seen in Figure 3 and confirmed in recent research (Scherer

and Pavolini, 2023), female and male labour market participation rates have consistently been high. The labour market participation of men is marginally higher than that of women, but the differences are small compared to the EU average. Yet, even across the EU, the difference between male and female labour market participation has declined during the past decade. It thus becomes even more relevant for EU member states to implement the Council Recommendation on the European Child Care Guarantee (2021), which calls for universally accessible high ECEC institutions (European Council, 2021). This is particularly important to implement in countries where fertility rates are low – such as in Southern or Eastern Europe – where women delay childbirth sometimes due to the lack of available ECEC (Beaudjouan, 2020).

Lessons to be learned from Nordic policies and policymaking processes

The Nordic model has proven to be both flexible and robust in response to acute crises, such as the COVID-19 pandemic. At the same time, the Nordic welfare model continues to be resilient and to sustain social investment, which has changed incrementally, as illustrated by the case of ECEC.

Regarding the COVID-19 pandemic, the Nordic model demonstrates the advantage of displaying timely due diligence regarding challenges that are addressed early on. This is exemplified by the pandemic-related relief packages. By acting proactively, the fiscal efforts overall are smaller than they would be if implemented later. Furthermore, the citizens' needs are addressed proactively and comprehensively, as illustrated by the example of the Nordic relief packages. The policymaking process was consensus-seeking and inclu-

sive, legitimising the role of the state and covering distinct groups of citizens.

Regarding social investment, the case of ECEC has been broadly supported by political parties ranging from left to right and is supported by employer organisations and unions. ECEC was institutionalised decades ago, and it is an important point of contact between citizens and welfare providers. This, in turn, provides legitimacy to the welfare state, which has a positive connotation for most citizens in the Nordics.

These two examples embody the style of Nordic policymaking, which is often characterised by broad-based coalitions. Yet, it is based on underlying cultural and institutional factors that are not necessarily present in other countries and could take a long time to cultivate. These include a high degree of trust between the citizens and trust in institutions, especially those who are responsible for providing welfare solutions.

Despite this, there are some lessons to be learned. Firstly, the Nordic governments' consensus-seeking policymaking is noteworthy, especially in times of political polarisation. Secondly, inclusive policymaking enhances the legitimacy of decisions, and thereby their potential impact. Third, the focus on social investment is well institutionalised in the Nordic welfare models, as illustrated by the case of ECEC. This is, however, difficult to emulate in countries where rights are stratified rather than universally provided.

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Holger Bonin

Social Investment in Immigrants: Why and How?

The turmoil of the COVID-19 crisis put a spotlight on the particularly high economic and social vulnerability of migrants and refugees in Europe. As many severely affected sectors in the economy were characterised by a large proportion of low-skilled and low-paid labour, immigrant workers were disproportionately exposed to the risk of unemployment and earning losses. Poorer working and housing conditions, over-representation in essential frontline jobs and fewer possibilities for remote work, as well as language barriers contributed to significantly higher health risks among migrants. Already existing educational disadvantages and insufficient skill-building opportunities were exacerbated by the interruption of active labour market policies, school closures and a lack of digital literacy (OECD, 2022). Emerging deficits in access to income protection and social security benefits, particularly evident among new immigrants and asylum seekers, forced several European governments to grant, at least temporarily, exceptional rights of access (OECD, 2021).

The challenges of economic and social inclusion of migrants

The shock of the pandemic has worn off, but immigrants remain particularly at risk under changing economic conditions. Due to their generally higher poverty rates, they are disproportionately affected by the real loss of purchasing power resulting from the current inflationary shock combined with the poorly targeted ad hoc transfers of many governments. In the coming years, the ongoing structural transformation towards a digital and green European economy will place higher skill demands on individual workers and accelerate labour market turnover. Since immigrants in many settings are systematically disadvantaged in both school and vocational training, they could suffer rather than benefit from this development,

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and fall even further behind non-immigrants economically and socially.

Against this backdrop, the population with a migration background in the EU (and in other major destination countries outside Europe) is an important target for social investment that should primarily focus on the development, maintenance and activation of human capital, and aim to promote individual employability and greater resilience in order to achieve economic and social integration (Bonoli, 2020; Hemerijck and Patuzzi, 2021). A systematic reason why agents who settle in a new country for economic reasons need such support is that they misjudge *ex ante* the expected net returns to settling in the destination country. As crossing borders is associated with uncertainty, immigrants may be exposed to unpredictable idiosyncratic or aggregate shocks after the move that leave lasting scars. Even if the actual net returns to moving thus become negative, they may not return to their country of origin because the migration costs originally invested have sunk in. The sunk costs issue may also come into play when migrants base their migration decision on incomplete information or are overly optimistic, for example, about the real barriers to labour market entry or the transferability of their human capital.

A second important reason is that receiving countries do not have perfect control over arrivals. Because of the free movement of workers in the European single market, it is possible that internal EU migrants who want to benefit from the different labour market developments and economic growth in the member states are on average more likely to have characteristics that hinder economic and social inclusion than natives. This may be the case even if they are positively self-selected in that they are determined to make a career at the destination. The same may apply to family migrants tied to economic migrants, and even more so to the admission of migrants for humanitarian reasons. It is evident that many of the asylum seekers currently reaching Europe do not possess the necessary skills to quickly catch up economically and socially with the receiving population.

In the migration context, the approach of supporting vulnerable people with precautionary measures to promote human capital and employability seems especially relevant, as they face particular risks of falling into a spiral of cumulative disadvantage. Research suggests that unfavourable labour market conditions at the beginning of ar-

rival have a significant negative impact on the subsequent employment trajectory of migrants, as human capital depreciates, and on-the-job learning and the development of professional networks slow down (Ho and Turk-Ariss, 2018). The lasting impact of unemployment or inactivity at an early stage after arrival on future careers at the destination may be particularly pronounced for migrants with a refugee background (Marbach et al., 2018). Incomplete transferability or recognition of human capital from the country of origin, as well as the lack of host-country specific skills, especially language skills, result not only in immigrants having difficulties in pursuing skill-adequate careers. They also reduce opportunities for further education and training. This disadvantage can be long lasting and even affect the educational success of second-generation migrant children, unless mitigated by tracking arrangements in the education system or active integration measures (van de Werfhorst and Heath, 2019).

Positive spillover effects of social investment in migrants

State intervention in the form of social investment to promote immigrant economic and social integration can be justified by a number of potential positive externalities to the benefit of the host society or the incumbent population. The arguments for policies to improve the skills and employability of immigrants are similar to those for selective admission practices to increase the proportion of skilled immigrants.

First, given the increasing pressure on public budgets, especially social budgets, in light of demographic ageing, there are significant external benefits to improving immigrants' skill levels as better-integrated immigrants make on average higher net payments into public coffers over their life course. Comparative simulation studies indicate that the net fiscal gains of EU member states resulting from labour migration systematically depend on the design of the tax-transfer system in the receiving country and on the characteristics of migrants (Belanger et al., 2020). At the level of the individual immigrant worker, net payments to the host state budget, at a given age, are strongly dependent on the employment rate and wage income earned. This reflects intra-generational redistribution, i.e. the transfer of resources from the relatively rich to the relatively poor via the tax-transfer system. It follows that the expected net tax payments of migrants correlate strongly with their level of education and the speed of their labour market integration.

For example, Bonin (2016), analysing the potential fiscal impact of 2015 humanitarian migration to Germany, estimates that upskilling 20% of the roughly one million

refugees to match the fiscal power of workers with completed vocational training, in the long term, would generate €60 billion in additional revenue net of social transfers for the state. Accelerating refugee integration by one year would generate additional net revenue of about €10 billion in total. As long as the state had to spend less than these amounts for active integration measures to achieve these goals, it would be a profitable social investment, which in turn would render public finances more sustainable.

A second source of positive spillover effects of social investment in immigrants' human capital and employability relates to labour shortages. These existed in many European economies already before the COVID-19 crisis. However, the associated disruption to the reallocation of labour has exacerbated hiring difficulties, contributing to slower economic recovery. In the coming years, the problems faced by employers in filling their vacancies with suitable specialist staff are likely to become even more severe. This is not only due to soaring replacement demand that comes with the retirement of the baby boomers, but also due to the strong dynamics of transformative structural changes that go hand in hand with digitalisation and decarbonisation. With search and matching frictions, a policy of upskilling migrants that increases employers' chances to hire in tight labour market segments can remove barriers to growth. Furthermore, upskilling migrants can lead to an equilibrium with higher job creation rates and thus better labour market opportunities for non-migrants as well. To the extent that public social investment displaces employer initiatives to support and train migrants to enter shortage occupations, these effects naturally diminish.

A related mechanism by which social investment in immigrants can lead to higher GDP per capita is higher total factor productivity resulting from a boost in innovation or knowledge spillovers. However, the upskilling of initially lower-skilled migrants may affect total factor productivity, as there is less scope for migrants and non-migrants to specialise in tasks that require different skill sets, and non-migrants in simple jobs have less incentive to escape competition with migrants by switching to more complex, complementary jobs. Overall, the effect of upskilling less-skilled immigrants on total factor productivity is therefore theoretically ambiguous. A review of the evidence suggests that the impact of immigration on total factor productivity in receiving countries tends to be positive but rather small (Bonin et al., 2020). This observation presumably also applies to the productivity effects of social investments in the qualification of less-skilled immigrants, provided these do not exceed a plausible magnitude.

Table 1
Estimated treatment effects and fiscal benefit-cost analysis of active labour market integration measures for refugees in Germany

	Estimated effects over 40 months from start of treatment						Forecast over 60 months in euros
	Integration effects		Fiscal effects in euros				Benefit-cost
	Months in employment	Days on social transfers	Taxes and contributions	Social transfers	Average cost per treatment	Benefit-cost	
Activation and professional orientation							
with an employer	9.2	-68	2818	-1683	635	3866	5105
with a provider	1.9	-19	726	-466	635	557	815
Career choice and vocational training							
entry level qualification	17.0	3	600	67	2331	-1797	473
assistance during training	3.2	13	1149	324	2697	-1872	2783
Continuing professional education	4.0	-43	2571	-1072	5738	-2095	332
Integration grants to employers	13.2	-232	9781	-5903	4330	11354	17612
Public work opportunities	-0.5	7	29	179	1683	-1833	-1736

Notes: Results refer to the population group refugees who arrived in Germany as of 1 January 2015 and started a treatment between August 2017 and September 2018.

Source: Own adaptation of results by Bonin et al. (2021).

The availability of social investments aimed at improving economic and social inclusion provides a form of insurance and conserves private resources. These features could help countries that offer such investments to attract more immigrants, especially younger ones, who can benefit longer from the returns on investment. As a result, the ratio of employed persons to population would rise, and with it GDP per capita. As mentioned above, this effect is amplified if the additional immigrants also help to overcome labour shortages. A possible drawback could be that the skill composition of the newcomers deteriorates. If immigrants can count on active support in training and improving employability in the host country, they will need to bring less transferable human capital from abroad. Due to the insurance motive, immigrants might also be more negatively self-selected or display greater risk aversion. However, such effects could be controlled by setting minimum qualification requirements for economic migrants and strong activation components in the social investment measures used.

Finally, social investment in immigrants can have positive externalities for the host society by promoting pro-social outcomes such as social cohesion, trust and tolerance, or by limiting anti-social outcomes such as crime. Expected returns of this kind at the societal level are a common argument for public investment in education in general and for investment in the education of marginal-

ised groups, such as less-skilled immigrants, in particular. One drawback is that such benefits are systemic and therefore especially difficult to measure. But the other potential social spillover effects of social investment in immigrants described above cannot be precisely quantified either *ex ante* or *ex post*. Nonetheless, given the large and diverse groups of asylum seekers that arrived in Europe in 2015-16, policymakers in key European destination countries intuitively adopted a strategy of social investment by allocating massive spending to active integration measures to avoid past mistakes that led to a cumulative disadvantage for less-skilled immigrants. Sweden, for example, spent more than 1% of GDP on refugee reception and upfront support in 2015, while Germany spent about 0.5% of GDP, and high levels of spending continued in the following years (Hemerijck and Patuzzi, 2021). The recent paradigm shift allows to study the impact of social investments targeting vulnerable immigrants from the outset.

Active labour market policies as a profitable social investment

In Germany, a comprehensive evaluation of all integration measures taken within the framework of active labour market policy is still ongoing. Interim estimates based on a control group approach indicate that for migrants with a refugee background who arrived from 2015 onwards, most of these measures lead to significantly better labour

market integration and less welfare dependency within the first 40 months after the start of training (Table 1). An exception is the provision of public job opportunities, which are used by the employment agencies as a last measure for a small part of the hard-to-place persons and do not function as a stepping stone. Otherwise, the employment rates of participants develop more favourably compared to refugees who do not receive treatment. This is true for small-scale interventions such as activation and vocational orientation, which usually start when refugees get access to the labour market; for a range of training and (re)qualification measures of different scope and having different target groups; and for wage subsidies, which give employers incentives to hire immigrants despite initial productivity disadvantages and necessary additional in-company training. The differences brought about by these active labour market policy measures appear to be long lasting.

The resulting positive treatment effects are a necessary but not a sufficient condition for spending on active integration measures to be a profitable social investment. In fact, the cumulative average value of additional net public revenues (taxes and social contributions plus savings in social transfer expenditure) calculated over a period of only 40 months is still not always sufficient to cover the upfront costs of treatment. This concerns treatments where the long-term investment character is particularly pronounced because they focus on the development and adaptation of human capital. However, projecting the gains achieved over a further 20 months shows that all benefit-cost balances turn positive. Since immigrants on average have many more years to spend in the labour market, the ultimate expected fiscal returns of active integration measures in this environment appear very high.

Several factors that were important to success in the German case are also increasingly present in the (re)design of integration policies for humanitarian migrants in other European countries.

Early intervention. Active measures should reach migrants with a high likelihood of staying and characteristics that make economic and social integration significantly more difficult as early as possible. The experience in the initial phase after arrival in a new country can be crucial in determining whether migrants embark on a positive or negative integration path. From a dynamic perspective, postponing profitable social investments means that their potential benefits are not fully realised.

Accessibility. Of course, active labour market integration measures can only be successful if the targeted persons are actually allowed to work. Their more intensive use

therefore demands and in fact often goes hand in hand with the removal of formal barriers to labour market access for migrants. Formal access to the arsenal of integration measures also plays a role. Immigrants are usually initially systematically excluded from the benefits of the contribution and insurance systems. This argues for the provision of active integration measures through welfare channels. Finally, formally eligible persons may be denied access due to positive or negative biases in the selection of programme participants (e.g. skimming) or even discrimination (e.g. application of gender stereotypes in programme design or selection). The latter could contribute, for example, to the underrepresentation of female refugees in active labour market policies, despite the fact that they would especially benefit from them, which has been observed in practice (Bonin et al., 2021).

Integrated services. As vulnerable immigrants are often disadvantaged in several areas at the same time, one success factor is to design combination treatments that address these areas in a coherent manner. Such combinations, like the provision of childcare services in conjunction with vocational training for women, may be necessary to encourage voluntary participation. But combining different elements, such as job-related language support in conjunction with in-service training, can also help to reinforce effectiveness. Combination treatments may also consist of planning logical sequences of individual measures. For example, basic language training would lay the groundwork for subsequent qualification measures.

Private engagement. The quality of progress in social and economic inclusion of immigrants is not determined by public authorities alone. It also depends on the commitment of businesses and civil society, which are essential parts of local integration ecosystems. Public integration measures that embed active private engagement therefore tend to achieve better results. Directly involving employers in active inclusion measures in real workplaces, e.g. by publicly assisted on-the-job vocational training, is proving to be a particularly profitable approach.

Sufficient resources. The implementation of profitable investment in integration measures asks for considerable resources at the start. These need to be stable enough to ensure continuity in well-functioning measures, pursue long-term strategies and allow gains from experience to unfold. It is also important to have high quality case workers who perform the key task of matching immigrants with the integration measures that are the most appropriate in the individual case. This requires experience and an excellent understanding of the specific needs within heterogeneous migrant target groups.

Conclusions

The principles set out above are also relevant when considering social investments in disadvantaged and vulnerable people with a migrant background who have lived in the host country for a long time or who may even have grown up there as descendants of immigrants – save for early intervention, of course. The latter is a massive issue, as the force of dynamic cumulative disadvantage is very difficult to revert once it is unfolded. Active public support may then primarily promote social stabilisation rather than economic well-being and is often unlikely to yield a positive return as social investment, at least in monetary terms.

Therefore, having to decide under budget constraints, the government may give preference to active inclusion policies that target newly arrived migrants in need of support. Many governments in Europe (if not being plain unwilling) are struggling to put this complex and challenging task into practice with another sharp rise in the number of asylum seekers in sight. Budgetary room for manoeuvre has shrunk, educational and social support capacities have been cut back, and parts of the administrations in charge suffer from labour shortages. This could lead to foregoing the substantial long-term social and economic returns that are possible if social investment in immigrant inclusion and integration is done well.

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Ivo J. M. Arnold

The Activation Conditions of the Transmission Protection Instrument: Flawed by Design?

In 2022, the European Central Bank (ECB) introduced the Transmission Protection Instrument (TPI) to counter the risk of financial fragmentation following the normalisation of monetary policy. The ECB has specified conditions under which the TPI can be activated. This paper examines these conditions and concludes that the activation conditions cannot be applied in an objective and transparent manner. This provides the ECB room for policy discretion and makes the ECB susceptible to pressure from member countries. A possible interpretation is that the activation conditions serve as a fig leaf to cover ECB policies that may go beyond its mandate.

On 9 June 2022, the European Central Bank (ECB) decided to terminate its asset purchase programmes and outlined a path for future interest rate hikes (ECB, 2022a). Less than a week later, a sharp increase in risk premiums on Italian government bonds prompted the ECB to announce the introduction of a new “anti-fragmentation” tool following an emergency board meeting (ECB, 2022b). Subsequently, on 21 July, the ECB unveiled the Transmission Protection Instrument (TPI) (ECB, 2022c). This new instrument is intended to enable the ECB to control sovereign spreads of euro area countries by buying up government debt from countries whose interest rates are deemed to be out of step with macroeconomic fundamentals. The ECB’s justification for introducing the TPI is that diverging yields on sovereign debt may hamper the transmission of monetary policy across the euro area and increase the risk of fragmentation.

Since July 2022, the ECB has continued to use the temporary Pandemic Emergency Purchase Programme (PEPP) as a first line of defence for risks to the transmission mechanism, by flexibly reinvesting bond redemptions. The TPI can be seen as a more permanent instru-

ment to control sovereign spreads. A similarity between the PEPP and the TPI is that both involve asset purchases that deviate from countries’ shares in the ECB’s capital, the so-called capital key quota. In contrast to the PEPP, however, the ECB has specified conditions under which activation of the TPI is warranted.

The introduction of the TPI has been met with criticism from both an economic and a legal perspective (Bernoth et al., 2022; Feld et al., 2022). A role for the ECB in limiting the risk of fragmentation is not self-evident. The Economic and Monetary Union (EMU) is an incomplete currency union by design. It has a common currency, but lacks a common fiscal policy. Each country is responsible for its own national debt. This is clearly laid down in the Maastricht Treaty, as exemplified by the no-bailout clause and the ban on monetary financing. This means that bond investors run credit risks on sovereign debt, as holders of Greek sovereign debt have experienced following the debt restructuring in 2012. This also means that risk premiums can arise on sovereign debt, depending on how financial markets assess credit risk. Fragmentation risk is thus ingrained in the currency union. Spread control could then be viewed as a form of fiscal support, which is not within the ECB’s mandate. Seen from this perspective, one can question whether it is up to the ECB to complete the monetary union under the guise of transmission protection.

To deflect this criticism, the ECB has stipulated two requirements to be met before the TPI can be activated. The first requirement is that the TPI can be activated “to counter unwarranted, disorderly market dynamics that pose a serious threat to the transmission of monetary policy across the euro area” (ECB, 2022d). The TPI will enable the

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Eurosystem to purchase assets “in jurisdictions experiencing a deterioration in financing conditions not warranted by country-specific fundamentals” (ECB, 2022d). Second, the ECB should assess whether “jurisdictions in which the Eurosystem may conduct purchases under the TPI pursue sound and sustainable fiscal and macroeconomic policies” (ECB, 2022d). For this assessment, the ECB will consider four criteria: compliance with the EU fiscal framework, absence of severe macroeconomic imbalances, fiscal sustainability and sound and sustainable macroeconomic policies. In the remainder of this paper, we call these two requirements the conditions for TPI activation.¹ TPI conditionality aims to quell any criticism that the programme amounts to fiscal support. Moreover, by stressing the importance of the TPI to safeguard the monetary transmission mechanism, the ECB can argue that the TPI contributes to achieving its price stability objective.

This paper examines whether TPI conditionality makes sense from an economic point of view. We first look at the theoretical case for the TPI in the presence of sound fundamentals yet disorderly market sentiment. We next consider whether adherence to the conditions for activation would allow the ECB to safeguard the monetary transmission. Finally, we discuss whether these conditions can be applied in an objective and transparent manner.

The macroeconomic case for the TPI

Since the normalisation of ECB policy, sovereign spreads between euro area countries have widened. Research has shown that the ECB’s asset purchase programmes have had a dampening effect on interest rate differentials (Lombardi et al., 2018; Wright, 2019; Havlik et al., 2021; Eijffinger and Pieterse-Bloem, 2022). Even though President Lagarde claimed in March 2020 that the ECB “is not here to close spreads” (Financial Times, 2020), in practice spread reduction has been a consequence of the ECB’s unconventional monetary policy. When monetary policy returns to normal, sovereign spreads may widen and fragmentation risk may increase.

Most authors define fragmentation as bond market fragmentation, i.e. the divergence of nominal interest rates on euro area countries’ sovereign debt (Claeys et al., 2022; Bernoth et al., 2022; Angeloni and Gros, 2022). One could argue for a broader definition of fragmentation risk, encompassing the divergence in borrowing costs for firms and households. This perspective is relevant for the ECB,

¹ This is not to be confused with the conditionality attached to support from the European Stabilisation Mechanism or from the Outright Monetary Transactions programme, which typically requires recipient countries to commit to a programme of economic reforms.

which shapes monetary policy to influence financing conditions in the private sector. If the normalisation of monetary policy leads to a sharper increase in mortgage rates or corporate lending rates in heavily indebted countries within the euro area, the uniform impact of monetary policy across the union would be compromised. Such a scenario would pose a concern for the ECB and undermine the unity of its monetary policy. Expanding the definition further, it is important to consider that the relevant interest rate affecting spending decisions by firms and households is the real interest rate, rather than the nominal interest rate. The real rate is also the one that is featured in macroeconomic models.

From a macroeconomic perspective, the real risk of fragmentation is that it may set in motion a process of economic destabilisation. Below, we illustrate this using the IS-MP-PC model (i.e. the income-spending/monetary policy/Phillips curve model), adapted to the case of the monetary union. The model consists of three equations (see e.g. Stevenson and Wolfers, 2023). The income-spending (IS) curve in equation (1) relates output (y) to the expected real interest rate (r) – defined as the difference between the nominal interest rate (i) and expected inflation (π^e) – and a demand shock (ε_1):

$$y = \alpha_0 - \alpha_1 r + \varepsilon_1, \quad \alpha_1 > 0. \quad (1)$$

Equation (2) is a short-run aggregate supply curve or Phillips curve (PC). It relates inflation (π) to expected inflation, the output gap (defined as the difference between output and the natural level of output, y_N) and a temporary supply shock (ε_2):

$$\pi = \pi^e + \beta(y - y_N) + \varepsilon_2, \quad \beta > 0. \quad (2)$$

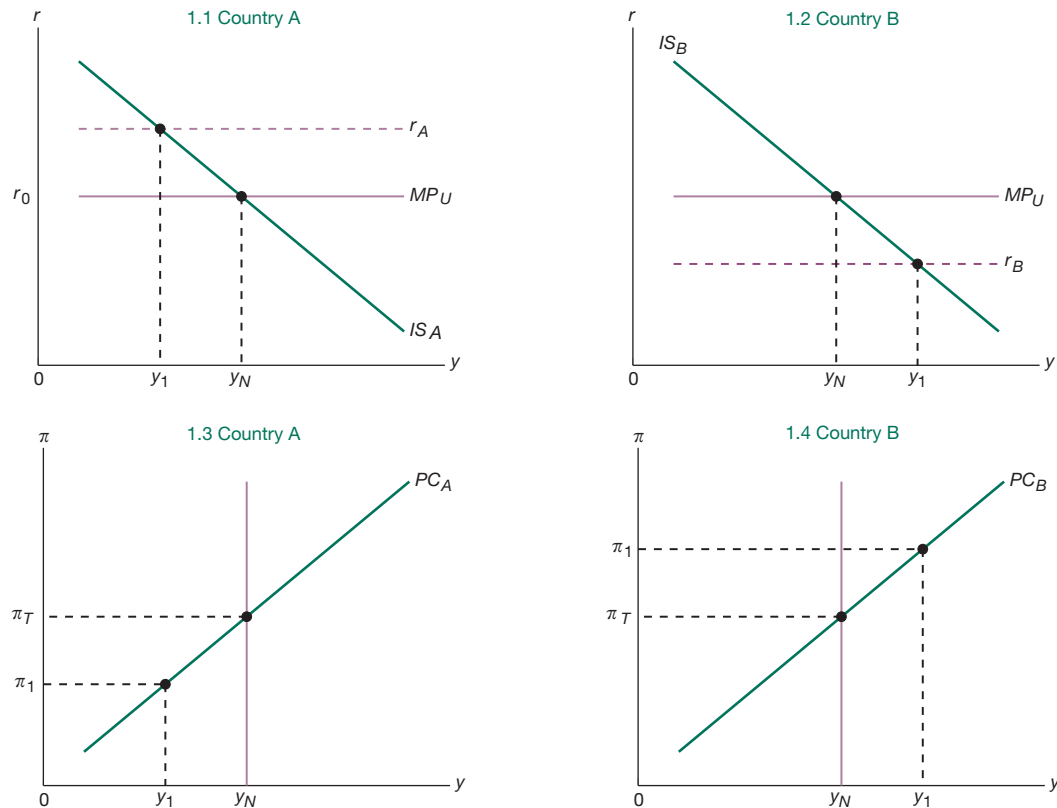
The model is closed with a single-mandate monetary policy (MP) reaction function that assumes that the central bank targets inflation only. In equation (3), the monetary authorities set the policy rate in such a way that the real rate is increased while lagged inflation remains above the target rate of inflation (π_T):²

$$r = r_1 + \gamma(\pi_{-1} - \pi_T), \quad \gamma > 0. \quad (3)$$

Macroeconomic equilibrium is attained when output is at the natural level and inflation expectations are anchored at the target inflation. Within a monetary union, the centralisation of policymaking precludes deriving a monetary policy reaction function for each region. The

² Using a more elaborate reaction function according to some version of the Taylor rule, the policy rate would also increase in the presence of a positive output gap.

Figure 1
Asymmetric financial shocks in the IS-MP-PC model



Note: IS-MP-PC model stands for the income-spending, monetary policy and the Phillips curve model.

Source: Author's representation.

determinants of the nominal policy rate are union-wide variables. In equation (3), the sole determinant is the deviation of union-wide inflation from the ECB's target inflation. In this setting, a situation may arise in which regional lending conditions start to diverge. Such fragmentation is discussed in the context of a monetary union using a stylised two-country version of the IS-MP-PC model.

We examine the transmission of asymmetric financial shocks resulting from unwarranted, disorderly market dynamics. As discussed above, this has been the ECB's main justification for the introduction of the TPI. In the two-country model, the regional real interest rate is no longer fully determined by the central bank, but depends on the nominal policy rate and regional inflation expectations. Following Stevenson and Wolfers (2023), we add financial shocks to the real rate by introducing a region-specific risk premium. The regional MP-curve then becomes:

$$r_i = i_U - \pi_i^e + \rho_i, \quad i = [A, B], \quad (4)$$

where r_i denotes the regional real interest rate, i_U the union-wide nominal policy rate, π_i^e the regional expected inflation, ρ_i the region-specific risk premium and subscript i denotes countries A and B. Fragmentation in lending conditions may result from divergences in inflation expectations and/or risk premiums. Figure 1 illustrates the dynamics in the case that unwarranted disorderly market dynamics lead to capital flows from country A to B. When financial markets perceive country A to be risky, investors will demand a positive risk premium ρ_A . In contrast, country B may benefit from a safe-haven effect (negative ρ_B). As a result, a spread between r_A and r_B emerges (see Figures 1.1 and 1.2). Along the IS-curves, output decreases (increases) in country A (B), resulting in deflationary (inflationary) pressures through the PC-curves (Figures 1.3 and 1.4).

Further destabilising dynamics may result from a de-anchoring of regional inflation expectations. When inflation expectations in country A (B) adjust to the lower (higher) inflation at π_1 , the PC-curve shifts downwards (upwards) and the real interest rate r_i increases (decreases), exac-

erbing the cyclical divergence and the fragmentation of lending conditions.³ In addition, the output drop in country A might further increase the anxiety in the financial markets, raising the country's risk premium. It is this self-fulfilling destabilising effect of fragmentation that the ECB's TPI seeks to prevent, through intervention in the bond markets to reduce the risk premiums and bring r_A and r_B in line with MP_U . This theoretical case would adhere to the activation conditions specified by the ECB.

Figure 1 presents a stylised version of the macroeconomic dynamics within a monetary union, which can be expanded along the following lines. First, financial market disorder could interact with asymmetric economic shocks in such a way that a negative demand shock triggers an increase in the risk premium. This would exacerbate the destabilising dynamics. Second, this interaction will also depend on the state of public finances. In the presence of a high public debt ratio, countries may fall into a debt trap, whereby a combination of low economic growth and high interest rates projects an unsustainable path for the debt-to-GDP ratio. Third, divergences in real borrowing rates may lead to wealth effects with macroeconomic implications. A booming regional economy with high economic growth and low real interest rates may lead to an increase in housing prices. Such an increase in homeowners' wealth stimulates consumption through balance sheet effects. The low labour mobility in Europe reduces arbitrage between national housing markets. Divergences in regional housing wealth are therefore likely to occur within Europe, as we have seen prior to the sovereign debt crisis.

Finally, we add a stabilising effect. Within the union, the real exchange rate channel remains intact. The competitive position of a booming region will deteriorate, not via changes in the nominal exchange rate but via a change in the price ratio. In contrast, the competitive position of a depressed region will improve through internal devaluation. These changes in competitiveness will be reflected in next exports, shifting the IS-curve in country A (B) to the right (left). The absence of swift adjustment through the nominal exchange rate will, however, reduce the size and speed with which the real exchange rate adjusts (Arnold and Kool, 2004). The sovereign debt crisis has also shown that this is a slow adjustment channel.

The conditionality of the TPI

This section discusses the TPI's conditionality based on Table 1, which contains four possible scenarios depending on whether the two activation conditions have been

³ These shifts are not shown in Figure 1, in order not to clutter the graph.

Table 1
Conditions for Transmission Protection Instrument activation, possible scenarios

		Market dynamics			
		Unwarranted		Warranted	
		Disorderly	Orderly	Disorderly	Orderly
Fiscal and macroeconomic policies	Sound and sustainable	A TPI activation	N.A.	N.A.	B Goldilocks
	Unsound and unsustainable	N.A.	C Complacency	D Crisis	N.A.

Notes: Unwarranted is interpreted as not in line with macroeconomic fundamentals. Disorderly refers to sudden, sizable increases in sovereign spreads. N.A.: not applicable; these are logically inconsistent scenarios.

Source: Author's elaboration.

met. A discussion of logically consistent scenarios requires the dissection of the first condition based on the adjectives "unwarranted" and "disorderly". In the remainder, "unwarranted" will be interpreted as not in line with macroeconomic fundamentals, whereas "disorderly" refers to sudden, sizable increases in sovereign spreads. Before examining whether the activation conditions make the TPI an effective instrument to safeguard the transmission of monetary policy, we first discuss each of the four scenarios.

Under scenario A, both conditions for TPI activation have been met. Disorderly market dynamics threaten to destabilise a country, even though the country pursues sound and sustainable macroeconomic policies. This scenario fits in a continental European tradition of blaming speculators for crises in financial markets.⁴ In this line of reasoning, market interest rates do not always accurately reflect fundamentals. In theory this could give rise to a so-called bad equilibrium, in which unfounded pessimism in the financial markets drives up interest rates to such an extent that the debt-to-GDP ratio enters an unsustainable trajectory. A country can then either take harsh austerity measures or decide not to repay the debt. In both cases, the pessimism of the markets becomes self-fulfilling (De Grauwe and Ji, 2013). In this line of reasoning, unpredictable market sentiment is the source of economic instability, justifying intervention by the ECB.

Scenario B is a "Goldilocks" scenario, in which euro area member states credibly pursue sound fiscal and macroeconomic policies. Sovereign spreads are low, reflecting

⁴ The currency crises in the European Monetary System in the early 1990s are a classic example.

the soundness of countries' economic policies. In this scenario, there is no need for the ECB to intervene. Under the remaining scenarios C and D, countries pursue economic policies which may compromise the stability of the monetary union. In scenario C, labelled "Complacency", financial markets do not recognise or react to unsound policies of member states. Sovereign spreads remain low, notwithstanding the deterioration in their macroeconomic fundamentals. An example of such unwarranted orderly market sentiment is the period prior to the Global Financial Crisis, when euro area sovereign spreads remained small, yet macroeconomic imbalances were building up. Finally, in scenario D, financial markets correctly price in the higher default risk associated with member states' unsustainable policies. This is an example of warranted disorderly market sentiment. This combination of unsustainable policies and adverse market sentiment would trigger a crisis in the euro area.

We next discuss whether the activation conditions allow the ECB to effectively use the TPI to counter fragmentation risk and safeguard the transmission of monetary policy. A first observation is that with conditionality, the TPI does not eliminate fragmentation risk. Only if disorderly market sentiment were not in line with fundamentals (scenario A), would the ECB activate the TPI. If fragmentation results from warranted disorderly market sentiment (scenario D), the instrument would not be activated. An important empirical question is then whether disorderly market dynamics unconnected to fundamentals are an important characteristic of the euro area bond markets. If the theoretical case of self-fulfilling yet unwarranted speculative attacks has little empirical support and negative market sentiment can always be linked to deteriorating fundamentals, the TPI would be irrelevant.

The ECB has not specified how it will determine whether financing conditions are unwarranted by fundamentals. It is not straightforward to prove that sovereign spreads are disconnected from fundamentals. Econometric models, as in Bernoth et al. (2022), may establish a relationship between sovereign spreads and macroeconomic variables. The unexplained part could then be interpreted as unwarranted market sentiment. However, this approach runs into the methodological problem that a single realisation of a country's macroeconomic path inside the EMU is compared to financial variables that at each point in time consider a probability distribution of all possible paths that a country could have taken.⁵ Bond markets discount the consequences of multiple future scenarios regarding a country's macroeconomic policies, only one

of which will materialise. Instances of seemingly unwarranted disorderly market sentiment might thus be linked to fundamental uncertainty about a country's economic direction and its prospects inside the monetary union. For example, sovereign spreads may be more volatile around elections in periphery euro area countries, when investors worry that newly elected politicians may pursue unsound macroeconomic policies.

As forward-looking bond markets price in uncertain future scenarios, qualifying market sentiment as unwarranted implies that the ECB has superior information on how the future will evolve. While financial markets can be wrong about sovereign risk, the question is whether the ECB can do better. Debt sustainability analysis is the main forward-looking tool that policymakers have at their disposal to assess fiscal soundness, and it depends on various assumptions regarding the future trajectory of economic growth, interest rates, inflation and fiscal and macroeconomic policies. Assessing debt sustainability poses significant challenges due to the need to make predictions about future events, which are often highly uncertain or even impossible to accurately forecast (Wyplosz, 2011; Heimberger, 2023). In short, the forward-looking nature of bond pricing and the limitations of debt sustainability analysis will make it difficult to apply the activation conditions in an objective and transparent manner.

Finally, there are four additional drawbacks to using the TPI and its activation conditions: price distortion, moral hazard, endogeneity and asymmetry. By using the TPI, the ECB interferes in the price formation in the euro area bond markets. Spread control will thus lead to price distortion and reduce the information value of euro area bond prices. A related risk is that spread control creates moral hazard (Feld et al., 2022). Absent market discipline, governments may steer policies towards an unsustainable path. When markets rely on the ECB to reduce spreads, a combination of macroeconomic imbalances and market complacency (scenario C) may materialise. The outcome of debt sustainability analysis will be endogenous to ECB policy. As the government bond yield is a key variable in debt sustainability analysis, activation of the TPI will influence the outcome of such an analysis. This results in circularity: by intervening, the ECB will positively affect a country's score on the fiscal criteria for TPI intervention, enabling the ECB to justify its intervention. Finally, the TPI and its activation conditions are by design asymmetric. As long as market sentiment is "orderly", the ECB will not activate TPI, even when markets suffer from a bout of unfounded optimism. In the run-up to the global financial crisis, yields on southern periphery public debt were very close to yields on German Bunds, yet inflation rates in periphery countries were relatively high. At

⁵ This problem is akin to Kleidon's (1986) critique in the debate about excessive stock market volatility.

that time, one could have argued that the low sovereign spreads were not in line with fundamentals and resulted in real interest rates that were too low and destabilised these economies. For a uniform transmission of monetary policy, these countries needed higher real interest rates. It is hard to imagine that the ECB will intervene to widen spreads when markets are overly optimistic. By focusing on disorderly market sentiment, the TPI's conditionality precludes this. The asymmetric nature of TPI thus creates a bias towards low sovereign spreads.

Conclusions

As asymmetric financial shocks have the potential to destabilise the EMU, it is understandable that monetary policymakers are concerned about fragmentation risk. In the absence of a full fiscal union, the elimination of bond market fragmentation will be difficult. The TPI has been introduced to counter the risk that fragmentation poses to the transmission of monetary policy in Europe. While the TPI can be interpreted as an attempt to repair the union's incompleteness, it makes the ECB vulnerable to legal challenges. Two activation conditions should protect the ECB from legal action. First, TPI activation should counter "unwarranted, disorderly market dynamics that pose a serious threat to the transmission of monetary policy across the euro area" (ECB, 2022d). Second, the ECB will assess whether countries "pursue sound and sustainable fiscal and macroeconomic policies" (ECB, 2022d).

This paper has examined the conditionality of the TPI. If the activation conditions were applied strictly, the TPI would not be able to eradicate fragmentation risk. In particular, fragmentation resulting from warranted disorderly market sentiment would not be addressed. It can be argued that in such a scenario, distressed countries should seek support from the European Stabilisation Mechanism or the Outright Monetary Transactions programme. These require recipient countries to commit to economic reforms, which countries dislike and will try to avoid. We may therefore expect that distressed countries will put the ECB under maximum pressure to use the TPI. The activation conditions fail to withstand this pressure. The difficulty in applying the activation conditions in an objective and transparent manner increases the likelihood that the ECB will yield to such pressure. It also provides the ECB room for policy discretion. Given the wealth of economic expertise at the ECB, one must assume that the Bank is aware of the difficulties in applying the activation conditions. A possible interpretation is therefore that the activation conditions are inapplicable by design. In this interpretation, TPI conditionality is a fig leaf to cover ECB policies that may go beyond its mandate.

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Digitalisation and Modernity of Capital Stock in Europe

Digitalisation has become one of the core concepts in European modernisation. While investment in computer hardware, telecommunications equipment, software and databases has increased over the years, the degree of modernity of the overall capital stock has not. This paper examines whether there is a relationship between digitalisation and the changes in the degree of modernity of capital stock in different sectors in 13 European countries. Our analysis shows that a higher degree of digitalisation leads to a more modern capital stock. That being said, comprehensive modernisation of capital stock will take more than an increase in the degree of digitalisation. Selective investment subsidies for digital assets, such as those provided at the EU level and in individual member states, are not enough. What Europe needs is for investment activity to be promoted across the board.

Digitalisation has become instrumental in the modernisation of developed economies. In order to remain competitive and retain technological sovereignty, the EU Commission has set out clear objectives in its Digital Decade policy programme 2030. In what is known as its Digital Compass, the Commission has laid out measurable goals for 2030 that will help translate the EU's digital objectives across four areas: population and digital skills, digital infrastructures, the digital transformation of businesses, and the digitalisation of public services (European Commission, 2021). Among other things, larger and targeted investments in multi-country projects are intended to develop and build pan-European cutting-edge capacities in strategic technology areas, and in doing so, help to increase the competitiveness and resilience of the European economy. Funding for these projects will come from

member states and may be combined with funds from EU programmes. This includes contributions from the Recovery and Resilience Facility, the Digital Europe programme, the Connecting Europe Facility, the InvestEU programme, the Horizon Europe programme, as well as the European Regional Development Fund and the Cohesion Fund.

Digitalisation could also make a crucial contribution to the ecological transformation of the economy. To help achieve climate neutrality by 2050, EU member states have launched a programme of political initiatives known as the European Green Deal (Wolf et al., 2021; Tagliapietra and Veugelers, 2021). Digitalisation plays an important role in the implementation of this programme. In particular, the expansion of digital infrastructure and services is anticipated to help reduce CO₂ and other greenhouse gas emissions to an extent far exceeding the emissions produced by the information and communications industry itself. One political priority, for example, is the digitalisation of the European energy system. Investments in digital technologies such as smart IT devices, 5G and 6G connectivity, a pan-European energy data space with cloud and edge computing servers, and digital twins for energy systems are expected to facilitate the transition to clean energy.

A key instrument when it comes to stimulating additional investment in ecological and digital transformation in the EU is the Recovery and Resilience Facility (EU Commission, 2023), a temporary recovery instrument that has allowed the Commission to mobilise funds and support member states with reforms and investments from the start of the pandemic in February 2020 until 31 December

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2026. This key instrument has €800 billion to disburse in the form of grants and loans, including a significant portion for measures to help drive the digitalisation of European economies and societies. In the national recovery and resilience plans of 22 member states approved by the EU Commission, almost 40% of planned spending was allocated to climate action and more than 26% to digital transformation (European Commission, 2022).

In addition to the EU's extensive packages, there are further programmes at the national and regional levels supporting the ecological and digital transformation. One reason to get these initiatives off the ground was the hope for a boost in investment and modernisation in Europe through digitalisation that has not been fully accomplished.

While there has been an increase in investment in digital products such as computer hardware and telecommunications equipment as well as software and databases over the past 25 years or so, there has been no development in the level of modernity of capital stock. On the contrary, the capital stock is getting older on average, and its service life is increasing.¹

Digital transformation is the incorporation of computer-based technologies (i.e. hardware and software-based control units) into an organisation's machinery and equipment. This makes equipment and systems more productive, and the improved flexibility and reliability can result in longer service life. The service life of equipment with integrated digital technologies, however, can decrease. Technological progress in this area is faster than in other technologies, meaning ICT equipment usually involves high depreciation rates and large capital losses (Stiroh, 2001). Digital assets depreciate most immediately after acquisition and at the beginning of their service life. On the one hand, this is due to the fact that they are only state-of-the-art for a comparatively short period of time. On the other hand, digital assets are often adapted to the specific requirements of the company that uses them, meaning they are barely marketable any longer (Bitkom e.V., 2020).

Given the decreasing lifetimes and increasing depreciation rates of digital technologies, as well as the fact that such technologies can be used to extend the lifespan of machinery and buildings, this paper examines whether and which connection exists between digitalisation and the modernisation of capital stock in Germany and 12 other European countries. Does digitalisation counteract the ageing of capital stock that we are seeing or do other effects crowd out any such impact?

¹ For Germany, see e.g. Bardt et al. (2017); for other European countries, see e.g. Michelsen and Junker (2023).

Analytical approach and data selection

In an attempt to gain a better understanding of possible correlations, we will begin by analysing the correlation between aggregate statistical data on digital investment and the modernisation of capital stock in different sectors of the EU member states.

Eurostat provides a wealth of data on investment activity and capital stock. Aggregated indicators can be developed for industries and regions or countries. Changes in the gross fixed assets in ICT equipment (computer hardware and telecommunications equipment) as well as software and databases can be used as indicators of digitalisation. If investments in such fixed assets increase, this indicates an increase in the pace of digitalisation and vice versa.

The ratio of net to gross fixed assets can be used as an indicator of the modernity of capital stock. This expresses how much of the total assets in use have not yet depreciated. The more modern the capital stock, the higher this ratio. Modernity is also related to the service life of the capital, i.e. the shorter (longer) the service life, the higher (lower) the degree of modernity.

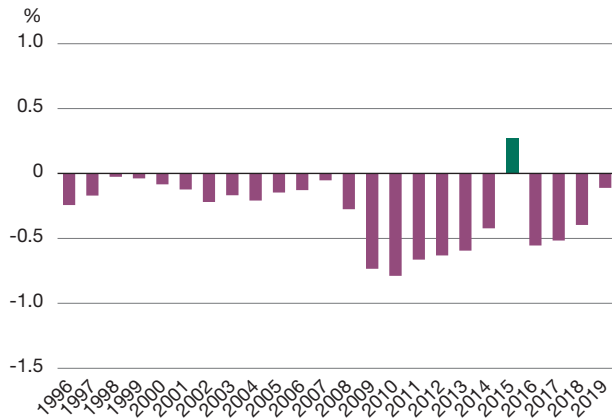
Eurostat publishes separate data on net and gross capital stock for the categories "buildings and structures", "machinery and equipment" and "intellectual property products". For the analysis in the period from 1995 to 2019, data are available from Eurostat for up to 13 different economic sectors (at the single-digit level of the NACE industry classification) in up to 13 European countries.²

The aim of this study is to identify an average effect of digitalisation on the modernisation of capital and thus on investment requirements as well. The goal is therefore not to prove a causal effect in individual cases, but to gain insight into the quantitative significance of the correlation. The focus is on the correlation between the change in digitalisation and the change in modernisation. The level of digitalisation achieved and the degree of modernity are not considered here.

In the following analyses, the changes in total digital assets are first compared with the changes in the degree of modernity of total assets. In this way, all possible channels of impact of digitalisation on the service life of total capital are taken into account. However, the aggregate may also reflect many changes in other underlying data. In addition, digital fixed assets are themselves part of to-

² Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands and the United Kingdom.

Figure 1
Average annual change in the degree of modernity of total fixed assets (1995-2019)



Note: The countries analysed are Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands and the UK.

Source: Eurostat; own calculations.

tal fixed assets. For this reason, the second approach is to analyse the specific changes in the total fixed assets in software and databases with regard to changes in the degree of modernity of equipment that those digital assets are not a part of.

Changes in the degree of modernity and investment in digital products

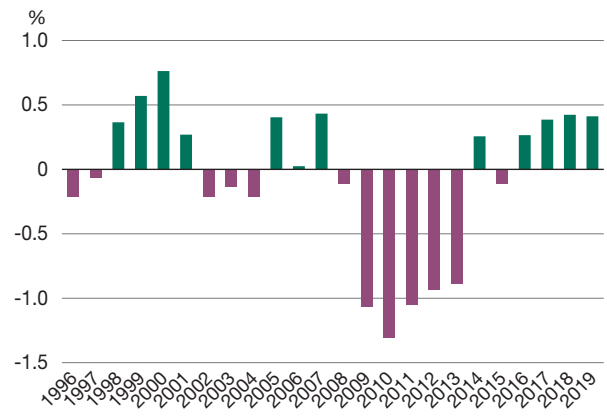
In the European countries studied, the degree of modernity of total fixed assets was generally found to decline over the period 1995 to 2019 (see Figure 1), with the second half of the period studied displaying a stronger average decrease than the first.³ The negative rates of change have, however, recently eased up, i.e. the trend towards increasing life span of fixed assets/capital has slowed.⁴

Capital stock also includes durable goods such as buildings, with residential buildings in particular, whose service life is less affected by digitalisation, playing a major role. If you look solely at the capital stock of equipment, the change in the degree of modernity paints a more nuanced picture. The rates of change in the degree of modernity are positive in half of the 24 years, but negative in the other half (see Figure 2). The global financial and economic crisis saw

3 This is also evident when looking at individual large countries such as France and the United Kingdom (Belitz et al., 2023).

4 The positive outlier of 2015 is determined by individual values in Ireland.

Figure 2
Average annual change in the degree of modernity of fixed assets in equipment (1995-2019)



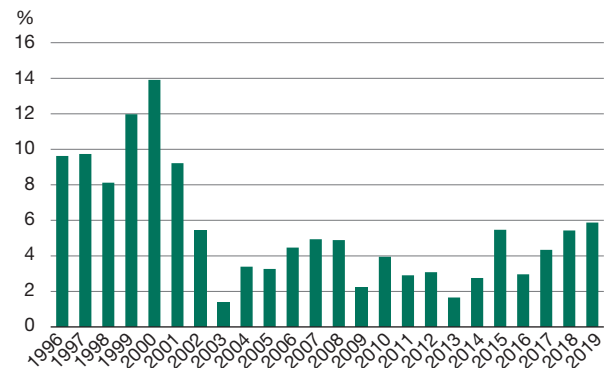
Note: The countries analysed are Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands and the UK.

Source: Eurostat; own calculations.

the onset of a six-year period of decreasing rates of change, meaning increasing service lives. From 2014 onwards, the rates of change were predominantly positive, indicating that equipment capital was once again ageing at a faster rate.

The increasing digitalisation of the economy is clearly reflected in the data. Investments are increasing from year to year (see Figure 3). The years after the dotcom crisis in 2002 and 2003 saw sharper declines in growth; a similar pattern

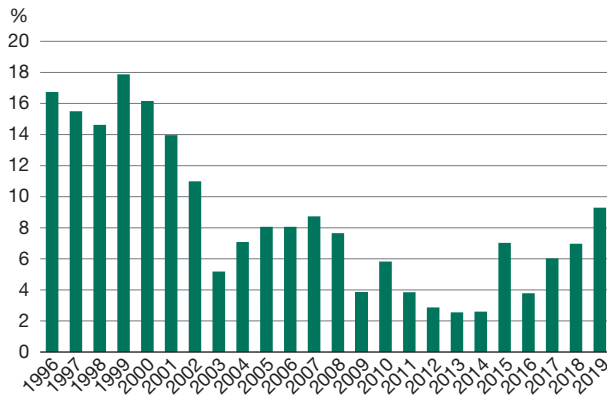
Figure 3
Average annual change in gross fixed assets in digital products and software (1995-2019)



Note: The countries analysed are Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands and the UK.

Source: Eurostat; own calculations.

Figure 4
Average annual change in fixed assets in software (1995-2019)



Note: The countries analysed are Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands and the UK.

Source: Eurostat; own calculations.

was observed following the global financial and economic crisis in 2009 and again in connection with the euro crisis in 2013. Investment in digital technologies increased to a far lesser degree after 2001 than before, a development that is likely to be related to the increasing digital assets.

On average, the rates of change in fixed assets in software and databases were also always positive for the countries studied (see Figure 4). Over the long term, however, these assets were found to decrease, only beginning to rise again slightly in the more recent years, similar to the growth rates of the fixed assets of all digital products taken together. Over time, the development of both the digital and software indicators has become very heterogeneous in the individual countries (Belitz et al., 2023).⁵

Correlation analysis

Correlation analysis is performed to identify indicators of the relationship between the change in digital investment and the modernisation of capital stock. Possible delayed interactions between changes in the digital fixed assets in previous years and the ageing of the capital stock must

5 In Germany and the United Kingdom, for example, the rates of change in the digital indicators were also negative at times; the swings in both directions were found to be greater in the United Kingdom than in Germany. In France, on the other hand, the digital indicator grew throughout the entire period studied. This was the case for the software indicator in both Germany and France, while in the United Kingdom, negative values were also observed with greater variation in the rates of change.

Table 1
Correlation between the rates of change in investment and the rate of change in the degree of modernity in selected European countries (1995-2020)

	Investments in	
	digital products and software	software
	and the degree of modernity of	
	total fixed assets ¹	equipment fixed assets ²
Total	0.24 ***	0.25 ***
Manufacturing/production of goods	0.31 ***	0.11 *
Energy supply	0.02	-0.07
Water supply; sewerage, waste management, etc.	-0.01	0.01
Construction/building	0.25 ***	0.20 ***
Wholesale and retail trade; repair of motor vehicles and motorcycles	0.32 ***	0.33 ***
Transportation and storage	0.34 ***	0.24 ***
Hospitality/accommodation and food service activities	0.20 ***	-0.05
Information and communication	0.33 ***	0.31 ***
Financial and insurance activities	0.14 **	0.05
Professional, scientific and technical activities	0.33 ***	0.00
Other economic activities	0.37 ***	0.06
Arts, entertainment and recreation	0.19 ***	0.24 ***
Other service activities	0.41 ***	-0.06

Note: *** p<0.01, ** p<0.05, * p<0.1. ¹ Austria, Belgium, Czechia, Denmark, Finland, France, Greece, Italy, the Netherlands and the UK. ² Austria, Belgium, Czechia, Denmark, Finland, France, Germany, Greece, Hungary, Italy, the Netherlands and the UK.

Source: Eurostat; own calculations.

also be taken into account. First of all, it can be assumed that investments, whether in individual years or over several previous years, can have a delayed effect on the degree of modernity of capital stock. Indications of such time lags can only be derived from the data themselves. The Akaike information criterion was applied to determine which lag structures provide the clearest evidence of possible time-delayed effect correlations (see Cavanaugh and Neath, 2019). For the correlations between the changes in the degrees of modernity of the total assets in digital systems or equipment, and the rates of change in the digital or software indicators in the different countries and sectors, we tested up to seven time lags for the digital or software indicators in every possible combination. For both correlations, the Akaike information criterion is lowest for the model with the current values only, i.e. without

Table 2

OLS estimates of the correlation between the change in the degree of modernity of total fixed assets and the changes in the digital indicator (1995-2008 and 2011-2019)

	1995-2008					2011-2019				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Digital indicator	0.0212***	0.0200***	0.0181***	0.0180***	0.0161***	0.0403***	0.0381***	0.0374***	0.0231***	0.0343***
Total investments		0.0387***					0.0516***			
Industry-specific investments			0.0484***					0.0418***		
Country-specific investments				0.0232***					0.0503***	
Country and sector-specific investments					0.0124***					0.0117***
Constant	0.00346***	0.00499***	0.00518***	0.00462***	0.00393***	0.00497***	0.00656***	0.00649***	0.00565***	0.00550***
Observations	1,859	1,859	1,859	1,859	1,859	1,231	1,231	1,231	1,231	1,231
R ²	0.037	0.044	0.087	0.046	0.09	0.046	0.052	0.067	0.108	0.149
Adjusted R ²	0.0361	0.0429	0.0858	0.0451	0.0888	0.0447	0.0506	0.0653	0.106	0.148
F-value	70.61	42.68	88.24	44.93	91.58	58.59	33.76	43.95	74.16	107.7

Note: *** p<0.01, ** p<0.05, * p<0.1.

Source: Eurostat; own calculations.

taking lags into account. The current annual changes in the degree of modernity of total fixed capital or equipment capital are thus most closely associated with the current annual changes in fixed assets (investments) in digital technologies or software.

Looking at the current annual changes in the indicators, a positive correlation can be seen, on average. In countries and sectors with higher growth in digital investment, the degree of modernity was also found to be on an upward trend. This is true both in terms of total digital investment and total fixed capital, as well as in terms of software and equipment capital stock (see Table 1).

That being said, there are clear differences between the sectors as well. The correlation coefficients of the relationship between the change in capital stocks in ICT technologies and the change in the degree of modernity were above the average of 0.24 in the sectors of manufacturing, trade, transportation, information and communication, professional, scientific and technical services, as well as other economic services. No significant correlation was found in the energy supply and water supply, sewage, waste management and environmental pollution and remediation, i.e. areas with a lower level of digitalisation.

In the manufacturing sector, the correlation between the annual changes in software capital stock and those in the degree of modernity of equipment capital stock is only

weakly significant and below average. Significantly positive correlation coefficients are found in as few as five industries: construction; transportation and warehousing; arts, entertainment and recreation; trade; and information and communication. For the latter two sectors, the correlation coefficients are above average. Overall, a stronger positive correlation between the change in digital and software investment, on the one hand, and the degree of modernity, on the other, is evident in those sectors that have already achieved a higher degree of digitalisation, as shown in various studies (Demary and Goecke, 2021; Calvina et al., 2018).

Regression analysis

Investment and thus the development of fixed assets in ICT products as well as in software and databases, however, may not only be an expression of the degree of digitalisation, but also a consequence of changing investment conditions in general. It is therefore important to separate, as far as possible, the effects of the change in investment in digitalisation on the capital stock and its degree of modernity (or remaining service life) from other factors influencing the investment cycle.

Multiple regressions were therefore used to test the correlations between changes in both investment in digital products and software and general investment activity and changes in the degree of modernity. A distinction was made between

Table 3

OLS estimates of the correlation between the change in the degree of modernity of equipment assets and the changes in the software indicator (1995-2008 and 2011-2019)

	1995-2008					2011-2019				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Digital indicator	0.00329	0.00282	0.00272	0.000426	0.000341	0.0371***	0.0349***	0.0351***	0.0139	0.0342***
Total investments	0.0758***					0.100***				
Industry-specific investments	0.0510***					0.0593***				
Country-specific investments	0.0570***					0.0830***				
Country and sector-specific investments	0.0228***					0.0112***				
Constant	0.000555	-0.00253**	-0.00143*	0.00243***	-0.000596	-0.00238**	0.00552***	0.00459***	0.00394***	0.00297***
Observations	2,176	2,176	2,176	2,176	2,176	1,460	1,460	1,460	1,460	1,460
R ²	0.001	0.008	0.015	0.016	0.042	0.011	0.017	0.021	0.045	0.030
Adjusted R ²	0.000585	0.00708	0.0141	0.0151	0.0415	0.0103	0.0154	0.0197	0.0435	0.0290
F-value	2.274	8.750	16.54	17.62	48.11	16.18	12.42	15.68	34.14	22.81

Note: *** p<0.01, ** p<0.05, * p<0.1.

Source: Eurostat; own calculations.

changes in general investment activity across all the EU countries and sectors examined and the specific investment cycles of the individual countries and sectors.

Crisis-related developments can show a significant and sudden effect on impact investment activity. Of particular relevance in the period under study is the financial and economic crisis that began at the end of 2008 and that had a particularly strong impact on the average values in 2009. Accordingly, the regressions presented here were estimated for the periods 1995 to 2008 and 2010 to 2019, i.e. not including the crisis years. Moreover, we chose not to extend the observation period to include the year 2020 due to the sharp decline in investment related to the coronavirus pandemic.

In this context, the results of the OLS estimates confirm an independent correlation between changes in the level of digital capital (ICT products and software) and the change in the degree of modernity of the total assets (see Table 2). The coefficient of the effect of the change in digitalisation was also found to decrease when the effects of the change in overall investment activity in the different countries and sectors are taken into account. The correlation with the change in digitalisation remains statistically significant even when the specific investment cycles in a given sector within a country are taken into account.

For both periods examined, increasing digitalisation was shown to have an independent effect on the increase

in the degree of modernity of the entire capital stock. Based on the size of the coefficients, however, the correlation was found to be significantly stronger in the second period. Thus, in the period 1995 to 2008, the impact of the change in digitalisation and the sector- and country-specific investment cycle is approximately equal. In the period between 2010 and 2019, however, the effect of the change in digitalisation on the overall change in the degree of modernity is three times greater than that of the investment cycle.

The differences between the two periods are even more pronounced when looking at the correlations between changes in software assets and the degree of modernity for equipment assets only (see Table 3).

In the period between 1995 and 2008, the software indicator was not found to have a statistically significant effect on the degree of modernity. The only proven correlation was the one between the changes in investment activity in the individual countries and sectors on the change in the degree of modernity.

In the period 2010-2019, on the other hand, there is a statistically proven relationship between the increasing use of software and the increase in the degree of modernity of equipment. This remains true even when controlling for the effects of sector and country-specific investment cycles. The effect of the change in the use of software was once

again found to be three times as high as that of the change in investment activity in the sectors in the individual countries. The only factors that appear to mask the effect of digitalisation on the change in capital utilisation are the – in some cases – very pronounced differences in investment patterns between the individual EU countries studied.

Conclusions

Our analyses of selected EU member states for the period 1995-2019 show that in those areas where digitalisation is picking up pace, the degree of modernity of the capital stock is increasing as well. For capital stock to be comprehensively modernised, however, it will take more than increased digitalisation efforts.

As important as digitalisation is for the modernisation of European economies, without broad investment incentives, the rapid renewal of capital stock, which is crucial for this twin transition, will not succeed. Selective investment incentives for digital technologies, as seen at the EU level, are not enough. What we need in Europe is for investment to be stimulated across the board (Revoltella, 2020; Gereben and Wruuck, 2021).

On the demand side, EU infrastructure programmes such as the Green Deal or Net-Zero Industry could play a key role. On the supply side, such stimulation can be achieved with the help of tax incentives such as degressive depreciation, for example. Some countries have already put forward concrete plans for this.⁶ Investment can likewise be promoted through specific measures such as those envisaged at the EU level under IPCEI (Important Projects of Common European Interest) and the EU Chips Act. The IPCEI instrument funds the transformation of large-scale investment projects into what are known as game changer technologies (e.g. microelectronics, battery cell production, hydrogen technology) in several EU member states. What is new here is that funding can be provided until right before the start of commercial use, i.e. mass production, and that European state aid regulations are relaxed for these projects. This creates new government policy coordination mechanisms that no longer separate pre-competitive technology policy and private investment activity. The IPCEI and the EU Chips Act are already demonstrating new strategies for future investment promotion that for instance could be taken as a basis for the creation of technology-oriented investment funds (Belitz and Gornig, 2021).

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⁶ An example of a targeted investment incentive is the introduction of “super depreciation” for investment in digital assets in 2022 and 2023, as provided for in the German government’s coalition agreement.

Christian Bender, Fabio Botta and Thomas Lenk

Changing Europe's Budgetary Framework

Implications for the German Independent Advisory Board

European governance is in a state of upheaval. Due to the impact of the coronavirus pandemic, the Russian war of aggression in Ukraine and the energy price crisis, European fiscal policy has come under increasing pressure. In this complex situation, the European Commission considers a return to the previous fiscal rules to be impracticable and has presented reform proposals. These include the strengthening of national independent fiscal institutions through the bundling and expansion of tasks and duties. This article examines the implications that the implementation would have with regard to the Independent Advisory Board to the Stability Council in Germany.

The European Commission's initiative on fundamental change in European governance has laid the groundwork for reform. In the wake of the coronavirus pandemic, a return to the previous rules was considered impractical from the perspective of the member states and the European institutions. Following a public participation process initiated by the Commission in 2020 and the subsequent publication of a Commission communication in 2022, legislative proposals have now been published. In addition to the much-publicised reform proposals on fiscal rules (European Commission, 2023a; 2023b), reforms to the budgetary framework have also been put forward (European Commission, 2023c).

This paper discusses the changes that would result from the proposed modification of the Council Directive 2011/85/EU (European Commission, 2023c). In particular, with regard to national independent fiscal institutions (IFIs), changes are planned that will permanently affect the budgetary framework. The amendments to fiscal rule

monitoring will have an impact on the way in which policies are designed, monitored and evaluated. The area of policy evaluation will most likely be structurally strengthened in this respect. The IFI provisions are intended in particular to promote a more stringent and comprehensive analysis of financial relations and compliance with fiscal rules. Before discussing the changes underlying the Commission's legal proposal, this paper describes the current design of IFIs by European Union law and applies it to the German Advisory Board. It thus shows the changes entailed in the Commission's proposal. Subsequently, the main innovations presented by the Commission with regard to the budgetary framework are presented, followed by a critical assessment.

Current design of IFIs: The European dimension

IFIs are public bodies responsible for monitoring compliance with fiscal rules, producing or endorsing macroeconomic forecasts for the budget and advising the government on its fiscal policy (European Commission, 2023d). They are financed by public funds and are functionally independent from fiscal authorities (European Parliament, 2013, Art. 2). This includes a statutory regime grounded in national law, no authority of budgetary authorities to issue directives, the capacity to communicate publicly as well as adequate resources and appropriate access to information to carry out their mandate (European Parliament, 2013, Art. 2).

From a political economy perspective, the deficit bias and procyclical fiscal policy in particular have been decisive factors that have significantly favoured the introduction of IFIs. The deficit bias can arise, for example, when the consequences of a deterioration in the fiscal position become

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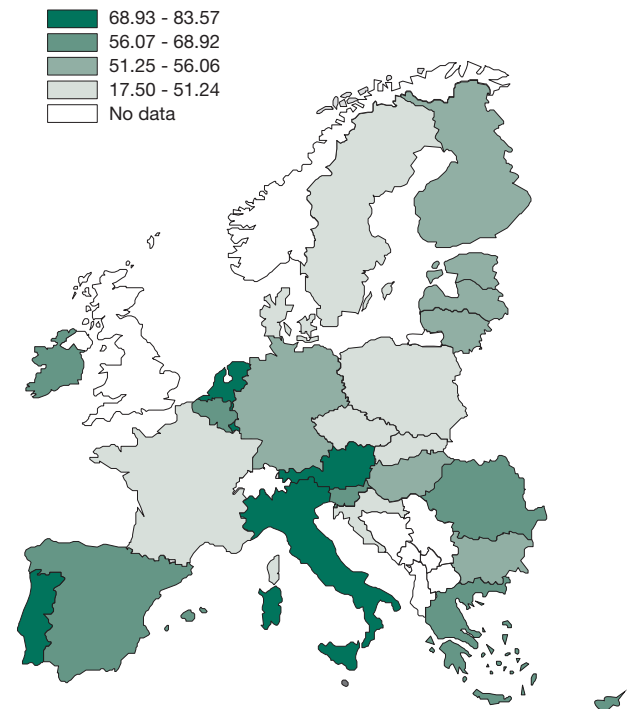
visible only with a time lag (fiscal illusion), expansionary fiscal policies are implemented not on the basis of fiscal policy considerations but on the basis of electoral decisions (election cycles), or interest-driven redistribution mechanisms of public funds exist (common-pool problem) (Eyraud et al., 2018, 8). As early as 2006, the Commission concluded: “The importance attached to national fiscal rules and institutions in the reformed SGP is not fortuitous. Recent economic history provides evidence that policymakers do not always pursue time consistent and sustainable fiscal policies” (European Commission, 2006, 140).

The Commission is thus aware of the existence of divergent behaviour and has been pricing it into its considerations of fiscal rules and budget monitoring for some time. Fiscal rules, as well as IFIs, are understood as mechanisms to address these circumstances. In their role as fiscal watchdogs, IFIs have several responsibilities. For their main role, namely the monitoring of compliance with fiscal rules, IFIs should also assess the medium-term budgetary objective (MTO),¹ the activation and monitoring of its correction mechanism (if necessary) as well as the surveillance of deviations in the wake of an unusual event outside the control of the member state (European Parliament, 2013). Concerning macroeconomic forecasts, regulation 473/2011 (which is part of the so-called two-pack) stipulates that these have to be produced or endorsed by IFIs (European Parliament, 2013, Art. 2, Art. 4). Therefore, the regulation leaves room for some national implementation options. These forecasts serve as the basis for the medium-term fiscal plans and the draft budgetary plans. Accordingly, IFIs do not only monitor fiscal rules, but they also analyse the underlying macroeconomic projections of the budgetary plans. Therefore, they are, at least in an indirect way, partly embedded in the national budget cycle. Their role is twofold: first, IFIs should foster budgetary discipline; and second, as fiscal watchdogs, they should promote national ownership of the fiscal rules. This is where the link between IFIs and fiscal rules comes from: they serve as complements and are intended to support each other in their effect.

In 2015, the Directorate General for Economic and Financial Affairs (DG ECFIN) launched the Scope Index of Fiscal Institutions, which is based on surveys and is in-

¹ The MTO is a country-specific budget requirement. It ranges between a structural -1% and a balanced or surplus budget and applies over a period of three years. All EU countries are expected to reach their medium-term budgetary objectives or to be heading towards them by adjusting their structural budgetary positions at a rate of 0.5% of GDP per year as a benchmark. Regulation 1466/97 describes the concept of the medium-term budgetary objective in more detail (European Parliament, 2011).

Figure 1
Scope Index of Fiscal Institutions in 2021 by country



Note: The index aims to measure the breadth of tasks covered by independent fiscal institutions and consists of the following tasks: monitoring compliance with fiscal rules, macroeconomic and budgetary forecasting, sustainability assessment, fiscal transparency and normative recommendations.

Source: DG ECFIN (2023), own Illustration.

tended to cover the range of tasks performed by IFIs. The index score for 2021 is shown in Figure 1 and divided into quantiles. As shown in the figure, the scope of tasks and mandates of IFIs are heterogeneous across Europe. In particular, the southern European countries, which were hit hard by the sovereign debt crisis, seem to grant IFIs a more comprehensive mandate than, for example, some northern European countries. Germany’s board is in the lower midfield. Even if this is only a momentary impression, there are still factors that limit the work of the board in a European perspective. The following section therefore initially describes how the German IFI, the Independent Advisory Board, is structured and what competencies it has.

The German Independent Advisory Board of the Stability Council: State of play

Under Paragraph 8 of the Stability Council Act, the Stability Council’s attached Independent Advisory Board is re-

Table 1
Schedule of the Independent Advisory Board

	April	May	October	November	December
External Projections	Joint Economic Forecast		Joint Economic Forecast	SVR Annual Report	Conclusions of WG Tax Estimates
Internal Projections - Federal Govt	Spring Forecast		Autumn Forecast		
EC	Stability Programm to EC	Spring Forecast from EC	Draft budgetary plan to EC	Autumn Forecast from EC	
Advisory Board	3-5 meetings and first draft → Final statement		3-5 meetings and first draft → Final statement		
Stability Council	Financial projections	Press conference	Financial projections	Press conference	

EC: European Commission; SVR: the German Council of Economic Experts; WG: working group.

Source: Own illustration.

sponsible for monitoring compliance with the upper limit of the structural general government deficit (StabiRatG, § 8). This is set at 0.5% for the general government in Section 51(2) of the Budget Principles Act and is derived from the requirements of the Fiscal Compact (HGrG, §51). The results of the monitoring are published biannually and are sent to the Stability Council (Independent Advisory Board, 2022). The Advisory Board is composed of one representative each from the Deutsche Bundesbank, the Council of Economic Experts, the Joint Economic Forecast, the leading municipal associations and the leading social insurance organisations. Two experts each are appointed by the federal and state governments for a period of five years. All members of the Advisory Board work on a voluntary basis.

The schedule to which the work of the Advisory Board is subject is dense, as shown in Table 1. According to the schedule, April and May are months of more intensive work phases for the first statement in spring, and Octo-

ber and November are more intensive due to the second statement in winter. The work of the Advisory Board is therefore relatively concentrated. This is particularly due to the European semester, which works towards a better linking of national and European reporting. However, the work of the Advisory Board has to fit in this scheme. This must also be seen in the context of the fact that the publication of external projections has been largely retained, while national and European reporting has shifted in line with the provisions of the six-pack.

The work of the Advisory Board is limited by some constraining factors, such as the absence of a legal basis for access to all information necessary to create its report (DG ECFIN, 2023). Although there is privileged access to non-public information, some important data, such as detailed budget data for the German *Länder*, are not fully available. That ultimately undermines the monitoring of the general government deficit. In addition, the comply-or-explain principle (CoEP), formerly prescribed at the EU level, has only recently been implemented by the government. Until 2022, this principle has not been followed. The principle is not enshrined in Section 51 of the Budgetary Principles Act, nor in the Stability Council Act. Rather, the legal derivation of the principle can be drawn from the European level, where it is mentioned in a Commission's communication from 2012.

Although financing is shared equally between the federal and state governments, neither the amount nor the periodicity is regulated by law. There is currently less than one staff member (0.75 full-time equivalent) available to support the work of the Advisory Board, which is funded from the Advisory Board's total annual budget of €150,000 (Jankovics and Sherwood, 2017, 17; DG ECFIN, 2023). Accordingly, the Board does not prepare its own forecasts, but instead refers to the forecasts of the Deutsche Bundesbank, the Council of Economic Experts, the Joint Economic Forecast, the IMF and the OECD. Additionally, the principle of endorsement or planning is not applied directly. Rather, the governments' macroeconomic forecasts are assessed against the forecasts of other institutions. Neither the government nor the parliament consults the Board with regard to budget planning.

In conclusion, the efficacy of the German Independent Advisory Board is limited. The Board prepares reports that are submitted to the Stability Council, which gives rise to two possible control mechanisms. First, the Stability Council has the task, in accordance with the CoEP, of either following the Advisory Board's statements or publicly explaining why the Stability Council does not do so (Independent Advisory Board, 2023, 2). It has done this only recently. Second, the Advisory Board has the oppor-

tunity to make its voice heard publicly through its statements. The Chairman of the Advisory Board can express the Board's position at the press conference of the Stability Council. In reality, however, this usually results in a short statement. The principle itself follows the logic of the theory of fiscal rules, in which publicity is a way of exerting pressure on policymakers via public opinion. However, since the resources of the Advisory Board are limited, the public perception of the Advisory Board is also diminished. This is reinforced by the fact that there is usually not much time available to prepare the Advisory Board's opinions. Since this cannot be compensated by the staff of the Advisory Board, the pressure on its members increases.

More is worth more? An analysis of the Commission's proposals and their implications

After first describing the European ideas on the part of IFIs and setting out the national design of the German Independent Advisory Board, this section discusses the Commission's proposals, which are intended to reform the national IFIs.

At the heart of the European governance reform is the re-drafted Article 8 of the Commission's proposed Directive, which sets out the additional powers and responsibilities to be given to IFIs (European Commission, 2023c). Due to the diversity of the requirements, these are clustered and evaluated below. A distinction is made between the areas of evaluation and assessment, the endorsement-or-production principle, the comply-or-explain principle, IFI monitoring and independence.

Evaluation and assessment

Referring to the IFI's core task, monitoring compliance with the country-specific fiscal rules and the EU's fiscal framework, the provision states that it should maintain the role of assessing compliance with the fiscal rules (European Commission, 2023c, Art. 8). However, the information it receives is notably expanded by Article 14: a problem inherent in the current mandate is that extensive lists of special funds and reserves from the federal and state governments are missing (Independent Advisory Board, 2023, 23). Since the *Länder* as well as the *Bund* continued to outsource credit authorisations into special funds outside of the core budget, the inclusion of those funds would be a step towards a comprehensive assessment of public finances. This would also be in line with the budget principles of annuality and maturity. According to the Commission's proposal, this should include past and expected future operations (European Commission, 2023c, Art. 14). If applied, this would lead to a more transparent view of public budgets. Under the impression

of the current outsourcing of spending activities from the core budget to extra budgets, this is also advisable. This would include, for example, the Climate and Transformation Fund, the Bundeswehr Special Fund or the Economic Stabilisation Fund at the federal level as well as the various Corona Special Funds and pension reserves at the state level. The Commission explicitly includes important fiscal policy instruments in the consideration of public finances.

Furthermore, even if a sunset clause is already implemented within the German debt brake, it has to be emphasised that the country-specific numerical rules should, under this proposal, be amended with a sunset clause if necessary (European Commission, 2023c, Art. 5). This would lead to first, a homogenisation of the existing rules across Europe, and second, a more cautious approach with regard to escape clauses.²

It is worth noting not only that the preparation and execution of its evaluation and assessment tasks are stated in Article 8, but also, that the Board should have the capacity to communicate their assessments in a timely manner. This refers to the reputational cost argument: if the Board concludes that the government does not comply with the rules, its only option is to execute its CoEP and to make its point of view public. However, if the Board does not have the resources to do so in a timely manner, then the only sanction mechanism that the Board has is considerably undermined. This also raises the question of whether the evaluation and assessment would be effective in the first place.

The most groundbreaking new role by far is established in section (f) of Article 8: The Commission wants the IFI to "conduct, on a regular basis, reviews of the national budgetary framework in order to assess the consistency, coherence and effectiveness of the framework, including mechanisms and rules that regulate fiscal relationships between public authorities across subsectors of general government" (European Commission, 2023c, 15). This is remarkable in the sense that this would cover not only the 17 national and sub-national fiscal rules, but also the fiscal relationship between the governmental sub-sectors as it is covered by the term "mechanism". This would, in principle, encompass the fiscal equalisation mechanism between the *Bund* and the *Länder*, its municipal equalisation mechanisms as well as funding outside of the equali-

² The German debt brake stipulates that the exemption must be established annually via the Budget Act. The implicit sunset clause is therefore annual in nature. The situation is different in the area of European fiscal rules. They do not contain a specific sunset clause. A repeal of the sunset clause must therefore be actively initiated (BMF, 2022; Tesche, 2023).

sation schemes, especially the direct financial aid, cash benefit laws as well as the joint agreements.

Although this would be restricted to a review function, its implications would be extensive. First, this would involve a massive expansion of the mandate. The possibility of also examining fiscal federal mechanisms gives the Board the option of examining German fiscal federalism in its entirety. Second, this includes, not least, the distribution of tasks, expenditures and revenues, since “consistency” and “effectiveness”, which are open to interpretation, are quite widely used. This opens the door to discussions of task and financial responsibilities (connexity principle) or, stated differently, the passive fiscal equalisation mechanism. In addition to distributive elements, the Board can therefore also address allocative and stability-oriented issues. Third, by opening up its mandate in this way, the Board can increasingly respond to public controversies, investigate them and express opinions. This gives the Board the opportunity to position itself strategically and to provide impetus to the debate. Its only lever, the exertion of public pressure, is thus greatly enhanced. Moreover, since the proposal speaks “a regular basis”, the Advisory Board can choose the periodicity of this new lever independently, giving it additional leeway.

Endorsement-or-production principle

The endorsement-or-production principle (EoPP) has a new and prominent role in the Commission proposal. It is used with regard to the annual and multiannual budgetary forecasts underlying the government medium-term planning, debt sustainability analysis as well as assessments concerning impacts of policies on fiscal sustainability (European Commission, 2023c, Art. 8). In the case of the German Advisory Board, the EoPP is not applied in its entirety yet, neither in the context of fiscal forecasts nor for budgetary planning (DG ECFIN, 2023). Moreover, the principle is not established in German law (StabiRatG, § 8; HGrG, § 51).

Concerning the proposed modifications of the governance architecture, changes in national legislation would be necessary to equip the Advisory Board with these new responsibilities. Since the Board or its tasks are not rooted in constitutional law, a simple majority is needed to change both national provisions. If it is the goal to establish an effective EoPP, changes in national legislation would be inevitable. Since the EoPP refers to three different fiscal areas, a serious evaluation would need to go hand in hand with a reform process covering a build-up of personnel, financial resources and know-how. In particular, if, for example, the EoPP were to be taken more seriously in the future, with respect to macroeconomic

financial projections, additional capacity and expertise will be needed for the preparation of the projections, their assumptions and technical details. Given that the build-up of resources takes time, the implementation of the EoPP would lead to a massive increase in requirements concerning the Stability Council and the Federal Ministry of Finance. The Advisory Board would have to opt for an endorsement policy without the necessary personnel to accurately perform the given set of new tasks. Given the time frame in which the Commission wants to put its proposal into practice, this would lead to a massive overload of the capacities of the Advisory Board.

Comply-or-explain principle

In addition to the EoPP, the CoEP might play a more stringent role. For instance, the period of time in which member states have to account accordingly will be limited to one month (European Commission, 2023c, Art. 8). If legally binding, this gives the Advisory Board further leverage to get the Stability Council to take a position. As this extends to all tasks to be assigned to the Board, it also covers issues regarding the fiscal-federal structure. In view of the fact that the Stability Council’s objective is not only to monitor compliance with fiscal rules, but also to decide on restructuring procedures (StabiRatG, § 5), this extension of the Board’s powers appears appropriate, for example, to prevent it from acting beyond its original mandate in the event of restructuring proceedings.

IFI monitoring

Interestingly, the Commission’s proposal contains a new mechanism that would imply that the Board itself should be evaluated on a regular basis (European Commission, 2023c, Art. 8). Since its evaluators should be (financially) independent themselves, the list of institutions that could perform this task is considerably small. Nevertheless, the broad idea of an evaluation mechanism can be beneficial especially in the sense that a constant monitoring reduces the public impression of an unsupervised institution as an arbitrary agenda-setter. Furthermore, constant evaluation offers the possibility of a reinsurance channel regarding the question of whether the Board is fulfilling its tasks within its mandate.

Independence

The first section of Article 8 refers to the structural independence of IFIs. This is underlined by functional autonomy, which emphasises that IFIs are institutions independent of the budgetary authorities (European Commission, 2023c, Art. 8).

However, it is difficult to meet this requirement against the background of the budget. Since the Board has practically no downstream personnel resources for research and evaluation, it can only fulfil the tasks entrusted to it to a limited extent. Moreover, this is particularly relevant because the division of funds between the federal government and the *Länder* as a whole significantly limits the fiscal burden (DG ECFIN, 2023). Increased funding for the Board is therefore not dependent on the fiscal burden, but rather on the political will to provide the Board with the resources it needs to fulfil its tasks. In order to ensure constant management of the audit tasks, it would be appropriate to allocate the scarce resources to the institution and not the chair. However, this organisational task could be accomplished by a change in the Board's statute. This would also stand in line with the new Article 8 section 3(c) which states that the Advisory Board should have adequate and stable own resources to carry out their mandate (European Commission, 2023c, Art. 8). Apart from this organisational point of view, the question remains about whether the Board is able to fulfil its task without having the resources to do so. This stands in contrast to the idea of the proposed amendment.

As noted in Article 8, the selection of Advisory Board members must be presented in a transparent manner. This is done by detailing how many Advisory Board members each institutional unit may appoint. Paragraph 2 shows that competence and experience in the field of public finance, especially in its application, is of particular relevance for the appointment of the Advisory Board. This is considered necessary, particularly given the audit mandate.

Critical assessment and conclusion

The present paper discusses the Commission's proposal for a Council Directive amending Directive 2011/85/EU (European Commission, 2023c), which represents a milestone for the reform of the European governance framework in general and for the German IFI in particular. As has been shown, the German Independent Advisory Board is subject to various restrictions that effectively limit its work. If the proposed Directive were adopted, this could be partially remedied. Aside from the proposed innovations, however, it must be mentioned that there are two main cross-sectional problems that effectively limit the implementation of the envisaged reforms.

First, some provisions of the proposed amendment are subject to general interpretation and, consequently, also to national interpretation. For example, the phrases of "adequacy" or "timely" access to information are so vague that a potential functional loss of the proposed

amendment is to be expected. Accordingly, it could be argued on the part of the legislator that the new interpretative requirements are already considered, thus substantially limiting the intention of the Commission's proposal. The fact that this consideration could be taken into account is shown, for example, by the deadline in the CoEP being set at one month, which would provide additional room for manoeuvre vis-à-vis the Stability Council. While this circumstance is commendable, the structural underpinning with concrete formulations is not inherent in the Commission's proposal.

Second, although the regulation speaks of "adequate and stable resources", this is in the eye of the beholder. Whether the financial position of the Advisory Board will change, especially against the background of the extended mandate, is not to be expected so far. Therefore, this underlying problem, the resource allocation, must be addressed by federal and state governments independently from the EU. Momentarily, the capacities and competencies of the German Advisory Board – also in relation to its European neighbours – are expandable. Closely related to the question of financial resources is the question of additional personnel for the Advisory Board. Since here, too, there is only a vague reference to adequate and stable resources, there is no direct pressure on the legislature to make structural changes.

Thus, while the European Commission's innovations are well intentioned, their implementation remains dependent on factors that will be negotiated at the national level. Consequently, even if the Commission's proposal is adopted, this will not automatically lead to the improved resources that would be necessary for this new audit mandate. Bringing the resource endowment in line with the new reality requires that governments take note of the importance of a functional advisory board and provide it with appropriate resources. A detailed and comprehensive analysis of the general government budget is also in everyone's best interest.

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Volker Brühl

Big Tech, the Platform Economy and the European Digital Markets

Digital platforms have become an important part of the digital economy by facilitating transactions between large numbers of users and by fostering innovation on collaborative platforms. It is striking that platform-based services are dominated by a small number of global players. Most of them are headquartered in the USA, including Alphabet, Amazon, Apple, Meta and Microsoft, also known as the “Big Five”. A comparative analysis of the Big Five provides insights into their success factors and platform-related antitrust issues that could be helpful for policymakers to improve the European technology ecosystem. Business decision-makers can also benefit from these lessons learned when shaping digital strategies.

New technologies such as artificial intelligence (AI), cloud technologies or distributed ledgers affect more or less all industries. Various forms of digital platforms have emerged, facilitating transactions between large numbers of users and offering technical platform services. It is striking that, due to the specific economic drivers of the digital infrastructure, platform-based or platform-related services are dominated by a select number of global players. Most of the global platform operators are headquartered in the US, including Alphabet, Amazon, Apple, Meta and Microsoft, known as the “Big Five”. Some are located in Asia (e.g. Alibaba and Tencent). In Europe, there are only a limited number of platform operators, with a small market share.

Much research has been conducted on the emergence and characteristics of platforms, network externalities and platform competition. However, there has been very little research on whether one can identify common features that might explain the success of Big Tech. The following article focuses on an analysis of the Big Five based on their strategies and development paths. The comparison reveals certain commonalities, from which several conclusions can be drawn regarding the success factors

of the Big Five. These insights could be helpful for business decision-makers when shaping digital strategies and to policymakers to improve the European technology ecosystem and thus increase the chances of becoming the home base for the next Big Tech.

Digital platforms and the platform economy

The digital age has given rise to various electronic platform-based business models. One can distinguish between traditional (one-sided) e-commerce platforms, such as Amazon, which are essentially retail businesses that sell and distribute products and services through web stores rather than physical stores. In contrast to this merchant model, two-sided platforms allow affiliated sellers to sell directly to affiliated buyers (e.g. Baldwin and Woodard, 2009; Hagiu, 2007; Rochet and Tirole, 2003). In more general terms, multi-sided platforms facilitate direct interaction within or between multiple user groups (e.g. Abdelkafi et al., 2019; Evans and Schmalensee, 2016; Verfaillie et al., 2021). This, in turn, may result in transactions among users (e.g. Ebay) or the matching of users (e.g. online dating platforms).

Platforms help to reduce transaction costs between market participants, but can also foster innovation by facilitating collaboration or sharing common technological building blocks (e.g. Cusumano et al., 2019; Evans and Gawer, 2015; Goldfarb and Tucker, 2019). One can distinguish several types of platforms that can be classified by the type of user relationships (B2B, B2C, C2C), the business model (transacting, matching, sharing, innovating) or the sector in which they are primarily active (travel and tourism, pharmaceuticals, car sharing, etc.).

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Multi-sided platforms often form the basis of rapidly scaling business models due to their flexibility, adaptability and low incremental transaction costs (see e.g. McAfee and Brynjolfsson, 2017; McIntyre and Srinivasan, 2017). The success of platforms depends, inter alia, on their potential to create network effects among their users, which can be direct or indirect (see e.g. Shapiro and Varian, 1999). Direct network effects arise when a given user's utility increases with the number of other users of the platform. Such effects can be observed, for example, in social media networks. Indirect network effects, or cross-side network effects, occur when the individual utility of a user depends on the increased usage of other market participants. Examples can be found in the market for credit cards, where the value of a given card for the user depends on the number of credit card terminals of companies accepting this payment method.

Scientific studies have identified strong network effects and an early market entry as common features of successful platforms. First, or at least early, movers can attract many users in a short period of time. Due to network externalities, platforms can grow at a high rate, creating high barriers to entry for new entrants. However, the design of the platform's technological architecture has to facilitate interconnectivity between users and integration of additional products and services. On the other hand, empirical findings suggest that many platform initiatives fail, mainly due to mispricing on one side of the market, failure to develop trust with users and partners, prematurely dismissing the competition or entering the market too late (Yoffie et al., 2019).

Platforms and the contestability of markets

A lot of research has been conducted on network externalities and platform competition (e.g. Armstrong, 2006; Roche and Tirole, 2003). Related research topics cover the impact of platforms on industrial structures, the contestability of markets and antitrust issues (e.g. Hagui and Wright, 2015; Evans, 2003).

The increasing relevance of platforms and their underlying economics create new challenges for competition policy and antitrust authorities. If platform-based networks become more attractive with each additional user, a self-reinforcing process can lead to higher adoption rates, which in turn creates additional incentives for new users to join the network. Depending on the industry and the type and size of network effects, markets may become highly concentrated, with only a few or even a single platform operator dominating the industry. Consequently, those markets become less contestable if potential competitors face high barriers to entry, as they have to cope

with structural disadvantages compared to first or early movers in the market.

Platforms often require subscription to specific technical services for use, which may pave the way for business practices that prevent fair and open competition. Detecting such unfair market practices can be challenging as platform-based businesses tend to offer a variety of services that are technologically or economically interdependent. For example, search engines may offer email accounts, online advertising services, customer relationship tools, translation or publishing services.

Abuse of a dominant market position can take very different forms in digital markets. Examples of unfair market practices include the pre-installation of applications on digital devices, the bundling of ancillary services with core platform offerings, discriminatory pricing or the mandatory consent of third-party users to data collection by platform operators. Such business practices can prevent fair competition if they impede third-party access to the platform's end users. High prices, limited consumer choice and reduced innovation are likely consequences.

For instance, Google was sued in Europe in 2017 for abusing its dominant position as a search engine provider by granting an unfair advantage to its own service (Google Shopping) by placing it ahead of other comparable services in search results. Meta has been accused of abusing its dominant position in social networks by making the use of a service conditional on the user's consent to the collection and pooling of data from other subscribed services. The EU Commission imposed a fine on Microsoft for not offering Windows users the option of using web browsers other than the pre-installed Internet Explorer. Amazon has been accused of abusing its dual role as the world's largest online retailer and as an operator of a marketplace for third-party sellers. In response to Big Tech companies increasingly leveraging their financial and technological resources in related markets, the EU has put a new regulatory framework in place to ensure fair and open competition in digital markets.

The Digital Markets Act and the Digital Services Act

In 2020, the EU adopted the Digital Market Strategy to facilitate cross-border digital services and boost innovation activities in the EU (European Commission, 2020). At the same time, digital data protection and privacy must be safeguarded and cybersecurity prioritised to protect critical infrastructure. The Digital Services Act (DSA) and the Digital Markets Act (DMA) are important elements of the Digital Strategy and the Digital Decade policy programme 2030 (European Commission, 2023).

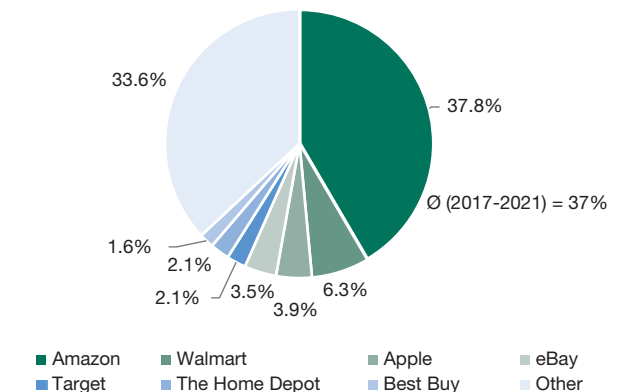
The DSA, which came into force on 16 November 2022 and will apply in all EU countries from 17 February 2024, sets out clear rules and obligations for online platforms to ensure a safe, credible and reliable online environment and the functioning of online services. This includes procedures for the immediate removal of illegal content such as hate messages or fake news. The DSA covers intermediary services (e.g. internet service providers), hosting services (cloud computing, web hosting) and online platforms (e.g. marketplaces, app stores and social media platforms).

The DMA complements existing EU (and national) competition rules. It was adopted on 1 November 2022 and applies from 2 May 2023 to address the growing importance of platforms in certain digital markets. The DMA was introduced to protect Europe’s digital markets from anti-competitive behaviour by “gatekeepers”, while at the same time ensuring a level playing field for existing and potential competitors. The DMA covers so-called core platform services, which can be exploited by their providers if they have a strong market position, such as app stores, search engines, social networks, virtual assistants, web browsers, operating systems, marketplaces or advertising services. Dominant providers of core platform services may abuse their strong market position through unfair practices such as bundling of products and services, control of APIs, data pooling or self-preferencing of products. According to the DMA, companies providing one or more of these core platform services may qualify as gatekeepers if they meet all of the following criteria:

- A size that impacts the internal market. This is presumed to be the case if the company achieves an annual turnover in the EU of at least €7.5 billion in each of the last three financial years, or has an average market capitalisation or equivalent fair market value of at least €75 billion in the last financial year, and provides a core platform service in at least three member states.
- The control of an important gateway for business users towards end consumers. This is presumed to be the case if the company operates a core platform service with more than 45 million monthly active end users established or located in the EU and more than 10,000 yearly active business users established in the EU in the last financial year.
- An entrenched and durable position. This is presumed to be the case if the company met the second criterion in each of the last three financial years.

In order to ensure fair, open and innovative digital markets, gatekeepers must refrain from any practices that

Figure 1
Market shares of retail e-commerce companies (United States, 2022)



Source: eMarketer 2022, own calculations.

limit the contestability of the respective markets through unfair market practices.

The case of Big Tech: Lessons learned

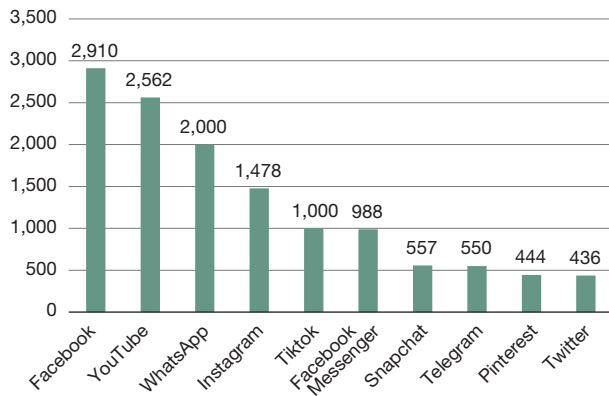
While the DMA will lay the foundations for fair competition in the European digital markets, it is important to gain a better understanding of how and why today’s Big Tech companies have managed to become digital champions, and what Europe could potentially learn to help the European corporate sector catch up and harness the market potential in future digital markets. These insights may help to further shape the European digital strategy and provide the framework to bring about competitive European digital champions that would reduce dependence on American and Asian players in key technologies.

Establishment of new markets

Considering the Big Five, it is apparent that all of them have more or less created and defined a new market with their products or services. This is true for Amazon (e-commerce), Apple (smartphones, tablets), Microsoft (Office), Meta (social media) and Alphabet (search engines). They have all managed to keep a high market share in their core business, which underlines high barriers to entry and a reduced contestability of the respective markets. Let us now take a look at recent market shares of the Big Five and their development over time to the extent that the data is available.

More than 20 years after its founding, Amazon is still by far the largest e-commerce player with a market share of about 37%, which has been quite stable over the past

Figure 2a
Global social networks (number of users in million, 2022)



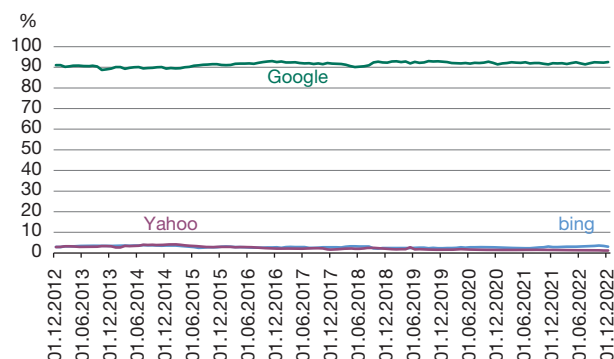
Source: DataReportal 2023, own calculations.

six years in the United States (Figure 1); it is followed by Walmart with a market share of about 6%. The picture is similar in Europe, while Alibaba has a comparable position in China.

Meta's business is mainly based on its leading position in social media networks and the traffic generated on their websites (Figure 2a and 2b), which it successfully translates into a high market share in online advertising.

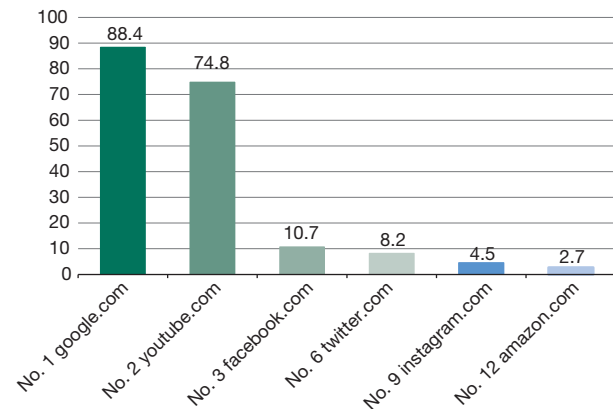
The picture is even more pronounced in the case of Alphabet (Google), whose search engine business, supported by a strong position in web browsers (Chrome), is a major driver of its advertising revenues (Figures 3a and 3b). Market shares in search engines in excess of 90% across plat-

Figure 3a
Global market shares search engines (desktop, mobile and tablet 2012-2022)



Source: Statcounter GlobalStats, own calculations.

Figure 2b
Selected largest websites by traffic (average monthly visits in billion, 2022)



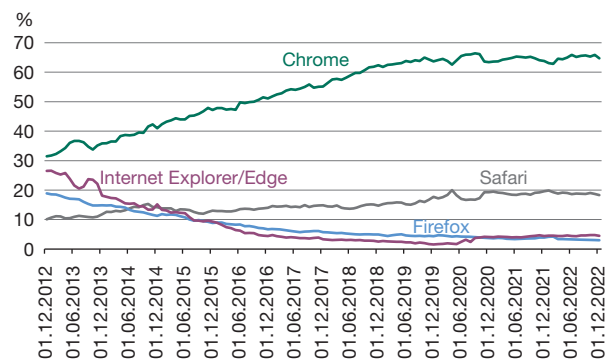
Source: DataReportal 2023, own calculations.

forms and regions speak for themselves. It is also striking how stable Google's market share is over time.

Figure 4 illustrates the development of the relative proportions of the online advertising revenues of Google, Facebook and Amazon. While Google's share has been slightly declining over time, Facebook's share is increasing with a combined share of Google and Facebook exceeding 50% of the online advertising revenue pool.

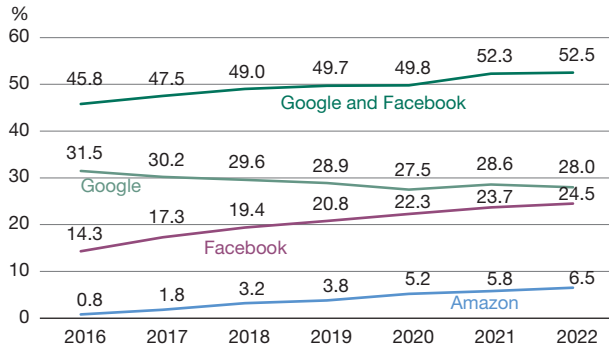
Microsoft has been the undisputed global market leader in operating systems for desktops and laptops and for office software products for decades (Figure 5a and 5b). Most recent data suggest a market share of about 90% for office software products. Google Workspace (G Suite)

Figure 3b
Global market shares browsers (desktop, mobile and tablet 2012-2022)



Source: Statcounter GlobalStats, own calculations.

Figure 4
Global online advertising revenue shares (2016-2022)



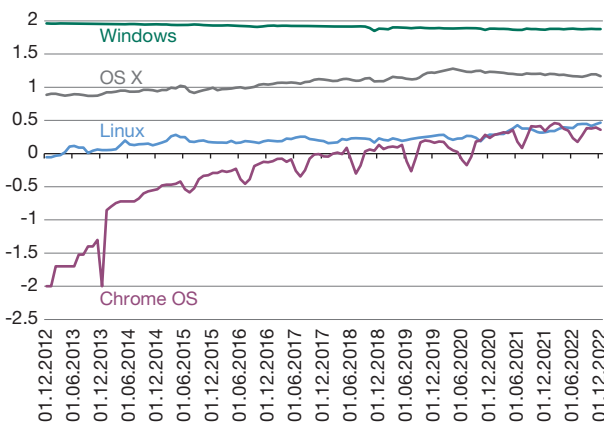
Source: eMarketer 2022, own calculations.

has not been able to challenge Microsoft’s leading position among business users although its products are offered at a much lower price.

Apple’s growth engine for many years has been its core product lines around the iPhone and iPad. Combined with its high market share in mobile operating systems, Apple has been able to keep its strong position in smartphones and tablets (Figure 6a and 6b). On the other hand, Google is trying to gain market share in smartphones based on its market-leading Android OS, which is also used by other major smartphone vendors such as Samsung.

Overall the market data suggest that the Big Five manage to maintain or even expand their dominant position in their original core businesses over a longer period of time.

Figure 5a
Global market shares, log₁₀ (Desktop OS, 2012-2022)



Source: Statcounter GlobalStats, own calculations.

Reduced contestability of core markets

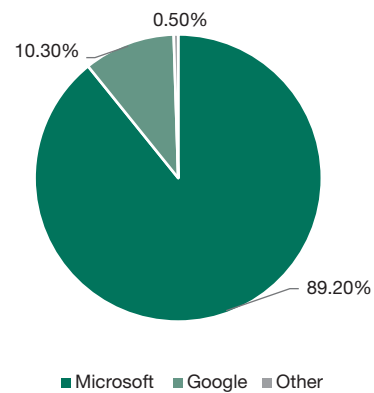
Furthermore, the data support the hypothesis that the business models of the Big Five create significant barriers to entry and reduce the contestability even of fast-changing digital markets. Highly concentrated market structures emerge and prevail that are often characterised by very few market leaders and a number of smaller players that remain in a marginal position or even exit the market.

Big Tech companies tend to build an ecosystem around their core and ancillary businesses in which their service offerings are mutually compatible, creating lock-in effects and increasing switching costs for their users. Such developments can raise serious antitrust issues if Big Tech companies act as gatekeepers to their platforms.

Platform-based business model

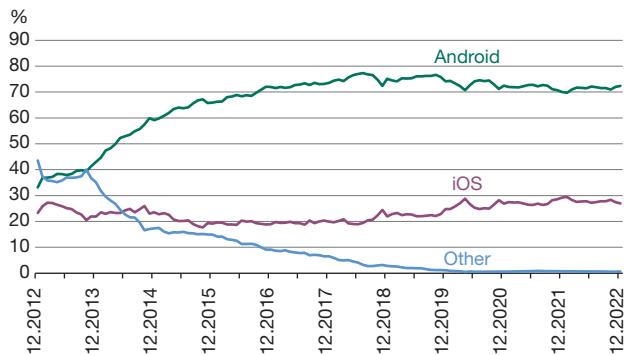
Big Tech companies typically operate one or more platforms, which may or may not be multi-sided (Table 1). For example, Amazon operates its e-commerce platform Amazon.com, the Amazon marketplaces for third parties and Amazon Web Services (AWS) as a web technology platform, e.g. for cloud computing. A closer look at their business models shows that they tend to be active in a number of markets, with a significant proportion of their revenues and profits coming from non-platform business activities. The growth of the core business of the Big Five is driven by consumer demand (B2C). This is obviously not a necessary condition for becoming a dominant digital player, but it seems to be a common feature of some Big Tech companies in their early stages of development.

Figure 5b
Global market shares (Office software products, 2020)



Source: Gartner.com (2021).

Figure 6a
Global market shares (Mobile OS, 2012-2022)



Source: Statcounter GlobalStats, own calculations.

Strong network economies

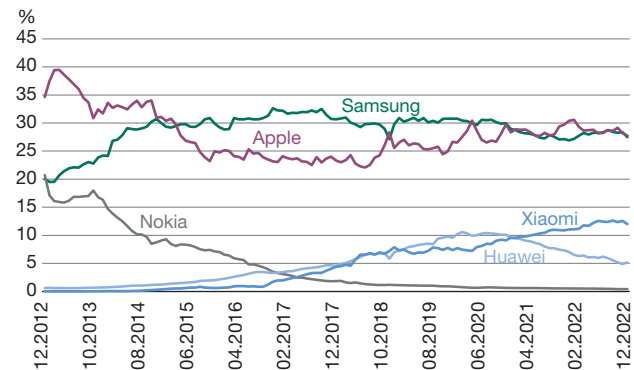
Competitive advantages of Big Tech companies in their core business are based on direct and indirect network economies. Amazon's marketplaces and Meta's social media networks are good examples of strong network effects driving the accelerated growth rates in the use of these platforms. Microsoft's operating systems and office applications generate both direct network externalities among their users and indirect network effects by linking complementary technologies to these platforms. Similar effects can be observed in Apple's hardware and software platforms (iPhone, iPad, iOS, iTunes, Apple Pay, etc.) and in Alphabet's business portfolio around Google.

Economies of scale and economies of scope

In addition to strong network effects, Big Tech also benefits from economies of scale (e.g. in manufacturing, overhead functions), economies of scope (e.g. in marketing and distribution, technology) or lock-in effects created by hardware or software solutions. Scale, scope and network economies often act as mutually reinforcing drivers of first-mover advantages, deterring potential competitors and leading to high barriers to entry (Table 1).

For instance, Amazon's e-commerce platforms benefit from economies of scale in IT infrastructure, procurement and logistics, as well as economies of scope in certain technical domains such as web technologies, software development and platform operations. In addition, direct and indirect network effects play a role in Amazon's marketplaces, which in turn increase the utilisation of shared assets such as IT or logistics infrastructure. Similar observations can be made, for ex-

Figure 6b
Global market shares (mobile devices and tablets, 2012-2022)



Source: Statcounter GlobalStats, own calculations.

ample, at Meta, whose large social media networks are based on – mainly direct – network externalities. At the same time, Meta's business model exploits economies of scale in basic IT infrastructure.

Strong financial position

Fast growing markets in combination with high barriers to entry lead to exceptionally strong financial performances for an extended period during which the Big Five have invested in new, primarily adjacent, markets. While the growth of the original core business remains strong, the new businesses often show even steeper growth trajectories.

Diversification into adjacent markets

In order to leverage their dominant position in their core market, Big Tech companies have conquered new markets by exploiting synergies between their core and new businesses. The strong capital base has enabled the Big Five to accelerate their corporate development both through organic growth and mergers and acquisitions (M&A).

Amazon, for instance, has diversified into areas such as web technologies, including cloud computing, media and AI, including robotics. Alphabet has moved into online advertising, social media, cloud computing and AI/robotics. For many years, Microsoft focused on strengthening its core software competencies through a series of smaller, mostly people-driven acquisitions before expanding into cloud computing, social media, gaming and even the mobile device market. Meta has also long focused its acquisition activity on social media networks, adding to the Facebook network. Only in recent years have acquisitions been made to build the Metaverse business. Even Apple, the least diversified of the Big Five, has acquired more

Table 1
Platforms, sources of competitive advantages and mergers and acquisitions

BigTech company	Core competencies		Platforms	Metrics	Network effects*	Economies of scale	Economies of scope	Diversification strategy	Selected acquisitions
	Common	Distinct							
Amazon	Innovations, web-technologies, cloud computing, software development, AI, data science, brand management, CRM, platform design	SCM, category management	amazon.com, amazon marketplace, AWS	300 m active customers (B2C); amazon.com 2.6 bn visitors globally 2/2023	✓	Logistics, procurement, IT infrastructure	Web technologies, software development, platform operations	AWS (web-technologies), cloud, AI, robotics, media	More than 100 takeovers since 1998 iRobot (2022), One Medical (2022), Metro-Goldwyn-Mayer (2021), Zoox (2020), PillPack (2018)
Alphabet	Innovations, web-technologies, cloud computing, software development, AI, data science, brand management, CRM, platform design	Search engines, semantic web, online advertising	google.com, youtube.com	97 bn visitors globally 2/2023; youtube.com 80.5 bn visitors	✓	Data analytics, IT infrastructure	Web technologies, software development, platform operations	Robotics/AI/VR/AR/analytics, online advertising, cybersecurity, HW technology, smart home	More than 250 takeovers since 2001 Mandiant (2022), Raxium (2022), Fitbit (2021), Motorola Mobility (2011), DoubleClick (2007), YouTube (2006)
Apple	Innovations, web-technologies, cloud computing, software development, AI, data science, brand management, CRM, platform design	Product design, hardware development, manufacturing excellence	apple.com, iTunes, Apple Pay, Apple TV, iPhone, iOS, Mac, MacOS	Active iPhones (2022): 1.3 bn; more than 2 bn active devices (Mac, iPad, iPhone)	✓	Manufacturing, logistics, procurement, IT infrastructure	Manufacturing, product development	Strengthening core business (iPhone, iPad, iOS), related services (Apple Music, iCloud, Apple Pay, Siri)	More than 120 takeovers since 1988, mostly after 2010 Mobeewave (2020), NextVR (2020), Intel (modem business) (2019), Shazam (2018), Latice Data (2017)
Microsoft	Innovations, web-technologies, cloud computing, software development, AI, data science, brand management, CRM, platform design	Operating systems, app development, software manufacturing	microsoft.com, MSN, Microsoft 365, Office 365, linkedin.com	1.4 bn customers; more than 250 m monthly users of Office; more than 1 bn Bing users daily; 900 m members of LinkedIn	✓	Software development, manufacturing, IT infrastructure	Common platform operations for Skype, Teams, Azure	Software, cloud, AI, cyber security, social media, mobile apps, gaming	More than 200 takeovers since 1986 Activision Blizzard (2022), GitHub (2018), LinkedIn (2016), Nokia mobile phones unit (2013), Skype (2011)
Meta	Innovations, web-technologies, cloud computing, software development, AI, data science, brand management, CRM, platform design	Social media, online advertising	facebook.com, instagram.com, whatsapp.com	Facebook: 12.5 bn visitors globally 2/2023; Instagram: 5.2 bn	✓	Software development, IT infrastructure	Common platform operations for Facebook, Instagram, WhatsApp	Meta labs (AR, VR), related technologies	More than 90 takeovers since 2005 Armature Studio (2022), Twisted Pixel Games (2021), WhatsApp (2014), Oculus VR (2014), Instagram (2012)

Notes: * Direct and indirect network effects. AR: augmented reality; AWS: Amazon Web Services; SCM: supply chain management; CRM: customer relationship management; VR: virtual reality; AI: artificial intelligence.

Source: Own analysis.

than 120 companies since its inception. Table 1 illustrates that M&A is an important strategic tool for the Big Five, as each of them has made numerous acquisitions in a relatively short period of time. The ability to smoothly integrate acquired companies and their teams is obviously another common success factor.

Monetisation of customer/user base

The Big Five companies try to monetise their huge customer and user bases for online advertising and potentially selling advanced analytics services to third parties. A substantial portion of Big Tech's revenue tends to

come from advertising if the business model is primarily data-driven, as in the case of Alphabet and Meta. Intelligent algorithms collect big data to develop precise user profiles, enabling targeted online advertising campaigns. Another common feature is the provision of complementary services (e.g. payments) to deepen their customer relationships and gain further insights into customer behaviour.

Similar core competencies

A closer look at the core businesses and their development both organically and through M&A suggests that the Big Five share similar core competencies in terms of technology (web technologies, software development, AI, data science) as well as innovation, marketing and customer relationship management. The combination of those with outstanding industry-specific capabilities such as supply chain management or category management in the case of Amazon, or product design and development in the case of Apple, seems to provide the basis for building and expanding a strong leadership position in the respective sector (Table 1). An important ingredient in their success is their ability to attract the best talent in engineering, computing and data science. They offer attractive individual development opportunities, flat hierarchies and the financial incentives that come with fast-growing companies.

Convergent activities

With some similar core competencies in terms of digital skills and strong financial resources, it is not surprising that Big Tech companies become competitors in new markets, even though their original core activities were quite different. We have already seen some Big Tech players attack others on their home turf, such as Microsoft launching its Bing search engine as an alternative to Google, or Alphabet positioning its Google Work Suite to challenge MS Office. Google, Amazon and Microsoft have entered the smartphone market, while Apple is challenging Amazon Prime with its Apple TV. Other areas where the Big Five's business interests are converging include cloud computing, autonomous driving, wearables, gaming and e-health.

Early access to public capital markets

Because Big Tech companies need to raise large amounts of capital to fuel their high growth, early access to public capital markets is important. Most of the Big Five companies went public on the NASDAQ stock exchange within a period of less than ten years after their founding. In some cases, venture capital played an im-

portant role in the early stages of their development. But access to a major stock exchange was a key factor in their rapid rise.

Conclusions

Big Tech companies play an increasingly dominant role in many digital markets. These companies have successfully conquered a specific market in which they have quickly achieved a leading position. Moreover, they benefit from network effects, often combined with economies of scale or scope, which reinforce their competitive advantages in these markets. The contestability of such markets declines over time due to high barriers to entry for potential competitors. At the same time, fast-growing technology groups such as the Big Five use their exceptionally high cash flow base to expand into adjacent markets, gradually extending their market power beyond their original core business. If these companies act as gatekeepers to new incumbents, they may hinder the development of European competitors, damage the ecosystem for technology start-ups and even jeopardise Europe's core strengths in manufacturing industries. Therefore, the amendment of the existing antitrust rules by the Digital Markets Act and the Digital Services Act were appropriate steps to ensure fair competition in Europe's digital markets.

The comparative analysis of the Big Five provides insights from which entrepreneurs, investors, European regulators and policymakers can learn. The success of the Big Five is based on a combination of similar core competencies such as outstanding skills in certain digital technologies and distinct industry-specific competencies. Furthermore, the Big Five were all at least early movers in their initial core market. Both M&A and early access to public capital markets have been decisive for their success.

The evidence presented in this article suggests that the focus of both start-up activities and European industrial and research strategy should not be based on an approach of building a serious competitor in one of the fields already occupied by the Big Five. Such an approach has little chance of success. The strategic focus of European initiatives should be on markets such as GreenTech, B2B platforms or AI, where the markets are "in the making" and not yet dominated by the Big Five. An important element in restoring the competitiveness of Europe and European companies is the Gaia-X project, which aims to build a modern data infrastructure that promotes the digital sovereignty of European users of cloud services. An ecosystem that supports tech talent, a regulatory framework that encourages innovation, and

substantial funds available to finance innovative business models increase the likelihood of building a thriving economy in the digital age.

The European Commission has estimated that the EU will face a shortage of eight million IT professionals by 2030 and that the EU lags significantly behind the US in terms of AI, cybersecurity and cloud technology experts (Anderson, 2022; European Commission, 2021). The EU has well acknowledged the need for action to close the gap with the launch of the European Skills Agenda and the Digital Education Action Plan in 2020. Furthermore, it should be discussed whether European clusters for key digital technologies could help to close the gap with the United States and China. As M&A plays an important role for scaling up young businesses, the EU should consider reforming its regulatory framework to speed up the approval process for small to medium-sized transactions. In addition, there is currently no stock exchange in Europe that can compete with the US technology exchange NASDAQ. Therefore, the possibility of creating a European tech exchange should be explored in order to improve equity funding opportunities for European tech companies.

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Computer Chips: Stronger Ties Can Mitigate Costs

The United States is grappling with how to maintain leadership in semiconductor technology while limiting China's ability to use US technology against the United States and its allies militarily. The Biden Administration has a four-pronged approach: (i) invest in the science and technology ecosystem; (ii) nurture top science, technology, engineering and math (STEM) talent; (iii) protect our technology advantages; and (iv) deepen alliances and partnerships. The calculus is complicated because China is simultaneously the biggest customer for most US chipmakers and a geopolitical threat to US national security. The US has focused primarily on subsidizing domestic industry and restricting access to US technologies in China. But export controls are short-term and costly, and industrial subsidies and tax credits usually do not work. Elevating international partnerships in trade and migration could mitigate the costs for US industry and partners abroad.

The CHIPS and Science Act of 2022 supports the first two prongs. It includes \$53 billion to support US semiconductor manufacturing, mainly through subsidies and tax credits. Another \$225 billion was authorized for STEM R&D and workforce development, but these funds have not been appropriated by Congress. Licensing requirements, export controls and investment restrictions targeting China show the heft of the third prong. Last year, the Biden Administration imposed licensing requirements on shipments of highly advanced chips to China, and export controls on semiconductors and the machines that make them.

Deepening alliances and partnerships, the last prong of the approach, is also critical for success, but tangible measures are largely absent. Expanding trade and investment with allies would enhance efficiency while promoting US technology adoption around the world. Removing restrictions on migration of highly skilled workers would allow US firms to access a broader array of talent. Such partnerships could reduce risks associated with the two prongs that have been most fully implemented – industrial policy aiding the US chip industry and export and investment restrictions related to China. Industrial policies are costly and, as history has shown, usually unsuccessful in achieving their goals. Working with partners and expanding the pool of competitive labor and capital markets would make it more likely that resources are efficiently allocated. Export controls may buy time in the short run, but could have perverse consequences of reducing US technological leadership in the longer run if trade partners follow a different approach.

The Biden Administration's strategy on computer chips is designed to drive scarce resources to semiconductor fabs, chosen not by market signals but by the government. The risk is that the companies in the sector may prove to be globally uncompetitive because the US lacks the technology, skills, or capital required for success. Those same resources spent on manufacturing that did not materialize could have instead been invested in education or infrastructure. Arguably the most notable threat to successful semiconductor fabrication in the US is the absence of skilled workers. Companies need access to talent to stay ahead of the curve. US firms need people now.

The United States has the potential to source talent from the world, while China sources talent from within China. US openness has long been a strength of its innovation ecosystem. But H1B visas that allow foreigners with special skills to work are unnecessarily capped at 65,000, unchanged since H1B was created in 1990, despite huge increases in both the size

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of the US economy and demand for high-skilled workers. In contrast, other countries are opening borders to the educated. The United Kingdom, for example, has a “high potential individual” visa that allows graduates of top universities to come for two to three years and look for work. In addition to expanding high-skilled immigration, the United States could work with allies on an agreement on the free movement of engineers and other scarce talent. With appropriate background checks, greater movement of talent could ease US labor shortages and maximize Chips Act funding returns.

Unlike the Chips Act, which aims to build up US production capabilities, export controls are designed to prevent China from using US technology for military purposes against the US or its allies. If other countries do not participate actively in the strategy, China will continue to access new technologies at the expense of US firms’ growth and innovation. International cooperation has at times been too little or too late. Without coordination among key suppliers, China will circumvent US export controls and access the US technologies from another source.

Given China’s large and growing market, the effect of technological decoupling on US industry is substantial. China represents large revenue streams for US chip producers: over 60% for Qualcomm, 35% for Broadcom, 25% for Intel, 20% for Nvidia. If these US companies cannot license or export to China, their revenue streams will decrease, translating into smaller margins, fewer jobs and less R&D spending. A 2020 BCG report showed potential losses of roughly \$80 billion in revenues and \$20 billion in R&D spending from full US-China decoupling in the semiconductor market. With a big chunk of their sales and investment gone, export controls could threaten US leadership in chip design. In the short run, the global market leader becomes Korea, while the longer-term leader could be China under the decoupling scenario.

The intuition is that US firms have competitors that are less affected by export controls or retaliatory restrictions from China. Micron will be a critical test case because the firm was banned by China from major infrastructure projects in May 2023. SK Hynix and Samsung produce alternative products, so Micron’s revenue loss is anticipated to be their gain. New restrictions on Apple iPhones in China could have similar implications for its competitors, primarily local Chinese competitors, with Apple’s loss reverberating to its US chip suppliers.

US firms could lose market share in foreign markets apart from China if the trade dispute continues to widen, as those firms may not want to get in the middle of US-China conflict. For example, if China restricts imported cars or phones with certain US chips inside, foreign firms dependent on the Chinese market would look for substitutes to those chips. In contrast, if international partners craft policies together, there is less harm to US innovation and leadership. The risk of go-it-alone policy was made evident in the recent energy sanctions against Russia.

Fortunately, there is a big difference between oil and technology. Each product has at most a handful of substitutes – giving the United States and its allies greater market power. Working closely with allies to craft trade and investment policies could produce better outcomes – limiting access in China, creating a larger market for US firms and reliable trade partners, and making it more costly for China to retaliate. But this close coordination could still backfire by expediting China’s efforts to advance on its own. Huawei recently released a smartphone with 5G capabilities. Time will tell if these chips can be produced affordably at high volume. While the technology is still generations behind market leaders like Taiwan Semiconductor Manufacturing, it would represent a big step forward for China’s chipmakers. For this reason, restrictions should continue to be highly calibrated and strategically applied, with a focus on the tools to make chips.

The chipmaking business is global, and an effective strategy in limiting a military aggressor’s access to dual use technology likewise needs to be global. More focus on international partnerships in trade and migration could help mitigate the costs of risky parts of Biden’s strategy for US industry and partners abroad.