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**SPECIAL ISSUE
THE ROLE BANKS
PLAY IN THE
POST-PANDEMIC
ECONOMIC RECOVERY**



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THE OSCAR FOR SUPPORTING
THE ECONOMIC RECOVERY IS
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SERIES 20



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The role, opportunities and challenges of the banking sector after the pandemic crisis

*Boštjan Vasle**

The recovery of our economies after a slowdown during the second and third waves of the COVID-19 pandemic has been faster than expected. More than two thirds of EU countries, including Slovenia, have already reached the pre-pandemic levels of GDP or will reach them later this year. However, uncertainty is still high and a surge in COVID-19 infections with increasing pressure on hospitals, further disruptions in global supply chains and aggravated labour shortages in some sectors have begun to stifle growth momentum and exert upward pressure on prices. Nevertheless, a significant part of the population has been vaccinated, so measures to contain the spread of COVID-19 infections can this time around be less restrictive, and businesses and consumers have adapted well to the new circumstances. Moreover, policy makers across several fields seem to agree in general that the unwinding of still abundant economic policy support should be gradual and well thought through, following the improvements in both health and economic situations.

With strong and coherent support from monetary, prudential, fiscal and other policies and a significantly better starting position than before the previous financial crisis, the banking system in Slovenia and the EU in general has remained resilient. In addition to bank recapitalisations and the resolution of non-performing loans (NPLs) after the previous crisis, the strengthening of banking regulation and super-

vision, which are now much more uniform across Europe, played a particularly important role.

All of this has enabled banks to continue lending to the real economy and avoid the credit crunch we have witnessed in the previous financial crisis. While banks have increased the share of forborne loans in this crisis, the NPL ratio has fallen further at the level of the system. In addition, this year most Slovenian and to a lesser extent some other European banks have begun to make impairment releases, which provided a short-term boost to their profitability. Nevertheless, banks should be vigilant and prudent, as all the consequences of the crisis are not yet visible and the increased credit and some other risks might be realized with a lag, which will probably be longer than usual given the unprecedented policy support.

Although the pandemic crisis is still at the forefront of our deliberations and policy actions, we are already focusing our attention on structural challenges that will become more apparent again when the crisis is over. Like many European banks their Slovenian counterparts are about to confront subdued profitability, which in the years before the crisis and this year was masked by one-off revenues and the release of impairments and provisions. The prolonged period of low interest rates and the rise of non-bank financial intermediation are particularly challenging for banks that are more reliant on traditional banking activities, including Slovenian banks and many others in

* Boštjan Vasle, Governor, Banka Slovenije

the CEE region. As a source of strengthening and attracting capital, bank profitability will be playing important role in light of the expected implementation of the renewed Basel III standards, more systematic consideration of climate risks and increased needs for modernisation of technology amidst growing competition from fintech and other “non-banks”. Better-capitalised banks generally lend more, as confirmed in the current crisis for the euro banks. Quite the opposite holds true for corporate lending by Slovenian banks, whose capital position is otherwise solid. With the relatively weak corporate demand for loans, more than a decade-long trend of lower corporate lending than in the euro area thus continues.

In the need for a strong and resilient European banking system, which will be able to contribute to financing the recovery, accelerated digitisation and greening of our economies, it is important that at the EU level we continue

with banking reforms initiated after the previous financial crisis, which have shown good results during this crisis. Pan-European efforts to improve the efficiency of capital allocation, to unify the European financial services market and create a capital market union are likely to gradually diversify the economy’s funding instruments and sources. This brings new opportunities and challenges for banks, which will be easier to seize and manage as the banking sector continues to consolidate.

In addition, future challenges for maintaining the economic role and stability of Slovenian banks - which have undergone significant structural changes in the last 15 years - are related to sustainability of their business models, including reducing income risk and developing new banking products, further digitisation and efficiency gains, and addressing the large maturity gap between bank assets and liabilities.

On the road to recovery, uncertainties remain

(based on Autumn Forecast of Economic Trends 2021, IMAD)

*Maja Bednaš**

In 2020, we witnessed unprecedented changes caused by rapid spread of coronavirus and global health crisis that strongly affected not only economies, but also everyday activities. This year, economies are on the road to recovery, which is, together with the better prospects regarding the mass vaccination, already reflected in an upward revision of forecasts for the euro area and for Slovenia for 2021. The greatest uncertainty is still associated with the epidemiological situation in Slovenia and its most important trading partners, but risks around baseline forecast are also related to the surge in commodities' prices and supply bottlenecks.

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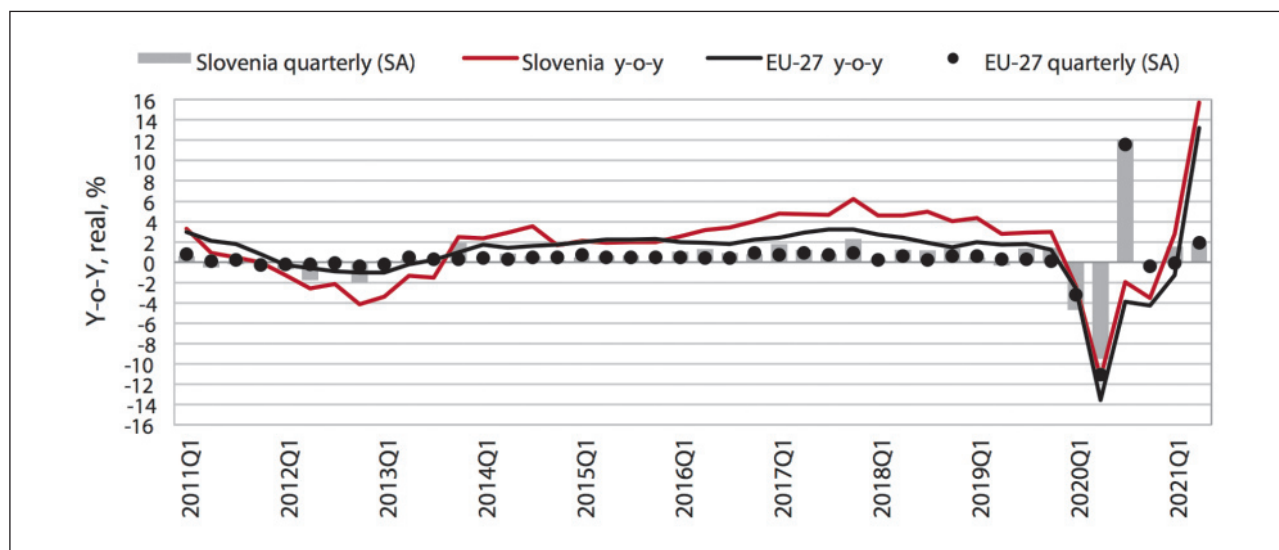
In 2020, we witnessed unprecedented changes caused by rapid spread of coronavirus and global health crisis that strongly affected not only economies, but also everyday activities and, in many cases, quality of lives. Coronavirus spread in China and significant related uncertainties already affected economies in the beginning of the year. But in the second quarter of 2020, fast spread of the coronavirus epidemic all over the world and the emergency health protection measures led to sharp decline of economic activity globally and in Slovenia (-11%, year on year). Many businesses and practically all non-essential service activities were closed overnight, while in manufacturing and other trade-related services, activities were severely hampered. Restrictions on movement, limited spending opportunities and high uncertainty significantly reduced the volume of household consumption. With high uncertainty and disrupted global supply chains, international trade shrank sharply, as did investment. Following the considerable recovery of most sectors during the summer 2020, the deterioration in epidemiological conditions observed from September 2020 onwards required a reinstatement of stringent containment measures. Unlike during the first wave, the impact of measures was much more concentrated on service activities, which were restricted or prohibited due to the COVID-19 pandemic, i.e., entertainment, sports, recreational and personal services, accommodation and food service activities and a large part of the trade sector. The decline in activity in these sectors was sharp again and, as

* Maja Bednaš, Director, Institute of Macroeconomic Analysis and Development of the Republic of Slovenia

during the first wave, resulted in a substantial fall in household consumption. As nominal disposable income continued to grow, mainly due to government measures to mitigate the consequences of COVID-19, the savings rate increased significantly to 22.6% (the average over the last 12 years is 13.4%). On the other hand, some other sectors, particularly those related to external trade (transportation of goods and manufacturing), were significantly less affected in the last quarter of 2020 and first quarter of 2021 and continued to recover. Investment has also been rising in quarterly terms since the middle of the year, driven especially by rebounding investment in machinery and equipment. This, together with a gradual adaptation of businesses and consumers to the new situation, led to a much smaller overall contraction of activity in the last quarter compared to the second quarter i.e., first wave. Statistical Office of the Republic of Slovenia's first estimate of 5.5% contraction of GDP in 2020 (SORS, February 2021) was revised to 4.2% decline (SORS, August 2021), a much smaller drop than expected in IMAD's and other domestic and international institutions' forecasts. The last IMAD's forecast in 2020, (published in December 2020) estimated that GDP decline in 2020 would be 6.6%, while the mean Eastern Consensus forecast for Slovenia in December 2020 stood at -7%. After the outbreak of the epidemic, a range of measures to alleviate its negative consequences for the population and the economy and for faster economic recovery were adopted both at the national level and by the ECB and the European Commission. In Slovenia, the first rapid support package for people and businesses was adopted at the beginning of April 2020 and by February 2021, a further seven packages of measures had been adopted. The total value of measures in 2020 totalled approximately EUR 2.8 billion and is estimated to amount to EUR 1.3 billion in 2021. At the level of the EU, the European Commission activated the general escape clause of the Stability and Growth Pact in March 2020, allowing for the temporary derogation from fiscal rules to combat the consequences of the COVID-19 pandemic. Furthermore, to mitigate the impact of the coronavirus pandemic, the European Commission allowed EU Member States more flexibility in the use of funds from the current multiannual financial framework and state aid. At the end of July 2020, EU Member States reached an agreement on financial package for the recovery of the EU economy after COVID-19. The package, in the overall amount of EUR 1.824 billion (13.1% of EU GDP from 2019), consisted of the classical multi-annual financial framework for 2021–2027 in the total amount of EUR 1.074 billion and an extraordinary recovery instrument ("Next Generation EU") amounting to EUR 750 billion

(EUR 390 billion in grants and EUR 360 billion in loans). The comprehensive immediate measures significantly mitigated the pandemic-related income losses of the economy and the population and provided companies with liquidity and support to cope with the negative consequences. They significantly cushioned last year's contraction in economic activity and prevented a collapse of some particularly exposed sectors. At IMAD, we estimate that GDP would have fallen by at least 4 p.p. more without the measures. The impact of the anti-COVID measures will also be crucial this year, first for sustaining, and later in the year, increasingly for a rebound particularly of service activities and the recovery of overall economic activity. The prospects for the economic activity in the euro area have been improving throughout this year, although at the end of summer signs of economic recovery slowdown occurred, mostly due to surge in commodities' prices and supply bottlenecks (increased container freight; shortage of semi-conductors: global demand for computer and electronic equipment surged in 2020, due to remote working and education and mining at higher cryptocurrency prices, and as production in the automotive industry gradually began to recover, semi-conductor production in the beginning of this year could no longer meet the surge in demand). Nevertheless, despite disruptions in global supply chains, growth in global trade in goods continued and is expected to continue in the coming months. Positive trends in the spring months, together with the better prospects regarding the mass vaccination, were already reflected in an upward revision of international institutions' forecasts for the euro area published in July. These assumed that with a gradual relaxation of containment measures, economic activity should have started picking up in the second quarter, and then more vigorously in the second half of the year when the most vulnerable persons and an increasing share of the adult population should have been vaccinated. Economic activity in the euro area indeed recovered significantly in the second quarter (2.0%, quarterly seasonally adjusted), after contracting in the first quarter of 2021 (-0.3%). Based on these positive trends, the euro area GDP is forecast to expand by 3.8% this year and next, thus returning to pre-pandemic levels in 2022, driven particularly by private consumption and with support from world trade. The depth of last year's decline and the speed of recovery vary significantly across EU member states, reflecting not only the progress of the pandemic and the strictness of containment measures, but also differences in economic structure (particularly the share of tourism) and domestic policy responses. The euro area recovery will be also supported by comprehensive stimulus packages in individual countries as well as those agreed at the EU level, increased

Picture 1: Economic recovery in 2021



Source: Eurostat, SORS

public investment and accommodative monetary policies. Along with the positive euro area economic prospects the outlook for GDP growth in Slovenia has been revised up. With increased vaccination coverage and other protective measures against Coronavirus in place, one can assume that containment measures will not be as stringent as last autumn and winter in spite of a surge in covid cases. Therefore, economic recovery should continue albeit might be occasionally hampered in the coming months. Support from fiscal policy measures at the national and EU levels will continue to play a crucial role, together with monetary policy measures of the ECB. In IMAD's Autumn Forecast (September 2021)¹, we predicted that GDP would grow by 6.1% this year. Mainly due to higher forecasts in the international environment, faster-than-expected activity growth, especially in the second quarter and the summer months, and the continued adjustment of businesses and consumers to the changed conditions, our forecast is higher than projected in the Spring Forecast (4.6%). Export and import trends are favourable and, on the investment side, investment in equipment and machinery in particular is increasing. Accommodation and food service activities, gambling and betting activities and sports, cultural, entertainment and personal care services have also been recovering. Private consumption also increased, mainly due to growth in disposable income, but also to the gradual use of accumulated savings, which rose sharply over the past year. At the same time, the household savings rate is expected to exceed the 2019 level in the coming years. Manufacturing and construction, as well

services related to these two sectors, will mostly already reach their 2019 levels of activity this year, as will investment and international trade. Other business services and private consumption, which have been hit harder by the COVID-19 pandemic, will mostly reach their pre-crisis levels next year, except tourism-related services that will reach that level later.

The crisis caused by the COVID-19 pandemic also interrupted several years of favourable labour market developments. After the first shock in March and April 2020 deterioration in labour market was contained by the adoption of measures to preserve jobs. In 2020, employment was thus 0.6% lower on average, while registered unemployment was 14.6% higher. The largest decline was recorded in the sectors most affected by the containment measures, namely accommodation and food service activities and administrative and support service activities, while employment increased the most in human health and social work activities. This year, especially in the past few months, the situation on the labour market is much better than last year, with the number of unemployed and employed people almost back to the pre-crisis levels. With the expected economic recovery, employment will continue to pick up gradually, while unemployment will decrease further. For this year, we expect 0.8% employment growth and a 11% decline in the average number of unemployed, which will be only 2% higher than in 2019. Over the next two years, the economic recovery will continue. In 2022, GDP growth is expected to moderate to 4.7% and to 3.3% in 2023. Labour market conditions will further improve, while limitations due to labour shortage will become an even more pressing problem.

¹ Spring Forecast of Economic Trends 2021, IMAD

The greatest risk around the baseline forecast is still associated with the epidemiological situation in Slovenia and its most important trading partners; another important factor is a well-planned lifting or re-implementation of measures for mitigating the consequences of the COVID-19 pandemic. In the event of a prolonged persistence of tight epidemiological conditions, more stringent containment measures due to new waves of infections, also as a consequence of new and more infectious coronavirus mutations or slower progress in vaccination, and thus further major closures of economies, the recovery could be slower than forecast. A longer maintenance or reintroduction of stringent containment measures would have an even more detrimental impact on service activities. In the event of a major closure of activities, the consequences would also be felt in industry. Liquidity problems could turn into long-term insolvency for some companies and lead to more bankruptcies. In that case, the banking sector could be affected due to an increase in non-performing loans. In the event of a faster permanent improvement in epidemiological conditions or faster-than-expected vaccine roll-out and/or availability of the medicine for fast widespread use, activity could, however, also recover more rapidly than predicted (by around 1.3 p.p. in 2021, according to the model estimate). Another key factor will be the speed and efficiency of the absorption of resources from the new multi-annual financial framework and the Recovery and Resilience Facility in Slovenia and its main trading partners and their targeted use to address the main development challenges.

Business results of companies in 2020 ²

In 2020, most of the indicators of company performance deteriorated due to the spread of the coronavirus epidemic. The epidemic interrupted the long-running increase in EU market sales and the recovery in domestic sales growth in recent years. Domestic sales fell by 6% and by almost 9% in the EU market, while they fell less in non-EU markets. However, the negative impact on companies' business results was partially offset by measures to mitigate the impact of the epidemic. The government introduced several job retention measures (e.g. wage compensation for temporarily laid-off workers, crisis allowance, partial subsidies for part-time work, etc.) to mitigate financial hardship, preserve jobs and provide income support to workers. Technically, employers recorded these payments arising from the measures as labour costs and the state aid as other operating income, which mitigated the fall in value added. In nominal terms, the value added of companies thus fell by only 1%.

Due to lower activity, operating expenses decreased by 5%, while labour costs, on the other hand, increased by 2.4%.

Unsurprisingly, in 2020, after two years in the black, companies recorded a net loss from financial operations. Although the deterioration was not as pronounced as during the crisis twelve years ago, financial revenue still fell by 28%, while financial expenditure rose by 40%. Within the latter, financial expenses related to impairments and write-offs tripled, while within revenues, financial revenues from equities decreased significantly. The net financial loss thus amounted to almost EUR 419 million in 2020 (also due to a significant loss in electricity supply, see below). Corporate indebtedness, continued to decrease slightly in 2020, debt as a percentage of total liabilities reached 50%, while net financial debt to EBITDA fell to 2.2. Whereas years ago, companies entered the economic and financial crisis heavily indebted, with debt accounting for almost two-thirds of corporate liabilities and net financial debt to EBITDA stood above 6%, their situation was much more stable in this respect.

Due to the COVID-19 pandemic profits fell in almost all sectors, but most sectors still operated at a profit. In 2020, most profits were still generated in manufacturing and trade. The decline in profits in these two sectors was much smaller than in most others, so that their combined share in the companies' total net profit rose from 50% in 2019 to over 70% in 2020. The changes during the pandemic had a significant positive impact on information and communication activities, where profit increased sharply. A slightly larger profit than in the previous year was also recorded in the public utilities sector (water, sewage, waste). On the other hand, due to the restrictions during the epidemic, significant losses were recorded in accommodation and food service activities, as well as in arts, entertainment and recreation activities. As for electricity supply, it experienced a significant deterioration of operations and a loss in 2020, which was to a large extent related to the thermal power plant.

Concluding remarks

After a year and a half, it is undisputable that the COVID-19 pandemic has had a strong impact on the Slovenian economy and cut deep into the quality of life. This crisis has interrupted several years of economic growth and favourable labour market developments, although its impact on the economy and the population was markedly mitigated by government measures. The pandemic, however, has also brought certain opportunities arising, for example, from the expectations on shortening of global value chains

² Slovenian Economic Mirror, No. 5/21, IMAD

or introduction of work from home. Moreover, with support of appropriate economic policies, the introduction of digital solutions, innovation and new business models could also accelerate significantly under the changed conditions, as well as the necessary changes in health and long-term care. Forces that shape short-term economic outlook are still very much related to the pandemic situation, vaccine roll out and policy support. But in the medium term, however, pending development challenges should be addressed. In the period of recovery, it is thus necessary to strengthen investment activity, especially in the direction of digital and green transformation of the economy. With the epidemic staff shortages in health and social work have increased, but with the economy recovering some other sectors are again facing difficulties finding workers with appropriate set of knowledge and skills. But ensuring the skills and competences of the future (for example in the context of digital and green transformation and population ageing) is becoming an ever-greater challenge. The accumulated problems of the social protection systems have intensified during the epidemic, particularly those related to the insufficient adaptation of the system of long-term care to demographic change, the insufficient capacity of the health system and long waiting times. All these development challenges accentuate that the measures for the recovery should be combined with structural reforms for greater resilience of the economy and society to shocks and more

sustainable development in the long term. While the short-term priorities of economic policy are still significantly related to preventing the spread of the COVID-19 pandemic and mitigating its socio-economic consequences, measures for the restructuring and modernisation of the economy should gain more importance and become focal, exploiting new opportunities and accelerating the transition to a highly productive, low-carbon and circular economy.³ To address development challenges while maintaining stable public finance, the necessary adjustments to the structure of general government revenue and expenditure in medium-term fiscal planning and private sources should be made.

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³ Development Report 2021, IMAD

Reforming the EU fiscal rules: what are the policy options?

*Mojmir Mrak**

In responding to the COVID crisis emergency and in order to keep their economies afloat, European countries have temporarily suspended the application of EU fiscal rules that govern public finance deficits and public debt to GDP ratios. This suspension will remain in place in 2022 but is planned to end with the beginning of 2023. As the current EU fiscal rule rules were put in place for an economic environment that was very different from today, one of the main questions for the EU at this moment is how its fiscal rules should be reformed before they are reinstated. The main objective of this article is to contribute to the discussion on this question. The text consists of three main substantive chapters. It starts with presentation of the EU fiscal rules as articulated in the Maastricht Treaty and their evolution until the outbreak of the COVID crisis in early 2020. The text continues with making a case for a comprehensive reform of the EU fiscal rules. This case was strong already before the pandemic but became overwhelming during the last two years. In final part of the article provides a brief overview of various proposals for the EU fiscal rules reform including those proposals that would combine fiscal consolidation with large green public investments required to address more and more pressing climate challenges.

I. Introduction

There are two dimensions of the fiscal framework at the EU level. The first one relates to the development of a fiscal union, through increased risk sharing, common borrowing, and the size and use of the common EU budget. In this area, the EU has made a dramatic move during the time of the COVID crisis. With the July 2020 agreement on the Next Generation EU, the EU Member States have put in place a solidarity-based investment vehicle that is being financed by borrowing of the European Commission on international financial markets. This instrument is expected to serve not just as a tool for fighting the pandemic but also for financing the green and digital objectives of the EU Member States. Although the instrument is being put in place as a one off response to the pandemic, many hope and expect that it represents a basis for a more permanent increase and reform of the EU budget with stronger stabilisation function. The second dimension of the EU fiscal framework, which is the focus of this article, relates to common fiscal rules that apply to Member States' public finances. In responding to the COVID crisis emergency and in order to keep their economies afloat, European countries have temporarily suspended the application of EU fiscal rules that govern public finance deficits and public debt to GDP ratios. This suspension will remain in place in 2022 but is planned to end with the beginning

of 2023. In the meantime, the fiscal landscape of the EU has changed significantly. With the objective to reduce the negative impact of the pandemic, the governments have rightly used large amounts of fiscal stimulus. As a consequence, the EU public finance deficit increased from a marginal one of 0.5 per cent of GDP in 2019 to as much as 7.5 per cent of GDP in 2021 (projection) and the public debt increased from 79 to 94 per cent of GDP in the same period. In some Member States, public debt ratios are substantially higher than the EU average – Greece over 200 per cent, Italy around 160 per cent and Portugal over 130 per cent (Darvasz and Wolff, 2021, p. 2).

The current EU fiscal rule rules were put in place for an economic environment that was very different from today. In addition, the rules are highly complicated in technical terms, excessively constraining and also not credible as they are based on non-realistic numerical targets. Still, being fully aware that some kind of fiscal rules are necessary for effective functioning of the EU, one of the main questions for the EU at this moment is how its fiscal rules should be reformed before they are reinstated. The main objective of this article is to contribute to the discussion on this question.

In addition to this *Introduction* and short *Conclusions*, the article consists of three main chapters. The *second chapter* presents the EU fiscal rules as articulated in the Maastricht Treaty and their evolution until the outbreak of the COVID crisis in early 2020. The core of the *third chapter* is the case for a comprehensive reform of the EU fiscal rules that was strong already before the pandemic but became overwhelming during the last two years. In the *fourth chapter*, the text provides a brief overview of various proposals for the EU fiscal rules reform including those proposals that would combine fiscal consolidation with large green public investments required to address more and more pressing climate challenges.

II. EU fiscal rules: origin and evolution until the outbreak of the pandemic

In close association with the introduction of the Single Market in the late 1980s, Member States of the European Economic Community took a decision to proceed to the European economic and monetary union as the most advanced stage of the regional economic integration process. The 1992 Maastricht Treaty outlined the convergence criteria that EU Member States have to meet in order to join the monetary union and determined the phases for the introduction of the euro. The Treaty also provided an institutional framework for establishing an independent central bank and determined price stability as its primary objective.

On the fiscal side, the Maastricht Treaty stipulated that two fiscal criteria – public finance deficit below 3 per cent of GDP and public debt below 60 per cent of GDP – have to be met by new euro area Member States. The 1997 Stability and Growth Pact (SGP) elaborated these two rules and their implementation mechanisms. The original SGP consists of two parts – a preventive arm, aimed at keeping public finance deficits close to balance or in surplus over the medium run (the so-called medium term objective) and a corrective arm, aimed at eliminating excessive public finance deficits (above 3 per cent of GDP) and executed through the Excessive Deficit Procedure. Only public finance deficits were technically addressed by the original SGP, whereas the public debt criterion (60 per cent of GDP) was kept in principle, but disregarded in practice. Even though the SGP had an escape clause for large recessions, the Pact came under immediate criticism for its pro-cyclicality because it was forcing the Member States to cut deficits during recessions. Another significant deficiency of the SGP was its strong focus on the public finance deficit criterion only while the public debt criterion was treated on the margins only. The original SGP was also managed inadequately. An obvious example of this problem was the weakening of the SGP institutionalised by several Member States including Germany and France, the engines of the euro area creation and the main architects of the SGP. The 2005 revision of the SGP, which made the fiscal rules more flexible, was a major blow to the credibility of the euro area's economic governance (Mrak, 2016, p. 3 and 4). A sense that the EU fiscal rules in the period before the global financial and euro area crisis were both not sufficiently stringent and hard to enforce led to a profound reform of the SGP focused on deepening and broadening of the EU economic governance framework. With the legislative packages, such as the 2011 "Six Pack", the 2013 "Two Pack" and the 2013 "Fiscal Compact", the public finance dimensions of economic governance were substantially strengthened on the one hand and complemented by introducing a more general framework of macroeconomic surveillance on the other hand. This highly complex legal response to the global financial and euro area crisis had as a result fiscal and economic governance rules that in terms of details and prescriptiveness have no comparison worldwide.¹ The complexity of fiscal rules is well illustrated by

¹ The main highlights of the 2011/2013 reforms include: (i) operationalisation of the «preventive arm» of the SGP by requiring a minimum fiscal effort (adjustment path) towards country-specific medium term budgetary objectives; (ii) operationalisation of the public debt criterion in «preventive» and «corrective» arms of the SGP by requiring a minimum reduction of the public debt ratio towards the 60 percent target; (iii) introduction of sanctions for non-compliance with the «preventive arm» of the SGP in addition to the already existing sanctions under the «corrective arm»; (iv) expansion of SGP sanctions to cover the public debt criterion in addition to the already covered budget deficit criterion;

the fact that European Commission's rulebook on this subject goes well beyond 100 pages (Pisany-Ferry, 2021, p. 1).

But even these greatly expanded rules seemed to have had perverse effects, constraining public investment and limiting the scope of fiscal support in the recovery from the global financial and euro area crisis. Experiences show that the existing EU fiscal rules continue to be characterised by a pro-cyclical bias. This was particularly obvious for the crisis that hit Member States during the years of fiscal austerity in the post-2010 period. This pro-cyclicality has triggered negative political consequences including political polarisation and anti-EU sentiment in several Member States. On the economic side, strict application of the fiscal rules was typically associated with significant spending cuts and tax increases holding back the recovery and consequently undermining a reduction of public debt to GDP ratio via higher economic growth. The major victim of fiscal consolidation were public investments. In the period 2010 – 2015, they were reduced by around one half in Greece, Ireland, Portugal, Italy and Spain. i.e., in the countries most heavily hit by the euro area crisis. Investments were cut substantially also in the Central and Eastern members of the EU (Darvasz and Wolff, 2021, p. 5).

III. Pandemic strengthens the case for reform of the EU fiscal rules

In contrast to the global financial and euro area crisis a decade ago, this time European institutions reacted immediately to the outbreak of the pandemic. One of crucial decisions was the activation of the so-called General Escape Clause of the SGP allowing Member States to deviate from their medium-term budgetary objective or from the appropriate adjustment path towards this medium-term objective in the years 2020 and 2021. In practical terms this means that in these two years, an EU member state is not put into an Excessive Deficit Procedure despite having a public fiscal deficit over the 3 per cent of GDP limit or public debt exceeding 60 per cent of GDP and not progressing sufficiently towards 60 percent. Application of the General Escape Clause was extended to 2022, but in 2023, Member States should normally abide again by the rules of the SGP.

Since public finances of the EU Member States have deteriorated significantly over the last two years because

of fiscal measures aimed at mitigating the effects of the pandemic, reinstatement of the fiscal rules in the existing form would imply drastic fiscal tightening from 2023 on. This scenario is simply not realistic for at least two sets of reasons.

First, the scenario where the existing fiscal rules would be reinstated in the existing form would lead to a repetition of a pro-cyclical fiscal austerity strategy applied after the global and euro area financial crisis with all the negative consequences and bad memories associated with its implementation. There are two ways how to bring down an elevated level of public debt to GDP ratio to more reasonable levels.

- One is to reduce the numerator through austerity programs. This was the course taken by the EU after the global financial and euro area crisis and has proved to be inappropriate and not to be repeated.
- The other way to bring down the public debt to GDP ratio is to increase the denominator through investments that generate sustainable growth. By choosing this path, the EU would significantly strengthen its capacities for financing the green transition and digital transformation as strategic objectives of the EU for the forthcoming decade.

Independent analysts estimate that yearly average of additional investment, public and private, that are necessary to achieve the EU 2030 climate and energy targets are above EUR 300 billion per year over the 2021-2030 period. Beyond 2030, the estimates of additional necessary annual investments are even higher. As roughly one third of this total is planned to be provided through public finances at the EU level, primarily through the Next Generation EU, the Multi-Annual Financial Framework 2021 – 2027, and EIB supported instruments, the majority of the investment gap is expected to be covered by national public finances and the private sector. If the EU is serious about implementation of the European Green Deal, then this will not be possible without either changing the existing fiscal rules before their reinstatement in 2023 or at least by applying the existing rules in a much more flexible manner than this was the case in the years before the pandemic. How to ensure green public investment while consolidating public finances will be a central macroeconomic challenge of the EU in this decade.

Second, economic landscape has changed significantly from the time immediately after the global financial and euro area crisis when the existing EU fiscal rules were introduced. A low-interest-rate environment we are living in shows, on the one hand, the limits of monetary policy's effectiveness, and on the other hand, makes fiscal policy a

(v) increased automaticity of SGP sanctions with introduction of reverse qualified majority voting; (vi) a public expenditure rule to limit growth of public spending; (vii) a new macroeconomic imbalance procedure (again with sanctions) to cover other macroeconomic and financial imbalances apart from fiscal imbalances; (viii) enhanced coordination and surveillance of Member States' fiscal and economic policies in the context of the European Semester; and (ix) a separate fiscal compact with more stringent rules and surveillance for euro area Member States.

more essential macroeconomic tool. The changed macroeconomic environment justifies a new mix of monetary of fiscal policies that should complement each other to protect economies from large recessions. Under this changed environment, reliance on numerical targets set for public debt does not have a strong economic justification any more. As Oliver Blanchard put it, there is no such thing as an unsustainable debt as long as interest rate remains below the growth rate (see in Pisany-Ferry, 2021, p.2). However, the current uptick in inflationary pressures could indicate that the macroeconomic environment is again starting to shift. The above arguments may therefore have to be reassessed if inflation proves to be persistent and monetary policy is forced to adopt a more restrictive stance. Such a change could have serious (negative) implications for debt sustainability.

Nevertheless, with public debt increased to levels over 20 per cent of GDP in several Member States during the pandemic, it is neither realistic nor credible to expect that countries will come back to the existing limit of 60 per cent in a foreseeable future. If forced to go on this path too fast (which is indicative of austerity approach), countries would again punish a generation that has already suffered in the post-2010 period with higher taxation and lower welfare. Social cohesion within these countries would again be sacrificed in order to achieve a numerical target that has little economic justification (Stiglitz, 2021).

Moreover, a strategy of fiscal consolidation based on fiscal austerity at a time of profound global structural changes due to green and digital transitions would deprive the EU Member States in general, and highly indebted EU countries in particular, of the financial means to compete and succeed in this transition. This could lead to not just temporarily, but permanently lower welfare that could prove fertile ground for economic, social and political instability. Such development would also substantially deepen the rift between the Member States that became evident already during the global financial and euro area crisis.

IV. Options for reforming the EU fiscal rules

in view of large needs for green public investment

There have been many proposals put forward how to reform the EU fiscal rules. Some of these proposals date back to the pre-pandemic period while others have been articulated as a response to most recent developments where efforts to mitigate negative implications of the COVID crisis are coupled with the recovery objectives requesting large public investment. In terms of the substance, most of the proposals presented so far aim to reduce complexity

and apply some sort of incentive for capital spending. The proposals cover a very wide spectrum, from those ones that argue for just minor adjustments in the interpretation of the existing fiscal rules to those ones that call for replacement of the existing fiscal rules with norms and standards enforced by independent fiscal institutions. The chapter is aimed at providing a brief overview over the spectrum.

No change of the existing fiscal rules but more flexibility in their interpretation;

On one end of the spectrum are proposals for no formal change in the existing fiscal rules arguing that they provide sufficient room to increase significantly the cyclical flexibility of the SGP. One very pragmatic reform option that could be realised at a technical level without amending primary and secondary legislation of the EU is to change the European Commission's method of cyclical adjustment of the budget balance that constitute the core of budgetary surveillance under the preventive part of the SGP. It is now generally accepted that structural (cyclically adjusted) budget deficit as a fundamental factor of assessing national fiscal policy is a problematic indicator because it considerably underestimates the extent of fiscal restraint in phases of crisis and overestimates the success of consolidation during the period of high economic growth. This means that the existing method of structural budget deficit calculation underestimates the extent of cyclical fluctuations and therefore leads to pro-cyclicality of the fiscal policy. Another methodological problem of the European Commission's methodology is its calculation of a potential output base predominantly on the current economic situation. Consequently, in phases of economic crisis, potential output of a crisis hit country is quickly and sharply revised downward (Truger, 2020, p. 279).

There are at least two very pragmatic options to address the deficiency of the existing methodology. One would be to use medium-term averages for potential growth calculations revisions. This would, indeed, be a minor improvement but it would not resolve the conceptual inappropriateness of the existing methodology based on two highly controversial economic indicators – potential output and structural deficit. Another pragmatic option to address deficiency of the existing methodology is to make its interpretation more flexible. This approach was introduced by the European Commission in 2015 and was actually applied in the case of several Member States (France, Spain and Portugal). A major deficiency of this option is that it may open the door for different interpretation of common rules for different categories of Member States.

Adjustment of the existing fiscal rules with new numerical targets more appropriate for the current macroeconomic environment;

A little bit more substantial EU fiscal rules reform proposals go in a direction that the existing numerical targets of the SGP are adjusted to the changed international economic environment characterised by extremely low interest rates and less effective monetary policy. In order to prevent that Member States with significantly elevated level of public debt to GDP ratio will not be forced to counter-productive austerity that would happen if the fiscal rules were reinstalled in the existing form, the proponents of this proposal suggest introduction of looser numerical targets. They suggest, for example, to increase the 60 per cent limit – which was the average for the EU Member States at the time of the Maastricht Treaty and has no evidence-based justification – to higher levels, for example 90 per cent. As already discussed, this would not create a debt sustainability problem under the current low interest rate environment. But, of course, with the growing inflation underway, an increased public debt to GDP numerical target would be associated with higher risks. Another proposal along the lines of changing the numerical targets in the EU fiscal rules relates to the current provision whereby Member States with public debt in excess of 60 per cent of GDP are asked to reduce the amount by which their debt exceeds the threshold by at least 1/20th per year. According to the proponents of this proposal this provision should be either relaxed significantly or eliminated altogether. This proposal is being based on the argument that public debt sustainability is today much less of an issue than at the time this provision was introduced.

Introduction of new fiscal rules that would be more transparent, easy to understand and more investment oriented;

In contrast to the above two groups of proposals – which are both aimed at providing more cyclical space for the fiscal policy but strictly within the framework of the existing fiscal rules – this group of proposals argues for more substantive changes. A common denominator of the proposals within this group is argumentation for replacement of the existing fiscal rules, or at least some of them, with entirely new rules that, on the one hand, are more transparent and easy to understand than the existing rules, and on the other hand, are investment oriented. The latter is a direct consequence of bad experiences with the austerity dominated adjustment applied by several EU Member States in the years following the global financial and euro area crisis.

There is a strong and growing proportion of both researchers and policy makers supporting the view that euro

area should better balance debt sustainability, economic stabilization and increasing investment needs. A substantial change of the existing fiscal rules is needed if all the three objectives are to be achieved simultaneously. One group of proposals goes on the lines that existing rules are replaced with a two pillar approach consisting of two components, a ceiling on expenditure growth to achieve the anchor and the long-term public debt target. A country specific annual debt reduction target would be determined based on the proposal of the respective national fiscal institution and approved by the EU-level fiscal watchdog (Benassy-Quere and others, 2018, p. 10).

Another way to strengthen public investment and protect them from crisis driven cuts is to introduce the so-called “golden rule” for either all public investments or for certain categories of public investments. This concept is well known in public finance literature and excludes net public investment from both the calculation of the headline and the structural deficit. The golden rule, in fact, introduces an intertemporal pay-as-you-use principle into public finance expenditures as present government spending provides benefits to the future generations. As public investment increases the public capital stock and consequently provides benefits to future generations, it is justified that future generations contribute to financing of these investments via their debt servicing (Truger, 2020, p. 5).

As large public investments of the EU Member States will be necessary in the forthcoming decades for achieving ambitious climate emergency objectives, it is realistically to expect that the forthcoming discussion on the EU fiscal rules reform will be strongly influenced by the desire to integrate into the reformed fiscal packages certain types of public investments, especially “green public investment”. One way how the existing EU fiscal framework could be adjusted to better address climate challenges and to ensure the necessary green public investment is the introduction of a »green golden investment rule«². If this rule is included in the EU fiscal framework, it would allow the Member States to undertake green public investment through the issuance of additional debt and the deficit accrued for this will not be counted towards deficit statistics. Such a rule would be

² There are at least two other ways how the existing EU fiscal framework could be adjusted to better address climate challenges each of them with its pro and cons. One way is the expansion of the green investment exception clause in the SGP so that it will also include green public investment. The main argument in favour of going this way is its simplicity of introduction as no legal changes is required. On the other hand, going this way will further increase the complexity of the fiscal rules and will create opportunities for “greenwashing”. The other way how the EU fiscal framework can be better suited to EU climate objectives is to introduce a national benchmark for green public investment amounting to a pre-determined share of the government expenditures. Legally, this would be rather easy to implement through integrating this objective into the European Semester. Unfortunately, experiences with implementation of country specific recommendations are rather unconvincing (European Parliament, 2020, p. 34-37).

undoubtedly effective for mobilizing resources for the green transition as there would be a strong incentive for governments to transform as much of their public investment as possible into green public investment. On the other hand, introduction of this rule would require changes in the existing EU fiscal legislation as well as an agreement on the precise definition of what is included into green public investment in order to prevent “greenwashing” (European Parliament, 2020, p. 35). In this respect, green budgeting and green financing at Member State level could be facilitated by the evolving EU sustainable finance framework, in particular the EU Taxonomy on green economic activities and common EU standards for green financial instruments, such as green bonds.

Replacement of the fiscal rules with fiscal norms and standards; At the very end of the spectrum of proposals for reform of the EU fiscal rules are those ones that call for elimination of fiscal rules based on strict numerical metrics and their replacement with fiscal norms and standards (see, for example, Blanchard and others, 2021). These qualitative prescriptions should leave sufficient room for judgement together with a process to decide whether the standards are met. Central to this process would be country-specific assessments of public debt sustainability led by independent fiscal institutions at the national level and at the EU level by the European Commission and European Fiscal Council.

V. Conclusion

The case for a comprehensive reform of the EU fiscal rules was strong already before the pandemic, but it has intensified in the period since the breakout of the COVID crisis. The rules are highly complicated in technical terms and excessively constraining. Further on, the rules are not credible anymore as they are based on nonrealistic numerical targets and not adjusted to economic environment that is now very different from the time when the fiscal rules were introduced.

All this should by no means be interpreted that the EU does not need fiscal rules anymore. On the contrary, fiscal rules continue to be necessary. Many countries around the world have national fiscal rules as an instrument helping to commit governments not to overspend. In a monetary union, there is an additional rationale for fiscal rules. An excessive public debt accumulation of a member state may namely lead to a messy default triggering contagion and collateral damage for all the Member States. The question for the EU is not whether it should continue to have fiscal rules or not but rather what kind of fiscal rules it

should have once the General Escape Clause is deactivated. Though it is still too early to make more firm conclusions about which way the prospective reform will go, it is still possible to identify some areas where an agreement may be reached. *First*, there is a building consensus among the Member States supporting the European Commission’s position to avoid draconian fiscal consolidation from 2023 on that would happen in case that the existing fiscal rules and their interpretation remained unchanged. *Second*, there seems to be an increased appetite of the Member States to embark on a more growth friendly reduction of public debt ratio than this was the case in the past. This in practice means that the existing debt reduction rule whereby public debt to GDP ratios that exceed 60 per cent threshold must be reduced by 1/20th a year will be either rewritten in a significantly relaxed form or eliminated altogether. *Third*, there is a strong constituency of Member States supporting the European Commission in searching for a most suitable solution on how to safeguard public investments, especially those ones addressing climate changes, once the General Escape Clause will be deactivated. And *fourth*, there seems to be growing support for simplification of the fiscal rules as well as for reducing reliance on hard-to-measure metrics based on the methodology of the European Commission for calculating potential output and structural deficit.

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A new investment climate to unlock climate-investment opportunities: Evidence from the EIB surveys

*Fotios Kalantzis, Debora Revoltella and Simon Savšek**

In this paper, we shed light on the perceptions of citizens, firms, and municipalities regarding the impact of climate change on their daily operations. Based on three interrelated, but in parallel independent surveys, conducted by the European Investment Bank (EIB), we find that 'climate awareness' is building up among these actors. Nevertheless, there are important gaps identified by these surveys, highlighting the need to further raise awareness of this prominent topic. Importantly, the perceptions of the above actors are not well aligned in several EU Member States, potentially jeopardizing a mutual understanding of the policy response and thereby its effectiveness. As the current decade is crucial to addressing our planet's climate and environmental emergency, only a joint action and close cooperation between the policy makers and economic agents will build sufficient capacity to overcome and address these gaps, helping to save our planet.

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Introduction

If anything, the COVID-19 emergency has made it clear that a united policy response to global issues is a prerequisite for any success. Climate action is no different. The issue is just too big and complex to leave it only to the national policymakers. That, however, is far from saying that national policymakers do not have a significant role. To the contrary, they are a crucial ingredient to channel national policies to a joint global effort.

On 12 December 2015, 196 Parties adopted the Paris Agreement, a legally binding international treaty on climate change, urging to keep global warming well below 2°C and to pursue efforts to keep it to 1.5°C above the pre-industrial levels. To reach this target, the world needs to emit less than 580 gigatons of CO₂ by the mid-century. At the current rate of emissions (about 37 gigatons annually), that stock will be fully absorbed already by 2032 (EIB, 2020).

The EU has set even more ambitious targets. The European Commission proposed to cut greenhouse gas emissions by at least 55% by 2030. This would set the EU to become a climate-neutral continent by 2050 (EC, 2020). To further commit to these goals, the EU's new multiannual financial framework (MFF) 2021-2027, coupled with NextGenerationEU (NGEU), the EU's temporary instrument designed to boost the recovery, will dedicate 30 % of its funds – the highest share ever – to fight climate

* All European Investment Bank. The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of the EIB. Any remaining errors are the sole responsibility of the authors.

change (EC, 2021a). The fit for 55 package (EC, 2021b) requires drastic changes for business and people, aiming at aligning laws with the EU's climate ambition. Among other things, it aims to strengthen the EU Emissions Trading System, update the Energy Taxation Directive, and propose new CO₂ standards for cars, new energy efficiency standards for buildings, new targets for renewables, and new ways of supporting clean fuels and infrastructure for clean transport.

To support these objectives, the EIB will increase the share of the support dedicated to climate action and environmental sustainability investments to 50% by 2025, with an overall package of financial instruments leading to some € 1 trillion of investments for climate and the environment by 2030. All lending activities were already aligned with the goals of the Paris Agreement at the end of last year (see EIB, 2019 and Revoltella et al. 2020).

Nevertheless, achieving such investment levels will require a comprehensive strategy, with a deep alignment of incentives, that brings together the public sector, the private sector, and individuals. Understanding the motivations of these different actors is therefore crucial for success. In this context, the EIB has run several surveys to gain a better understanding of what motivates individuals, firms, and municipalities to combat climate change. The three EIB surveys of citizens, firms and municipalities in the EU bring interesting perspectives and clearly show that momentum is growing in support of the green recovery.

In this paper, we shed light on the perception of citizens, firms, and municipalities regarding the impact of climate change on their daily operations. We take stock of three separ-

ate surveys: i) The EIB Climate Survey, conducted by polling company BV from 5 October to 2 November 2020, surveying 30 700 individuals from all 27 Member States and the UK, as well as China and the US. ii) The 2020 EIB Investment Survey (EIBIS), which includes interviews with some 12,000 firms from all Member States, the UK and the US across various size classes and main sectors, highlighting their investment activities, financing needs and the difficulties they face, iii) The EIB Municipality Survey, conducted during the summer of 2020, covering 685 municipalities across the 27 EU countries, to inform about their investment activities in certain types of infrastructure as well as the perceived adequacy thereof.

We show that climate awareness is building up across all these actors. Nevertheless, there are important gaps in tackling and understanding climate change identified, signalling an urgent need for more coordination and capacity building.

The paper is structured as follows: First, we present results from the above-mentioned surveys, with a focus on their climate parts. We also provide an illustration of how aligned perceptions among firms, municipalities and individuals in these surveys are. In the concluding section, we draw some policy conclusions.

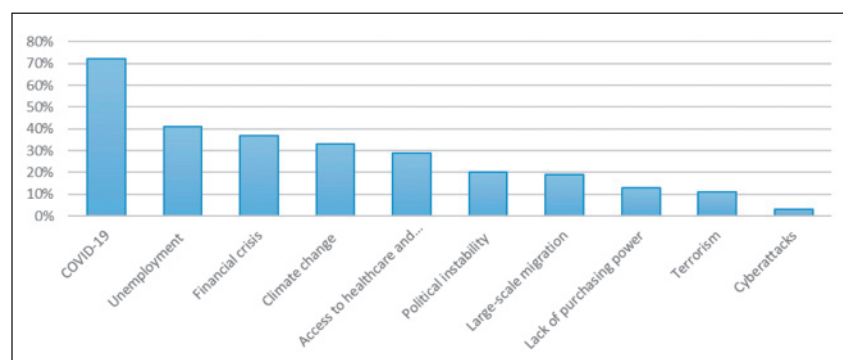
1. What do the individuals say?

The EIB Climate Survey, conducted by polling company BV from 5 October to 2 November 2020, surveyed 30 700 individuals from all 27 EU Member States and the UK, as well as China and the US, for the third time in a row. Its purpose is to learn about the biggest challenges faced by individuals, impact of their own actions and best ways to tackle climate change (see EIB, 2021a).

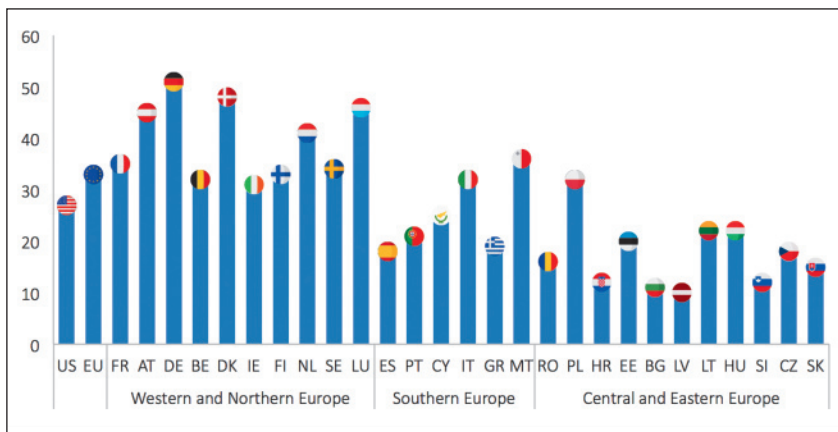
In the EU, citizens say that their biggest challenge is the pandemic (72%), followed by unemployment (41%) and financial crisis (37%) – Figure 1. In fact, the pandemic was the biggest challenge in all Member States. Similar shares are reported by individuals from the US, while climate change (61%) and the pandemic (59%), followed by access to health care and health services scores third (33%) are the key challenges in China.

In the EU, climate change scores fourth, with 33% of individuals saying that climate change is one of their biggest challenges (Figure 2). However, the heterogeneity is substantial, as individuals living in Western Europe are more likely to report climate change an issue, with the highest percentages in Germany (51%), Denmark (48%), Luxembourg (46%) and Austria (45%). On the other side, only a tenth of individuals consider it as being important

Figure 1: Biggest challenges for Europeans



Source: EIB Climate Survey 2020-2021. Q: In your opinion, what are the three biggest challenges that citizens in your country are currently facing?

Figure 2: Climate change as one of the biggest challenges (%)


Source: EIB Climate Survey 2020-2021. Q: In your opinion, what are the three biggest challenges that citizens in your country are currently facing?

in Latvia, followed by Bulgaria (11%), Croatia and Slovenia (both 12%).¹ In addition, 75% of Europeans believe that climate change has an impact on everyday life² with individuals from Southern and South-Eastern Europe more likely to report more elevated pressures, particularly in Romania (95%), Italy (92%) Hungary (91%) and Greece (90%). Slovenia also scores high, at 80%. On the other side

of the spectrum are Denmark (45%), the Netherlands (56%), Estonia and Finland (both 56%) and Sweden (57%) - Figure 3.

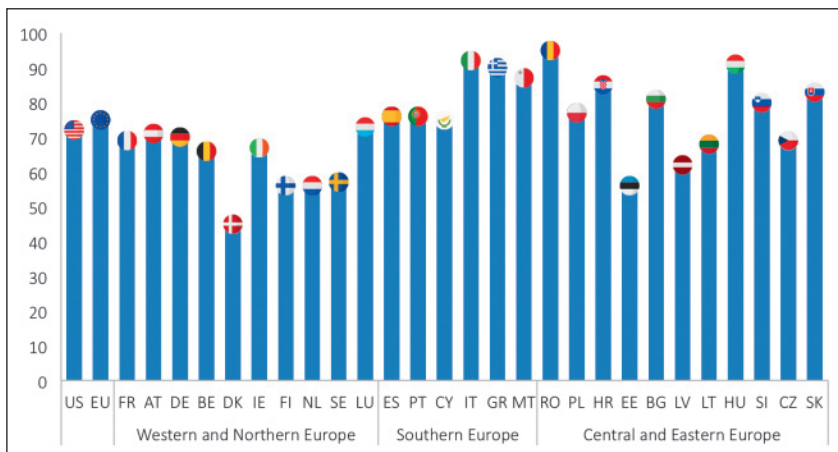
As regards their actions and choices, most Europeans (72%) think they can make a difference and contribute to fighting climate change. They place a stronger emphasis on behavioural shifts than on technology: 39% say that a radical change in their habits is the most appropriate way to fight climate change. About a fifth of them are already making radical lifestyle changes to do their part to avoid the climate catastrophe.

Europeans are also willing to change their habits to counter climate change.

40% say it would be easiest to give up flying, followed by giving up video streaming (18%), consumption of meat (16%), new clothes (15%).

Only 11% say that giving up their car would be easiest, while 39% would find giving up their car to be the most difficult option. About a third of Europeans think they will have to move because of climate change to another region or country. In countries with warmer climate, people are more likely to be concerned, while those with higher incomes typically feel safer than those with lower ones. This may be due to differences in living conditions as well as the household's capacity to adapt to a changing climate. In a sense, risks from climate change add to the other uncertainties in people's lives, including potential job changes that are linked to moving. As the pandemic is likely to influence these developments in the coming years, it will be even more crucial that policy support considers these elements, in line with the priorities of the NGEU and MFF.

As such, government action will be paramount. To fight climate change³, 70% of Europeans would actually be in favour of stricter government measures. Almost half (49%) think that the energy sector and renewable energy use should be prioritised. 40% mention subsidies for electric cars and

Figure 3: Citizens responses about the impact of climate change on their daily lives (%)


Source: EIB Climate Survey 2021-2022. Q: Do you feel that climate change is having an impact on your everyday life?

³ Importantly, two-thirds of Europeans also think the European Union is in the lead in the fight against climate change, while Chinese and the US citizens are less convinced about their countries. In all EU Member States most citizens agree that the EU is at the frontier. Looking at the national level, Northern Europeans are more likely to believe their country is at the forefront in the fight against climate change. Percentages are being highest in Finland (72%), Denmark 66% and Germany (65%) and lowest in Cyprus (10%), Croatia (16%) and Bulgaria (18%). Slovenia is in the middle, with 38%. Most Europeans (57%) also think that following the pandemic, the government's priority should be to reorient the economy towards climate sustainability. However, there is a strong cross-country heterogeneity identified by the survey. Indeed, only about a third of surveyed individuals in Cyprus (31%) and Latvia (34%) see this reorientation as crucial, while the percentages go as high as 71% in Hungary and 67% in Malta. Shares are also high in Austria, France, Germany, Italy, Luxembourg, and Spain, and somewhat lower in Slovenia (53%).

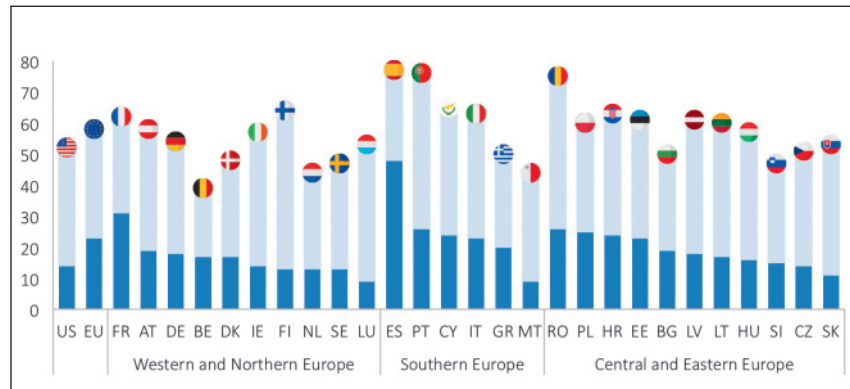
the need to extend remote working or to cut on commutes (36%). To support urban mobility, increasing the efficiency of public transport is the top priority for 55% of Europeans, while only a third are in favour of bans on high-emission vehicles.

2. What do firms say?

In this section, we rely on the 2020 edition of the EIB Investment Survey (EIBIS), which surveyed some 12,000 European firms, representative by sector, country, and firm size class. The EIBIS survey also offers a further sample of firms in the United States for comparison. The database has run annually since 2016 to gather qualitative and quantitative information about firms' investment activities, their financing needs, and the difficulties they face. Special attention to the climate block is paid in the following section.

When considering climate risks, firms are confronted with two main risk concepts. The first is the physical risk, which is the risk of being affected by extreme weather events or slower changes in climate and weather patterns. The second is the transition risk, namely the risk that the global decarbonization path, with consequent changes in regulations, costs, and demand, might affect the firm in terms of reputation,

Figure 4: Share of firms whose business activities are affected by climate – physical risk by country (% of firms)

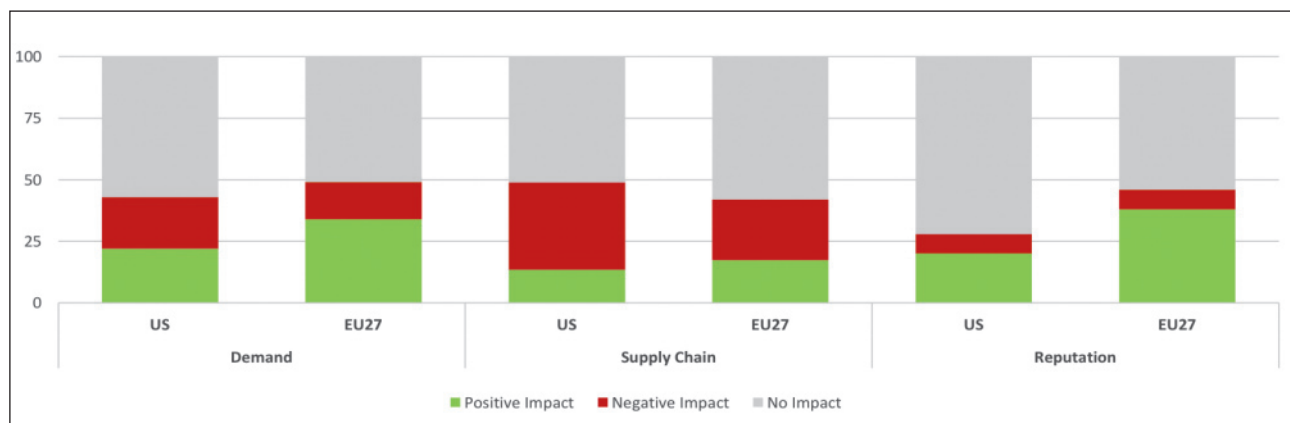


Source: EIBIS, 2020. Notes: Base: All firms (excluding don't know / refused responses). Dark blue denotes major and light blue minor risks. Q: Thinking about climate change and the related changes in weather patterns, would you say these weather events currently have a major impact, a minor impact or no impact at all on your business?

demand for its own products, business model and the value of its assets. More than half (58%) of European firms, and about half in Slovenia, consider themselves vulnerable to physical risks, but less than a quarter perceive this risk as major. Firms in Southern and Central and Eastern Europe feel the impact of extreme climate events more – Figure 4. In the United States, a lower share of firms (52%) state that the climate change affects impacts business activities, with less than 15% saying they face a major risk. When asked about the potential effect of decarbonization on demand for their own products and services, or on their reputation, most firms, both in the EU and in the US, believe there will be

no impact (Figure 5). When an impact is expected, this is mostly expected to be a positive one, suggesting that firms mostly see the climate transition as presenting opportunities. While the majority of EU firms state that the energy transition does not affect their supply chains, those that do observe an impact tend to hold negative views. Nearly three of five EU firms (58%) state that the energy transition will have no impact on their supply chains. Some 25% of firms in the European Union expect the transition to hurt their supply chains. This share is higher in the United States (some 35%). The negative perception could be explained by the fact that the energy transition might increase

Figure 5: European firms perceiving transition risks



Source: EIBIS, 2020. Notes: All firms (excluding don't know / refused responses). Q: What impact will the transition to a reduction of carbon emissions have your demand/supply chain/reputation over the next five years?

Figure 6: Share of firms investing in climate, according to their perception of climate risks (%)



Source: EIBIS, 2020. Notes: Base: All firms (excluding don't know / refused responses). Q: Has your company already invested to tackle the impacts of weather events and reduction in carbon emissions?

supply costs (costs of energy and non-energy raw materials). If suppliers incur greater costs due to new regulations, they might try passing them onto their consumers.

Regarding their actions, nearly half of European firms (45%) already invest in measures to deal with climate change, much above the 32% share in the US. Climate investment in the European Union differs significantly between regions. While 50% of firms in Western and Northern Europe invest in climate measures, only 32% of Eastern European firms do so. The differences between individual EU countries are even more pronounced. Firms in Finland and the Netherlands are at the forefront of climate investment: 62% of Finnish firms and 58% of Dutch firms invest in climate measures. By contrast, other EU countries are lagging in this area, with only 24% of Slovenian firms, 23% of Cypriot, 19% of Irish and 18% of Greek firms making this kind of investment. Awareness is important to motivate investment. Firms that see the climate transition as an opportunity tend to invest more (Figure 6). Firms in energy-intensive sectors are also much more aware of the climate transition risks and invest more. So do the enterprises with dedicated climate staff, those that set climate targets or conduct an energy audit.

The EIBIS findings⁴ also indicate that investment in climate by firms goes hand in hand with national policy objectives and an enabling environment. The biggest obstacles for climate investments, according to firms, are the uncertainty about regulation and taxation and high investment costs. Again, this highlights the need for a greater alignment of objectives across all actors.

3. What do the European municipalities say?

The 2020 EIB Municipality Survey, conducted during the summer of 2020 and covering 685 municipalities across the 27 EU countries, asked municipalities about their investment activities in certain types of infra-

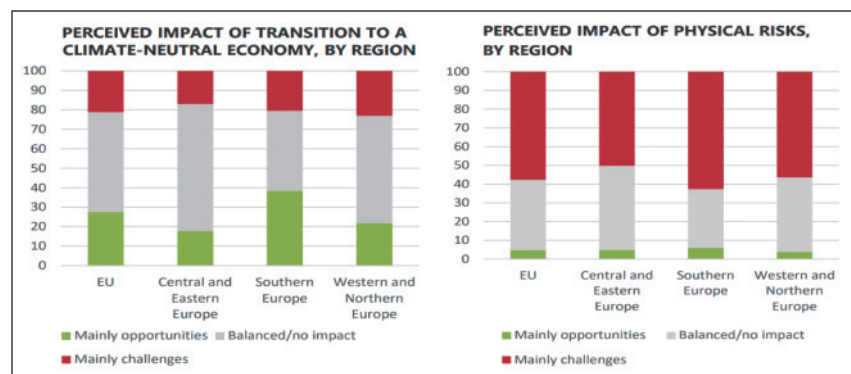
structure as well as the perceived adequacy thereof.

Looking at the transition risks (Figure 7, LHS), challenges and opportunities are broadly balanced. In the EU sample, slight majority anticipates more opportunities (27%) than challenges (21%). However, there is some variation between regions. Municipalities from Southern Europe are more optimistic⁵, with nearly twice as many seeing mainly opportunities than those reporting mainly challenges. Turning to the physical risk, challenges are much more elaborate, particularly in Southern Europe. Here, 63% of surveyed municipalities remains concerned, while only 6% of them are on balance optimistic.⁶ Regarding climate infrastructure investments, an investment gap seems to have been building in years before the pandemic. Indeed, the adequacy of investment was most frequently deemed lacking for infrastructure assets related to both climate change mitigation and adaptation (65% and 69%, respectively), followed by digitalisation (47%) and urban transport (46%). While the investment plans for climate change mitigation and climate change adaptation have been high

⁵ With large municipalities reporting a particularly positive net balance.

⁶ A U-shaped relationship appears to exist between the net balance of concerns and population size: concerns increase with size from micro to medium-sized municipalities, before tempering for large municipalities.

Figure 7: Transitional and physical risk among EU municipalities, by region



Source: Municipalities Survey, 2020. Notes: All municipalities (excluding don't know/refused responses). Q: On balance, over the next five years what economic impact do you expect the climate change transition to have on your municipality?

on the agenda before the pandemic⁷, the priority for such infrastructure investment seems to have somewhat waned, as municipalities stepped up particularly digital and social infrastructure. Why?

First, EU municipalities seem to lack the capacity to deal with climate change. Municipalities were asked if they have several features in place such as green budgeting, measurement of their CO₂ emissions, etc. Some 70% of EU municipalities do not have those features in place, thus being less well equipped to deal with the climate transition in the first place. Second, distinct barriers to investment in climate action and green projects can be identified, with availability of funds by far the most important (Figure 8). This is followed by regulatory red tape and a lack of technical capacity. Yet another type of barrier holding up investment in climate action and green projects is the lack of a clear classification. With a clear nomenclature for investment in climate action and green projects missing, channelling investments into sustainable activities is dif-

ficult, although the EU Taxonomy for sustainable investment and the EIB Climate Roadmap go some way in addressing this difficulty.

One important finding from EIB research (e.g. EIB, 2021c) is that municipalities that engage more in collaboration also tend to invest in climate mitigation and adaptation. This finding suggests that collaboration can be an effective tool for the diffusion of knowledge. In fact, municipalities that coordinate locally with their peers or with networks of cities or municipalities with similar policy priorities (including associations such as Covenant of Mayors, or UN compact of mayors) also have a higher probability to implement climate actions. Thus, concerted action matters, although so far, coordination among municipalities is not well developed. Survey evidence suggests that coordination is stronger in the case of smaller municipalities. This observation may reflect the need for smaller players to coordinate with neighbours to get larger projects off the ground, while larger municipalities might have the capacity to act alone. In fact, while the latter perceive stakeholder coordination to be an issue, smaller municipalities

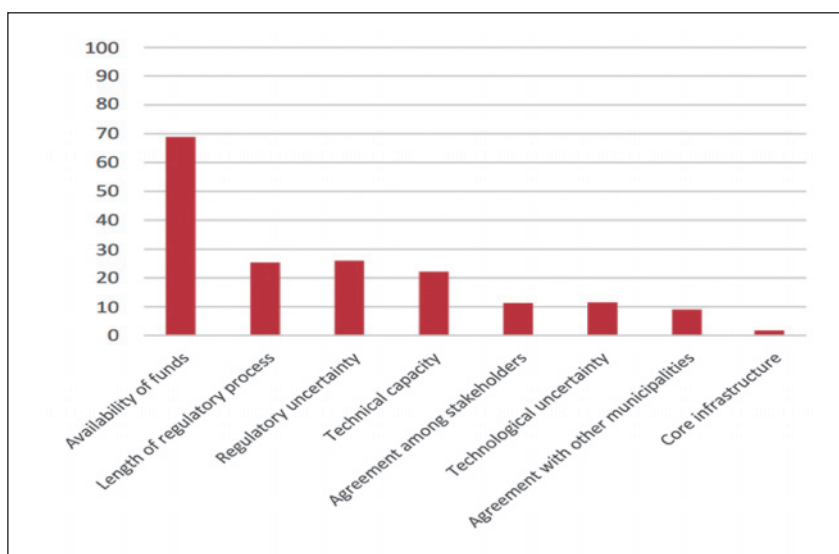
identify the challenge of coordinating among neighbouring municipalities to be an obstacle to investment.

4. Do all actors share the same views on climate change impacts?

It is not only about the coordination of municipalities. Economic research has shown that the alignment of economic agents at various levels is crucial for achieving common goals.⁸ Some recent studies also focused on climate change. For example, Salhi et al. (2020) claim that the alignment of farmers' perceptions on soil degradation and public policy in Marrocco is far from perfect, calling upon a comprehensive solution that would involve all the actors. Worryingly, Maas et al. (2020) show a strong misalignment of farmer experience and perceptions of climate change in the U.S. inland Pacific Northwest, potentially jeopardizing support for climate action policy and adaptation strategies. Sullivan and White (2019) show that the gap in risk perceptions between the public and experts may be decreasing in some US cities and that pro-environmental worldview and perceived personal responsibility are the most influential predictors of climate awareness.⁹ Finally, Roelich and Gieseckam (2018) in fact claim that the interaction between policy makers and their actions is another source of uncertainty as they usually do not share a common view in the first place. They claim that if this divergence would be properly addressed, the implementation and effectiveness of climate adap-

⁷ Scoring second and third only after digital infrastructure at the EU level and even first in Central and Eastern European municipalities.

Figure 8: Barriers to climate infrastructure investment



Source: EIB Municipalities Survey, 2020. Q. Thinking of green or climate related infrastructure investment, which are the two main obstacles to this type of investment?

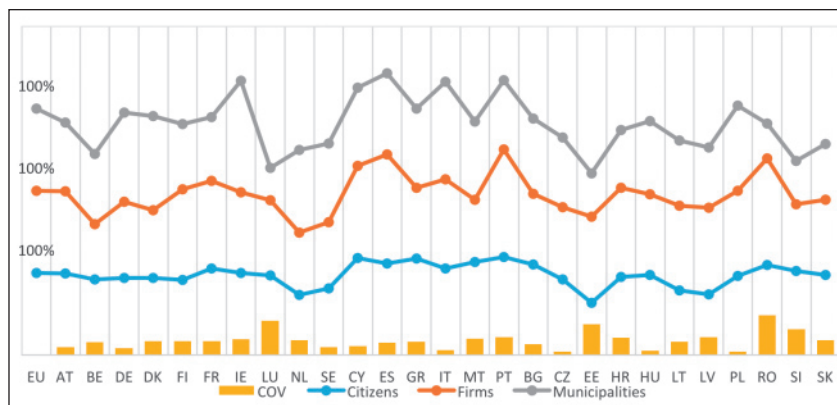
⁸ For example, a study by Kuhn and Rundle-Thiele (2009) showed that student perceptions of learning achievement helped to understand if the curriculum goals were achieved and was useful for educators to improve it. Furthermore, a study by Kim et al. (2020) showed that that strategic alignment is indirectly related to organizational performance through goal clarity and employee engagement. Menichini T. & Rosati F. (2014) provide a methodology on how to better align company CSR with consumers.

⁹ Some further studies are offered in Mass et al. (2020) and Sullivan and White (2019). We only concentrated on the some of the most recent ones.

tation and mitigation activities would enhance.

In the following we try to identify whether, at a country level, the perceptions of climate change impact firms, citizens and municipalities converge or diverge in Europe. Specifically, from the EIB climate survey the answers given by citizens on the impact of climate change on their everyday lives are taken (see Figure 3). From the EIBIS, the responses of firms on whether climate change had an impact on their business activities are studied (Figure 4). Finally, a similar question on the climate change impact on Municipalities at the country level is used (Figure 7, RHS). To identify convergence, first, we normalised each question based on the EU average and then we used a simple but commonly used indicator for assessing convergence, the coefficient of variation (COV) of the perceptions from the three surveys for each country. Looking at Figure 9, we see that awareness of climate change impacts is rather heterogeneous at the country level. A relatively strong alignment of awareness, based on the coefficient of variation, is found particularly in Germany, Sweden, Italy, Poland and the Czech Republic. On the other hand, perceptions are associated more poorly in Romania, Estonia, Luxembourg, and Slovenia. At a country level, the perceptions of municipalities on climate change impacts exhibit the highest variation (26%), followed by those of firms (17%) and citizens (15%). While determining the causes of this misalignment is important for a broader understanding of the topic and associated policy responses, such an analysis exceeds the purpose of this article. Nevertheless, it illustrates how different the perceptions of physical risk are across the EU countries and actors in these surveys, calling upon a broader investigation.

Figure 9: Alignment on awareness of climate change impacts from the three EIB studies



Source: EIB Surveys. Notes: In the municipalities survey, the question on perceptions was used at the country level even if representativeness issues were identified. Therefore, the chart should be seen as an illustration of heterogeneity on awareness of climate change impacts, while additional analytical tools need to be used to draw stronger policy decisions or scientific inferences. Indeed, features such as the level of sophistication, institutional setting, political views etc. could all impact these perceptions.

Conclusions

This decade is critical for transitioning to a net-zero carbon economy by mid-century. We cannot afford another lost decade and investment is the utmost factor for making the energy transition happen. Stepping up climate investments requires a coordinated plan that increases clarity, awareness, and the alignment of incentives across all key players. The agreements to tackle climate change at the global, the EU and national levels have been endorsed and now need to be put into practice. In this respect, understanding better the needs and obstacles of private and public sector entities will be crucial. To do so, the EIB has been running surveys of individuals, firms, and municipalities in recent years. In this article, we take stock of the outcomes of these surveys as regards climate action.

We find that climate change is among the biggest challenges of citizens, firms, and municipalities' agenda, but sometimes is underestimated due to other short-term challenges, such as the pandemic outbreak. According to the EIB Climate Survey, climate change is the fourth biggest challenge among individuals in Europe, with a

strong cross-country heterogeneity. Generally, persons living in Western Europe are more likely to make climate change an issue, with the highest percentages in Germany (51%), Denmark (48%), Luxembourg (46%) and Austria (45%). On the other side, only a tenth of individuals consider it as being important in Latvia, followed by Bulgaria (11%), Croatia and Slovenia (both 12%). As we show, to tackle climate change, Europeans are also willing to change their habits to counter climate change and willing to subscribe to more stringent government measures, reflecting the need for a broader coordination. The EIBIS shows that 58% of European firms consider themselves vulnerable to physical climate risks, but less than a quarter perceive this risk as major. Almost 45% of European firms already invest in measures to deal with climate change, much above the 32% share in the US. Climate investment in the European Union differs significantly between regions. Firms in Finland and the Netherlands are at the forefront of climate investment: 62% of Finnish firms and 58% of Dutch firms invest in climate measures. By contrast, other EU countries are

lagging in this area, with only 24% of Slovenian firms, 23% of Cypriot, 19% of Irish and 18% of Greek firms making this kind of investment. Several areas linked to governments' action are found among the biggest obstacles, highlighting the need for broader coordination across all actors, including policy makers and firms. At the municipality level, most of them (outside of Western and Northern Europe) considered their level of infrastructure investments in recent years to have been too low. Infrastructure investment is most frequently deemed inadequate for climate mitigation and adaptation. Distinct barriers to investment in climate action and green projects can be identified, with availability of funds by far the most important. Coordination is another important challenge, which supports climate action. Achieving sufficient investment capacity will therefore require full alignment of initiatives of economic agents at various levels. For the recovery to be sustainable and green, individuals, firms and public sector entities must join efforts in their calls for urgent action to tackle climate change and utilise the solutions offered by the policy makers. Our findings confirm the notion taken in Roelich and Gieseckam (2018) that economic agents, with sometimes opposing incentives, actions or inspirations need to find common grounds for climate change adaptation and mitigation, but may not do so, in case the proposed actions are not aligned with their perceptions or even do not have the possibility to engage at various levels. In that sense, it is welcoming that the MFF and the NGEU will support the EU Green Deal, with record amounts allocated to climate action, including for education and research, which will bring municipalities, firms, and individuals closer in understanding the com-

mon goals and thereby stimulate awareness of climate change impacts. Without awareness there will be no concern, and without concern there will be no adaptation.

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EU sustainable finance framework in the context of the European Green Deal

*Vasja Rant**

This article presents the emerging EU sustainable finance framework in the context of economic arguments behind a regulatory approach to sustainable finance and key elements of the European Green Deal. The objective of the framework is to redirect private capital flows to finance sustainable transition to a climate-neutral economy using three building blocks: an EU taxonomy of sustainable economic activities, sustainability disclosures of non-financial and financial companies, and sustainability tools for designing financial products. Its implementation is expected to have profound implications for the financial industry in the coming years.

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1. Introduction

Humanity is facing profound environmental, social and economic challenges. Weather patterns are becoming increasingly dangerous due to climate change. The latest IPCC report predicts that some densely populated parts of the world could be headed to a future of deadly heat and humidity conditions, whereas others could face increased risk of flooding and drought (IPCC, 2021). The loss of biodiversity, pollution, and waste threaten the ecosystems upon which a thriving human society and economic activity depend. There is a strong realization in the scientific community today that Earth's environmental boundaries, some of which have already been crossed, are interrelated and that non-linear switching to a less stable state of the planet may occur beyond the safe zone (Steffen et al., 2015).

At the same time, cohesion of our societies has been shaken by a decade of financial, migration and health crises, preceded by a fast rise of globalization. In the process, some countries (particularly developed) have witnessed a stagnation of the middle class and increased social inequalities, whereas others (particularly developing) have paid a price for fast development by turning a blind eye on human rights (Alvaredo, 2018). In the future, social pressures are projected to increase further due to the negative effects of climate change (Islam & Winkel, 2017). Recently, technology has emerged as another key driver of social transformation. There are concerns in particular that the nature

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of digital technologies, with low marginal costs, strong network externalities, data privacy issues and high propensity for automation, may be conducive to 'winner takes all' outcomes that could hurt competition and exacerbate social inequalities (Furman & Orszag, 2018; Autor et al., 2020).

Environmental and social challenges are inextricably linked to the design of our economic systems which have until recently been focused on short-term shareholder profits, linear production methods, resource depletion and fossil fuels as the main energy source. To address these sustainability challenges, paradigm shift towards a long-term stakeholder view and a circular economy, independent of fossil fuels, is required.

Increased political focus on sustainability has so far translated to policy commitments on international level, exemplified by the UN Sustainable development goals (UN, 2015a) and the Paris climate agreement (UN, 2015b). Within the EU, this has led to the adoption of the ambitious European green deal¹ with the objective to transform the EU into a sustainable, carbon-neutral economy by 2050. In parallel, a bottom-up approach has also been gaining momentum, as companies increasingly incorporate environmental, social and governance (ESG) criteria into their decision making and consumers start taking sustainability of products, brands and companies seriously.

Finance lies at the nexus of these efforts. Through its ability to mobilize financial resources and allocate them to the most productive uses, it is uniquely placed to help steer the paradigm shift. For that purpose, finance itself must become sustainable. Sustainable finance is built on the premise that environmental and social factors should be considered alongside financial variables in financing and investment decisions because they co-determine long-run profitability and financial stability. Over the last few years, sustainable finance has seen a global surge and is projected to grow further into the future (Schoenmaker & Schramade, 2018). This growth is partly organic due to the increasing ESG focus of financial and non-financial companies but it is also imposed by policy choices and regulation. The latter is particularly true for the EU, where a new framework for sustainable finance is starting to take shape.

The contribution of this article is twofold. First, it provides economic rationale behind sustainable transformation of finance. Second, it reviews and places the evolving EU framework for sustainable finance into the broader context of the European Green Deal, highlighting reinforcements between different policy instruments.

In addition to the Introduction, this article contains five sections. The second section builds economic arguments in favour and against a government-led regulatory approach to sustainable finance. The third section briefly explains the logic of the European Green deal and focuses on three important elements of the Deal that bear specific relevance for sustainable finance because they set the EU trajectory to sustainability. The fourth section presents the evolution and the current state of play of the EU sustainable finance framework, including its three building blocks, the EU taxonomy, sustainability disclosures and sustainability tools. Finally, the fifth section concludes the article by considering implications of the sustainable finance framework.

2. Why do we need sustainable finance and sustainable finance regulation?

From economic perspective, sustainability challenges amount to negative externalities of existing production and consumption patterns. The main problem with negative externalities is that they impose costs on the society that are not reflected in companies' private cost-benefit analysis and market prices. This type of market failure is normally addressed by the government, so it's important to ask why should the financial system get involved.

A part of the answer may lie in the fact that crucial environmental externalities, which dominate the sustainability debate, are not just global in nature but entail a strong inter-temporal element with potentially catastrophic costs in the long-run and relatively low mitigation benefits in the short-run. In other words, future generations will bear the brunt of the impact of climate change while current mitigation actions will take time to produce discernible effects on the climate. Prudent financial analysis should therefore start taking climate-related costs and benefits into account as they enter the forecasting horizon of the financial industry. In this respect, sustainable finance could organically grow over time to support the green transition.

However, organic growth of sustainable finance may not be fast enough due to the required timing of response. If pledges of the Paris climate agreement to limit global warming to well below 2 and preferably to 1.5 degrees Celsius compared to pre-industrial levels are to be met, humanity is literally running out of time. The IPCC estimates that the remaining global carbon budget after 2020 that is consistent with the 1.5 degrees goal stands at 400 GtCO₂ at a 67% degree of certainty (the higher the probability, the lower the remaining carbon budget). For the 2.0 degrees goal, the respective figure is 1.150 GtCO₂. At the current annual rate of global emissions of roughly 50 GtCO₂ (2018 estimate), these remaining budgets would be

¹ COM(2019) 640 final.

exhausted in 10-25 years (IPCC, 2021). Given the fact that global emissions are again on the rise after a temporary decline at the start of the Covid-19 pandemic, time may be even shorter. Overshooting the Paris targets risks opening the path to high temperature climate scenarios with substantially increased frequency of extreme weather and rising sea levels, which may be incompatible with stable human societies (Richards et al., 2021). The message of natural sciences is therefore clear: the paradigm shift to a carbon-neutral economy has to be accelerated and completed in the relatively near future. This requires a coordinated and organized approach by the government. Acceleration of transition to sustainable finance through regulation is a part of this approach.

Another factor weighing in on the need to bring finance on board of sustainability is the sheer scale of the challenge, especially in relation to climate change. The European Commission estimates that in order to reach the EU's internal goal of carbon-neutrality by 2050 and the intermediate objective of a 55% reduction of greenhouse gas emissions by 2030, total supply and demand side investments in the energy system across the EU, from power plants and power grids to industry, residential and transport sectors, will amount to roughly EUR 1,000 bn per year in the 2021-30 period and EUR 1,200 bn per year in the subsequent period of 2031-2050 (European Commission, 2020). Relative to the 2011-20 period, this amounts to an increase of investment in the energy system by around EUR 350 bn and EUR 500 bn per year, respectively. Public resources will not be sufficient to finance the estimated needs, even when taking into account public financial institutions, such as development banks. EU framework for sustainable finance is therefore needed to incentivize private financial players to participate in financing of the green transition. The timing and scale of sustainable transition also imply systemic implications for the economy and the financial system. This transition requires nothing less than a complete rethinking of technological solutions and business models across many sectors, with direct implications for their competitiveness and ultimately for financial and price stability. Conversely, reneging on climate and sustainability action would also inevitably lead to adverse systemic effects. It is therefore no wonder that sustainability is fast becoming a focal point of financial supervision and even monetary policy. The use of sustainability criteria by central banks and financial supervisors provides a further argument in favour of a more common, regulated approach towards sustainable finance.

In the end, a certain level of regulation of sustainable finance may also be in the best interest of private financial

players because it helps to resolve information asymmetries that are inherent in the quest for sustainability. Recent proliferation of ESG criteria has on the one hand been accompanied by the development of sustainable investment approaches by the industry,² but it has on the other hand also generated the problem of greenwashing, where the primary objective of companies is to look but not act green. Regulation that helps to define sustainable principles and activities therefore brings some much needed clarity to the field and could help spur further growth of sustainable finance.

However, there are two important caveats to the above arguments. The first one are increased costs of regulatory compliance. The traditional financial sector is already one of the most heavily regulated sectors of the economy. Adding another layer of sustainable regulation could have negative implications for the competitiveness of the sector at a time when it is already facing substantial challenges from new competition (fintech, including bigtech) and from unfavourable market conditions (very low or negative interest rates). This could have especially detrimental effects on smaller players in the sector who may find it difficult to cope with increased regulatory burden, leading to further market consolidation and concentration. Such market dynamics could in turn disproportionately affect financial systems of smaller Member States.

The second caveat are the well-known risks of government failure. While the end goals of decarbonisation and broader sustainability are clear, there are 'many roads that lead to Rome'. By committing to regulation, the government (in this case, the EU as a supranational collection of governments) is choosing to select some roads over the others. A typical example is unwillingness to include nuclear energy as a sustainable activity in the initial version of the EU taxonomy (it seems now that this particular problem may be corrected). Likewise, sudden triggering of massive public and private capital flows to sustainability causes by regulation could lead to inefficiencies and corruption.

3. Implications of the European Green Deal for sustainable finance

The EU approach to sustainable finance is embedded in the European Green Deal, adopted in 2019 with the goal to transform the EU into a sustainable, climate neutral economy over the coming years and decades. In addition to its headline objectives of zero net greenhouse gas emissions

² Examples of such approaches are sustainability themed investments, best-in-class investment selection, exclusions/negative screening, norms-based screening, ESG integration, engagement and voting and impact investing (Deloitte, 2020).

by 2050 and decoupling economic growth from resource use, the Green Deal is also concerned with the preservation and restoration of biodiversity, improving human health and well-being and ensuring a socially just and inclusive transition, corresponding to the broader set of UN sustainable development goals and ESG criteria.

Implementation of the Green Deal rests upon a comprehensive set of instruments, which include development of EU sector-wide strategies and action plans, alignment of national strategies with the Green Deal objectives, changes to the EU legal framework in terms of both new and existing legislation as well as arrangements to stimulate public and private investment and financing of the green transition. On top of these instruments, important emphasis is also given to sustainability mainstreaming, which refers to the principle of including sustainability into all aspects of EU policies. Sustainable finance framework is the most relevant attempt of such mainstreaming.

Three elements of the European Green Deal bear specific relevance for the acceleration of the green transition with implications for sustainable finance. The first element are substantially increased medium term climate targets. The second one concerns effective regulation of carbon pricing with the aim to deliver the more ambitious climate targets. The third element is a coordinated approach to sustainable investments and financing under the European Green Deal Investment Plan.

3.1. Increased medium term climate targets

Even before the European green deal, the EU already planned to cut greenhouse gas emissions by 40 percent by 2030 relative to 1990 levels. This target has now been raised to 55 percent for net emissions.³ By 2019, the EU (without the UK) managed to decrease net emissions by 27.9 percent relative to 1990. Increased 2030 ambitions therefore mean that the last three decades of EU emissions reductions will now have to be redoubled in the space of only 10 years, which is clearly a very ambitious objective.⁴ Moreover, the new 2030 target as well as the 2050 climate neutrality goal are now enshrined in the EU climate law,⁵ making them legally binding for the Member States.

³ The main difference between »gross« and »net« concepts of greenhouse gas emissions comes from the inclusion of the land use, land use change and forestry sector, which can act as a carbon sink and negatively contribute towards total emissions.

⁴ It is true that emissions decreased dramatically in 2020 due to COVID-19. While the data for all greenhouse gas emissions is not available yet, estimates of EU CO₂ emissions for 2020 show a 13.4 percent drop relative to 2019 (BP, 2021). However, this is only a temporary effect and emissions are expected to rebound as economic activity returns. Achieving the 2030/2050 targets will therefore require substantial and coordinated efforts.

⁵ Regulation EU 2021/1119.

3.2. Effective regulation of carbon pricing

In order to deliver climate policy targets, the EU relies on three key instruments, the EU Emissions Trading System (EU ETS), the Effort Sharing Regulation (ESR), and the Land Use, Land Use Change and Forestry (LULUCF) Regulation, which together cover all EU greenhouse gas emissions and removals. The European Commission proposed to revise each of these instruments in its 'Fit for 55' legislative package on 14 July 2021 to reflect increased climate ambitions.

The EU ETS covers the emissions of the power sector, energy intensive industry and a part of commercial aviation, accounting for approximately 40 percent of EU emissions. It follows a cap-and-trade principle where the total amount of emissions covered by the system, corresponding to the total amount of allowances, is capped.⁶ This cap is reduced each year to ensure a decreasing profile of emissions. The idea is that a decreasing cap will put upward pressure on the market price of allowances and drive up the cost of carbon-intensive technologies, encouraging investment into low or zero carbon alternatives. The 'Fit for 55' proposal expands the scope of the EU ETS to the maritime shipping sector and envisages a separate ETS for road transport and building sectors by 2026. It also significantly increases the pace of emissions reductions by lowering the overall emissions cap and increasing its annual rate of reduction from 2.2 to 4.2 percent, on the back of a much lower 1.74 percent reduction rate before 2021. Next, the ESR sets binding emissions reduction targets for Member States in sectors not covered by the EU ETS, such as transport, buildings, small industries, agriculture and waste, accounting for the remaining 60 percent of EU emissions. In these sectors, the 'Fit for 55' proposal raises EU-level targets from 30 to 40 percent by 2030, on the back of a 10 percent target for 2020. Implementation of these targets, which are differentiated by Member State (less developed Member States have less demanding targets) rest upon national climate policies, in particular National Energy and Climate Plans.

Finally, the LULUCF regulation sets a binding commitment for each Member State to ensure that emissions from land use are completely compensated by CO₂ removals from the atmosphere within the sector (no debit rule). The 'Fit for 55' proposal additionally sets a new overall EU target for carbon removals by natural sinks (such as forests) in the LULUCF sector, equivalent to 310 million tonnes of CO₂ emissions by 2030.

⁶ Companies under the EU ETS must submit sufficient allowances corresponding to their emission output at the end of year or face fines. Under the system, they can either buy, receive or trade allowances with each other.

These key instruments are further supported by sectoral legislation and standards in the areas of energy efficiency, renewable energy, CO₂ emissions standards for cars, sustainable fuels and energy taxation, all of which are also being revised by the 'Fit for 55' proposal to increase their level of stringency. Notably, the proposed revisions imply a complete phasing out of newly produced cars with internal combustion engine by 2035, expansion of charging capacity for electricity and hydrogen powered vehicles, increased EU-level targets for the minimum share of renewables and the minimum rate of increase in energy efficiency by 2030⁷ as well as less favourable taxation of fossil fuels relative to green energy. To prevent carbon leakage, which could occur in the face of increasing upward pressure on EU carbon prices, the Commission is also proposing a new Carbon Border Adjustment Mechanism, which effectively places a carbon tax on imports. To address social concerns, a new Social Climate Fund is proposed to help citizens finance investments in energy efficiency, new heating and cooling systems, and cleaner mobility. Whereas the 'Fit for 55' proposals are obviously contentious and still subject to negotiations, their implications for the carbon market are clear: the EU drive towards climate neutrality will place increasing costs on carbon-based technologies. This could have substantial financial impact on companies' profit margins, turnover and capital expenditure plans in the affected sectors as well as social impact in terms of higher traditional (fossil fuels based) energy prices for end-consumers. Changes in behaviour of companies and individuals induced by the ambitious EU sustainability agenda should also force the financial industry into developing its own transition plans from traditional to sustainable finance to maintain long-term profitability and preserve financial stability.

3.3. Sustainable investments and financing

The third element of the European Green Deal with a direct link to sustainable finance is the European Green Deal Investment Plan, which has three specific objectives. First, to mobilise at least EUR 1,000 bn of public and private funding for sustainable investments in the 2021-2030 period. Around half of this amount (EUR 503 bn) is to be raised through the EU budget, and the rest mostly through the European Investment Bank, private funding and national co-financing. An integral part of this funding is also the Just Transition Mechanism (with the Just Transition Fund at its core), which aims to provide transition finance to help trans-

form the less developed carbon-intensive regions. The second objective of the Investment Plan is to provide an 'enabling framework' for private investors and the public sector to properly identify sustainable investments, which is based upon two key elements: the evolving sustainable finance framework and the integration of sustainability into the European Semester.⁸ The final objective is to provide support in planning and executing sustainable projects. A quick comparison of investment needs and envisaged resources indicates that the Investment Plan falls short of providing the necessary means to reach the ambitious 2030 and 2050 climate objectives. As already mentioned, increased climate targets require EUR 350 bn (EUR 500 bn) of *additional* energy system investments per year in the 2021-2030 (2031-2050) relative to the 2011-2020 period. These should be considered as low estimates of total implementation costs of the European Green Deal, since they only relate to the climate objectives. Addressing the remaining environmental and social objectives will unquestionably require further spending. The Investment Plan advertises to mobilize at least EUR 100 bn in public and private funding per year in 2021-2030, which is less than a third of the estimated investment needs in the same period.

Moreover, the headline figure of EUR 100 bn per year is misleading. First, it is an estimate of *total* and not *additional* climate funding in the 2021-2030 period. The EU has already spent 20 percent of its budget on climate in the 2014-2020 period, corresponding to EUR 216 bn over seven years (EUR 31 bn per year), and has increased this target to 30 percent in the 2021-2027 period. Second, the Investment Plan figure is based on the pre-pandemic proposal of the Multiannual Financial Framework 2021-2027, whereas the ultimate budget deal was substantially enlarged with the addition of the Next Generation EU on top of the traditional Multiannual Financial Framework. Taking into account larger budget size and higher climate mainstreaming target while factoring in the pre-existing level of climate mainstreaming, estimated *additional* climate-related spending *from the EU budget* in the 2021-2030 period amounts to EUR 585 bn, a slight increase from the initial estimate of EUR 503 bn.⁹ If the leveraging effect of EU budget funds remains unchanged, this means that total mobilization of *additional public and private funds* should be close to EUR 1,164 bn or EUR 116 bn per year in

⁷ Raised from 32 to 40 percent for renewables and from 32.5 to 36 percent for increased energy efficiency by 2030 on the back of a 20 and 20 percent target in 2020.

⁸ European Semester is the annual cycle of coordination of Member States' economic and fiscal policies.

⁹ This figure is calculated as follows: 2021-2027 estimate of climate spending (EUR 625.72 bn) less 2014-2020 pre-existing climate spending (EUR 216 bn), extrapolated to 10 years (EUR 409.72 bn $10/7 =$ EUR 585.31 bn). Climate mainstreaming figures are based on European Commission (2021).

2021-2030. This is exactly a third of *additional* investment needs in 2021-2030 and less than a quarter of *additional* investment needs in 2031-2050.¹⁰

This financing gap highlights the urgent need to secure additional funding for climate and other sustainability objectives. The European Investment Bank has already responded to this call by declaring its intent to become the EU climate bank and pledging to allocate EUR 1,000 bn to the financing of climate objectives in 2021-2030 (EIB Group, 2020). Since the EIB has already allocated EUR 150 bn to climate objectives in 2012-2019, the climate bank pledge translates to *additional* EUR 81.25 bn per year, assuming that the climate bank pledge fully refers to climate spending based on EIB's own capital and not EU budget guarantee.¹¹ This brings the total of available *additional* climate funding to EUR 198 bn per year in the 2021-2030 period. The remainder of the financing gap (44 percent or EUR 152 bn per year) will have to be covered by yet unaccounted for additional funding. This is the driving force behind the EU's push into sustainable finance.

4. EU sustainable finance framework

The current EU framework for sustainable finance can be traced back to the 2018 Sustainable Finance Action Plan, which is based on recommendations of the High-Level Expert Group on Sustainable Finance established in 2016. Two key recommendations of the expert group were increasing long-term orientation of finance to focus on societies' long-term needs and promoting long-term financial stability by incorporating ESG factors into investment decisions and financial risk management.

Based on these guidelines, the Sustainable Finance Action Plan proposed ten specific actions to support the transition from traditional to sustainable finance. The first and most fundamental of them was to establish an EU classification system of sustainable activities, the so-called EU taxonomy, as a necessary precondition and complementary instrument for the other actions. The other proposals were to: (ii) establish EU standards and labels for sustainable financial products, such as green bonds, (iii) reinforce advisory capacity for planning and executing sustainable investment projects, (iv) incorporate sustainability into financial advice for clients, (v) develop sustainability benchmarks for investors to track and measure

performance, (vi) integrate sustainability into credit ratings and marketing research, (vii) clarify fiduciary duty of institutional investors and asset managers with respect to sustainability, (viii) incorporate sustainability into prudential requirements for financial institutions, (ix) strengthen disclosure and accounting rules on sustainability, and (x) promote sustainable, long-term oriented corporate governance to avoid undue short-termism.

Drawing on the work already in progress based on the Sustainable Finance Action Plan,¹² the changed circumstances after the adoption of the European Green Deal and the enlarged multiannual EU budget, aiming at sustainable post-pandemic recovery, the European Commission published a renewed sustainable finance strategy on 6 July 2021.¹³ The renewed strategy identifies four main areas where further action is needed beyond the proposals included in the Sustainable Finance Action Plan.

The first area is increased emphasis on *sustainability transition process*, not just the end goal. This requires recognition of intermediary activities on the pathway towards sustainability that reduce harmful climate and environmental impacts but are not considered as fully sustainable in the orthodox sense. Among such activities, the Commission specifically refers to keeping nuclear energy and natural gas options open.

The second area is *greater inclusiveness* of the sustainable finance framework, in particular for small and medium-sized enterprises and households (as retail investors and consumers). This requires better access to sustainable retail financial products, such as green loans or mortgages, advisory services about sustainability, insurance protection against climate risks, and putting more emphasis on the social (not just environmental) component of sustainability. The third area is *strengthening financial sector's link to sustainability* through the so-called double-materiality approach. On the one hand, this approach rests upon understanding of and improving resilience to financially material sustainability risks by individual financial institutions and at the level of financial supervision (microprudential and macroprudential). On the other hand, it is related to the transposition of EU sustainability goals and transition planning into long-term financing strategies and decision-making processes of financial institutions and into the monitoring toolkit of competent supervisory authorities.

The last area is *the EU contribution to global sustainable finance efforts*, building on its domestic experience and internationally recognized sustainability leadership. For this purpose, the EU is actively advocating the key elements of

¹⁰ This figure is calculated as follows: leveraging factor from the original Investment Plan (EUR 1,000 bn / EUR 503 bn = 1.9881), applied to the revised EU budget climate mainstreaming figure (EUR 585 bn · 1.9881 = EUR 1,164 bn).

¹¹ This figure is calculated as follows: $1,000/10 - 150/8 = \text{EUR } 81.25 \text{ bn}$. In addition to this amount, the EIB is also involved in leveraging EU budget climate funding under the InvestEU programme.

¹² COM(2018) 97 final.

¹³ COM(2021) 390 final.

an international sustainable finance architecture, such as common principles of taxonomies, disclosure frameworks and double materiality, in relevant international forums. These include the G20 Sustainable Finance Working Group, the International Platform on Sustainable Finance, the Task Force on Climate-related Financial Risks in the Basel Committee on Banking Supervision, the International Association of Insurance Supervisors, the Financial Stability Board, as well as standard-setters, such as the IFRS Foundation.

Taking into account the above-described Sustainable Finance Strategy and Action Plan, as well as the broader context of the European Green Deal, the current state of the EU sustainable finance framework is based on three building blocks that will evolve further in the future in line with the actions envisaged by the strategic documents. These building blocks are: (1) EU taxonomy, (2) disclosure regimes for non-financial and financial companies and (3) sustainable finance tools.

4.1 EU taxonomy

The EU taxonomy is a classification system, establishing a list of environmentally sustainable economic activities as a prerequisite for informed decision making by companies, investors, and policymakers. The idea behind it is to help scale up sustainable investment and prevent greenwashing. Its envisaged application is broad and includes both mandatory and voluntary uses, such as disclosures of taxonomy-aligned activities by non-financial and financial companies,¹⁴ the development of standards and labels for sustainable financial products, identification of sustainable investment opportunities, or the preparation of green transition strategies and plans by companies. Moreover, it is highly likely that other areas of EU or national policies will gradually become taxonomy-aligned. Notably, this may include Member State fiscal and economic policy coordination in the context of the European Semester, prudential requirements under banking supervision, or even the conduct of monetary policy (in particular, asset purchase programmes).

The Taxonomy Regulation¹⁵ is focused on the main environmental objectives of the European Green Deal: climate change mitigation and adaptation, sustainable use and protection of water and marine resources, transition to a circular economy, pollution prevention and control, protection and restoration of biodiversity and ecosystems. The regulation defines sustainable activities as those that *substantially*

contribute to one or more of the above listed objectives *without harming* any of the remaining objectives (the ‘do no significant harm’ principle). In practice, this means that such activities must comply with technical screening criteria for individual objectives established through delegated acts under the Taxonomy Regulation.¹⁶ The European Commission has so far adopted one such act for ‘climate mitigation and adaptation’ and is expected to cover the remaining objectives in a separate act. These delegated acts are envisaged to be ‘living’ documents, reviewed and updated as necessary. One such review of the ‘climate mitigation and adaptation’ act is already underway with respect to the possible inclusion of nuclear energy as sustainable activity and natural gas as transitory activity. To enable users to check which activities are included in the EU Taxonomy and view the technical screening criteria, the Commission has also launched the EU Taxonomy Compass, which displays a matrix of relevant activities per environmental objective and sector.

The development of technical screening criteria for the purpose of delegated acts is entrusted to the ‘Platform on Sustainable Finance’, consisting of public and private sector experts. These include the European Environmental Agency, the European Supervisory Authorities (EBA, EIOPA and ESMA), the European Investment Bank, the European Union Agency for Fundamental Rights, financial and non-financial market participants, accounting experts, representatives of relevant industries and of civil society. Before adopting delegated acts, the European Commission also consults the ‘Member State Expert Group on Sustainable Finance’ regarding the appropriateness of the technical screening criteria and the approach, taken by the Platform.

Whereas the EU taxonomy currently covers only environmental aspects of sustainability, the European Commission is also planning to develop a parallel EU taxonomy of socially sustainable activities and is considering the merits of an EU taxonomy of significantly harmful economic activities. This would expand the EU sustainable finance framework to the full range of sustainability goals under the European Green Deal and the UN Sustainable Development Goals.

4.2 Sustainability disclosures

Corporate sustainability disclosure requirements primarily concern large non-financial and financial companies with the aim to establish a continuous stream of reliable and

¹⁴ The Taxonomy Regulation applies to companies covered by the Non-Financial Reporting Directive and the Sustainable Finance Disclosure Regulation.

¹⁵ Regulation EU 2020/852.

¹⁶ Additionally, they must also comply with minimum international (OECD and UN) standards with respect to responsible business conduct and human rights (social safeguards).

comparable qualitative and quantitative information about sustainability aspects of business that can feed into corporate strategy, risk management, investment decisions, product and service design, as well as supervisory practices. They are governed by two separate legislative acts: the 2014 Non-Financial Reporting Directive (NFRD)¹⁷ and the 2019 Sustainable Finance Disclosure Regulation (SFDR).¹⁸

4.2.1 Non-financial reporting directive (Corporate Sustainability Reporting Directive)

The NFRD requires large public-interest companies with more than 500 employees, including listed companies, banks, insurance companies and other companies designated to be in public interest by national authorities, to report sustainability information on an annual basis. Sustainability disclosures relate to climate, other environment, social and employee matters, respect for human rights, anti corruption and anti bribery matters as well as board diversity. Reporting follows the 'double materiality' principle, meaning that companies have to report about sustainability risks to their business and about their own social and environmental impact. Pursuant to the NFRD, the Commission published non-binding guidelines for companies in 2017 to improve consistency of their disclosures. These guidelines were supplemented in 2019 to include reporting of climate-related information. Nevertheless, reliability and comparability of reporting under the NFRD remains an acute problem. Coupled with increasing demand for credible sustainability data due to the fast development of green financial markets and green EU policies and regulation (in particular, SFDR), this prompted the Commission to propose a revision of the sustainability reporting requirements under the NFRD on 21 April 2021 with a new Corporate Sustainability Reporting Directive (CSRD).¹⁹ The CSRD proposal extends the scope of existing sustainability reporting requirements to all large companies and all companies listed on regulated markets, including listed SMEs (except micro-enterprises). It also introduces more detailed reporting and mandatory auditing of sustainability disclosures to increase their reliability. Furthermore, to address comparability concerns, the proposal envisages the development of mandatory EU sustainability reporting standards. These standards are to be developed by the European Financial Reporting Advisory Group (EFRAG) and adopted by the Commission after consultation with the Member State Expert Group on Sustainable Finance, the

European Securities and Markets Authority (ESMA) and other relevant advisory bodies and institutions.²⁰

In its recently published technical recommendations for the development of such standards, EFRAG specifically emphasised the need for convergence of the many moving parts in the EU sustainable finance framework. In particular, EFRAG noted that EU sustainability reporting standards should be consistent with the EU taxonomy as well as with the SFDR demands (EFRAG, 2021). This is a sensible approach since the Taxonomy Regulation specifically requires that all companies under the scope of CSRD (NFRD) report their taxonomy-aligned economic activities. To decrease compliance costs for listed SMEs, the Commission is further proposing the development of separate, scaled-down standards for SMEs, which could also be used by non-listed SMEs on a voluntary basis. In addition to standardisation, the CSRD proposal also requires digitalisation of sustainability reporting to increase its usability in financial markets.

4.2.2 Sustainable finance disclosure regulation

The SFDR complements corporate sustainability disclosures by creating a comprehensive reporting framework specifically for the financial industry, including banks (acting in portfolio management capacity), insurance companies, investment and pension funds, and financial advisory firms. The regulation requires financial market participants and financial advisors to disclose sustainability-related data and policies at *entity* and *product or service* level following the 'double-materiality' approach.

At entity level, financial companies under the scope of the SFDR will have to regularly publish information on their websites about their policies on integration of sustainability risks in the investment decision-making process (the 'outside-in' part of double materiality) and consideration of principle adverse impacts of their investment decisions on sustainability factors (the 'inside-out' part of double materiality). Additionally, they will also be required to disclose information about the consistency of remuneration and sustainability policies.

At financial product or service level, a similar double materiality logic applies. Financial companies will have to disclose information about the integration of sustainability risks into investment decisions, including their likely impacts on product returns (the 'outside-in' part), and information about product impact on sustainability factors (the 'inside-out' part) in pre-contractual disclosures. Furthermore, the

¹⁷ Directive 2014/95/EU.

¹⁸ Regulation EU 2019/2088.

¹⁹ COM/2021/189 final.

²⁰ The European Banking Authority, the European Insurance and Occupational Pensions Authority, the European Environment Agency, the European Union Agency for Fundamental Rights, the European Central Bank, the Committee of European Auditing Oversight Bodies, and the Platform on Sustainable Finance.

SFDR gives specific recognition to financial products with positive externalities on sustainability. Two categories of such products are considered: (1) products that promote environmental or social characteristics (or a combination thereof) and (2) products that have sustainable investment as their objective. For these products, financial companies will have to provide specific information in pre-contractual disclosures, on their websites and in annual reports about how the product's contribution to sustainability is achieved, including by using designated quantitative measures, such as sustainability indices and benchmarks, where available. The SFDR also envisages the development of regulatory technical standards (RTS) by the Joint Committee of European Supervisory Authorities (EBA, EIOPA, and ESMA) to further specify the content, methodologies and presentation of sustainability disclosures by financial companies. The initial draft of seven RTS was published by the Joint Committee on 2 February 2021 (Joint Committee, 2021a). The SFDR was subsequently amended by the Taxonomy Regulation, which created specific disclosure requirements with respect to climate and environmental objectives. In turn, the Joint Committee proposed to amend its initial draft and add six additional RTS to cover taxonomy-aligned disclosures, including compliance with the 'do no significant harm' principle. The new draft of RTS was published on 22 October 2021 and aims to streamline reporting requirements to avoid duplication and to establish a single rulebook for sustainability disclosures under the SFDR and the Taxonomy Regulation (Joint Committee, 2021b). The European Commission plans to bundle all 13 RTS into a single delegated act that is scheduled to apply from 1 July 2022.

4.3 Sustainable finance tools

The third building block of the EU sustainable finance framework is a set of investment tools, including financial product benchmarks, standards and labels. Benchmarks, such as specially constructed indices, are increasingly used by investors as a yardstick to measure performance of investment portfolios and financial products. In recent years, a wide variety of low-carbon and other green indices with varying degrees of ambition and divergent methodologies have emerged from the financial industry to help align investment strategies with climate and environmental objectives. Such situation is conducive to information asymmetries and market fragmentation that impede capital flows and may encourage greenwashing. To increase transparency, the EU is developing minimum standards for low-carbon benchmarks. Standardisation in turn allows the creation of reliable green labels for products that can be used for marketing purposes.

Two types of low carbon benchmarks were adopted by the EU: the 'EU Climate Transition Benchmark' and the 'EU Paris-aligned Benchmark'. In order to be labelled as 'EU Climate Transition', the benchmark portfolio has to be on a decarbonisation trajectory, whereas in order to be labelled 'EU Paris-aligned', the benchmark portfolio's carbon emissions have to be aligned with the objectives of the Paris Agreement, which is a stricter condition. On 17 July 2021, the Commission adopted further minimum technical requirements for EU Climate Benchmarks as well as a number of ESG disclosure requirements for benchmark administrators. In addition to the climate benchmarks, the European Commission is also developing standards for green financial products. The first one in the making is the EU Green Bonds Standard, proposed by the Commission on 6 July 2021. Its aim is to become a gold standard for green bonds that would enable easy access to large-scale financing of climate and environmentally friendly investments to issuers, while protecting investors from greenwashing. The standard is intended to be voluntary and inclusive (open to all EU and non-EU, public and private issuers) and fully compliant with the definitions of green economic activities in the EU taxonomy. External reviews of the use of bond proceeds are envisaged in the pre-issuance, intermediate and post-issuance phases to ensure taxonomy alignment. Furthermore, to encourage green retail lending, the Commission also intends to explore definitions and possible supporting tools for green retail loans and green mortgages in 2022. Finally, the Commission is planning to extend the widely recognised EU Ecolabel to retail financial products with criteria being developed in collaboration with the EU Joint Research Centre.

5. Implications and concluding remarks

This article has tried to build arguments from academic and regulatory perspectives that show that we may be about to witness a fundamental transformation of finance in the EU. While sustainable finance has largely followed organic, unregulated growth as an attractive industry niche in the past, academic arguments speak in favour of a more regulated and harmonized approach to accelerate and broaden sustainable finance development. These arguments primarily stem from the need to substantially accelerate decarbonisation of our societies to mitigate climate change and to address other environmental and social objectives, which necessitates massive additional investments into our energy and economic systems for years to come. Public (budgetary) resources will not be sufficient to cover these additional investment needs, hence the EU has been building a sustainable finance framework that aims to incentivize

private players in the financial industry to redirect capital flows into sustainable transition.

The implications of the sustainable finance framework for the financial industry are profound. Financial market participants, including banks, insurance companies, pension and investment funds, will have to adjust their strategies and business models to take into account sustainable finance regulation as well as the broader transition to sustainability, stemming from the European Green Deal. Given its central relevance to the framework, the EU green taxonomy will likely become the new gold standard for climate and environmentally friendly investment decisions and reporting in the coming years. In time, it may be complemented by an equivalent EU social taxonomy and even an EU taxonomy on significantly harmful activities. Furthermore, sustainability disclosures at entity, product and service level will become mandatory for financial market participants and will have to follow harmonized reporting standards. When adjusting to these changes, financial market participants will be aided by an increasing stream of reliable (audited) and comparable (standardized) sustainability data, required from both non-financial and financial companies, as well as credible EU standards for sustainability benchmarks, indices and green financial products.

Sustainable finance framework also has important implications for monetary, financial, and fiscal policies. In its recent strategy review, published on 8 July 2021, the ECB noted that implications of climate change and carbon transition will be taken into account in the conduct of monetary policy and central banking. Specifically, the ECB intends to adapt the design of its monetary policy operational framework in relation to disclosures, risk assessment, corporate sector asset purchases and the collateral framework (ECB, 2021). Beyond monetary policy, financial policy will also be affected. In November 2020, the ECB published a report, which finds that banks are lagging behind significantly on their climate-related and environmental risk disclosures (ECB, 2020). As result, the ECB plans to carry out a full supervisory review of banks' practices with respect to climate change risks and conduct climate-related stress tests in 2022. The next step could be to give greater weight to climate-related and environmental risks in bank capital requirements. Finally, the need to find a balance between the sustainable post-pandemic fiscal policies and the necessary public investments in carbon transition will also tread highly in the upcoming review of the EU fiscal and economic governance rules. These developments in other policy areas will undoubtedly take account of the EU sustainable finance regulatory framework, in particular in relation to taxonomy and disclosures.

In the end, while the EU sustainable finance framework is still a work in the making, many of the pieces of the puzzle are now beginning to fit together and we can envisage their further convergence in the future, as outlined in strategic documents. This allows us to paint a bigger picture of the relevance of the framework. First, it is clear that the end goal of the framework is to redirect capital flows to finance the transition to a sustainable, climate-neutral economy. Furthermore, it is now clear that the common EU taxonomy and harmonized disclosure standards are at the core of the sustainable finance strategy and will likely permeate the remaining parts of the framework as well as other policy fields. Finally, it is clear that the EU has global ambitions with its regulatory approach and is pushing to shape international sustainable finance standards in its own image. What is not clear at this point, is how the market dynamics of the application of the framework will play out. Transition from traditional to sustainable finance could create significant problems for the financial industry. If not implemented systematically by the industry and prudently by the competent supervisory authorities, it could lead to profitability losses due to increased compliance costs or eventual capital shortfalls due to slow or superficial adjustments of business models, which could act as prelude to further consolidation of the sector. The message for all relevant players is therefore to plan and prepare for the expected change.

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Integrating ESG factors into credit portfolio analysis and stress tests

*Slaven Mičković**

Environmental, social, and governance (ESG) issues are becoming more and more relevant for financial institutions. For banks, sustainability may soon enough also become an economic and existential question generating a new type of risk: ESG risk. Climate-related risk is most widely researched and recognised type of environmental risk. Given climate risks specific features and its long-term forward-looking nature, Stress-Testing is seen as the key tool to assess their financial impacts. This paper explores building an appropriate climate stress testing framework in the scope of corporate loans i.e., focusing on ESG factors in credit portfolio analysis. After the current climate risk management frameworks of banks are reviewed, paper presents main features to be considered in the design and execution of climate risk stress-testing are presented and provides main steps of climate stress-testing. View on future development concludes paper.

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1. Introduction

Environmental, social, and governance (ESG) issues are becoming more and more relevant for financial institutions. For banks, sustainability may soon enough also become an economic and existential question - generating a new type of risk: ESG risk. According to World Economic Forum Global Risks Perception Survey 2019-2020 climate change is perceived to generate the most significant risks to the global economy, climate risks are considered more likely to happen than data fraud and cyber-attack risk in the scope of global risk¹.

As ESG risk exerts influence on financial and non-financial risks present in a bank to varying degrees, it is not a fully stand-alone risk type. Hence, risk measurement/assessment techniques as well as stress testing applications must be amended, considering the complex cause-effect relationships across risk types.

Climate-related risk is most widely researched and recognised type of environmental risk. Given climate risks specific features and its long-term forward-looking nature, stress-testing is seen as the key tool to assess their financial impacts. To understand how each climate risks may impact the value of financial portfolios, two types of climate risk are considered:

1. the first is physical risk, in other words the economic impact stemming from the expected increase in the frequency and magnitude of natural hazards.

* dr. Slaven Mičković, Strategic Risk Management, Nova KBM d.d.

¹ <https://www.weforum.org/reports/the-global-risks-report-2020>

2. the second is transition risk, where the potential delayed and abrupt introduction of climate policies to reduce CO₂ emissions could have a negative impact on certain carbon-intensive industries.

Stress tests are now considered as key elements to understand, quantify and forecast the financial impact of climate risk in order to assess physical and transition risks in different plausible scenarios. Central banks are focusing on stress testing and scenario analysis as tools to provide transparency about the economic impacts of climate change:

- there is large uncertainty about future pathways for climate change and its economic impact,
- the economic impact is complex, and there are multiple dimensions such as transition and physical risks,
- there is no real precedent, so we cannot learn much from historical experience.

Several supervisors already conducted or planning to conduct climate stress-tests involving financial institutions:

- The French supervisor ACPR² ran the first phase of its climate risk stress test for French banks and insurance companies on a voluntary basis in Q4/2020.
- The Bank of England intends to conduct a climate risk stress test for the seven largest UK firms as a Biennial Exploratory Scenario³ in the second half of 2021.
- The ECB⁴ plans to conduct a climate risk stress test for all significant institutions in 2022.

² Cf. ACPR's website for climate risk stress test (limited information also available in English): <https://acpr.banque-france.fr/scenarios-et-hypotheses-principales-de-l'exercice-pilote-climatique>

³ Cf. Bank of England's website: <https://www.bankofengland.co.uk/stress-testing>

⁴ Published at <https://www.ecb.europa.eu/press/blog/date/2021/html/ecb.blog210318~3bbc68ffc5.en.html>

This paper explores building an appropriate climate stress testing framework in the scope of corporate loans i.e., focusing on ESG factors in credit portfolio analysis. After introduction in the second part of paper the current risk management frameworks of banks are reviewed. Next, main features to be considered in the design and execution of climate risk stress-testing are presented. In fourth part main steps of climate stress-testing are presented which includes 1. Portfolio analysis, 2. Climate scenario selection and 3. Quantification via Stress Test Modelling. Paper concludes by providing view on future development.

2. Current climate risk management frameworks

Although sustainability has been an overarching goal of global and local financial organizations together with governing bodies from the mid-2010s, still the objectives are often not clear or at least not transparent. One goal could be to achieve or support the Paris climate targets and thus reach greenhouse gas emission neutrality in 2050. Another might be to ensure the solvency of institutions, or it could be one of the 17 Sustainable Development Goals (SDGs) of the United Nation's 2030 Agenda for Sustainable Development, launched in 2015. Since there is a lot of confusion on why and how to deal with ESG risks, it is essential to review the existing risk management approaches of banks to the assessment of ESG risks and to understand when and how to add a climate component.

2.1. Alignment-related approaches

Portfolio alignment methods are methodological approaches for the assessment of ESG risk which focuses on how aligned a bank's portfolio is with global sustainability targets. Looking specifically at climate, this approach

outlines in how far a bank would need to change its portfolio and activities in order to align with the Paris Agreement 2 °C scenario. It looks directly at the ultimate goal of global efforts on climate change and explicitly defines the portfolio changes that would be required by institutions to contribute to this. Assessing the alignment of the portfolio with global targets in turn presents a way to measure ESG risks for the institution itself.

However, these approaches, which mainly consist of carbon footprint alignment tools, do not adequately cover the impact of transitional and physical risks. They rarely cover investment and financing activities (so-called scope 3 emissions).

A two well-known tools falling under this approach are i. the Paris Agreement Capital Transition Assessment (PACTA) tool developed by the 2 Degrees Investing Initiative (2DII), and ii. the heatmaps published by United Nations Environmental Program Finance Initiative (UNEP FI) Principles for Responsible Banking (PRB), launched in September 2019 by 130 banks from 49 countries. The PACTA tool combines institution level portfolio information on corporate exposures, a database on the technology mix and production plans of individual companies, and technology mix scenarios developed by the International Energy Agency (IEA) in order to assess an institution's alignment with the Paris Agreement Targets. The aim of the heatmaps is to align banks' business strategies with the goals expressed in the SDGs and the Paris Agreement. The heat map is a guidance tool for organisations to get an indication of levels of potential ESG risks across economic sectors. Each organisation should determine its own risk appetite and risk management approach to these ESG risks. A key difference in this framework com-

pared to the PACTA approach is that it takes into account all three components of ESG, not only the environmental component. Twenty-two 'impact areas' are defined, in line with the UNEP FI Positive Impact Initiative 2018 on ESG pillars, as well as the economic pillar. Each impact area can be mapped to at least one of the 17 SDGs.

2.2. Exposure approaches

The basic principle of this type of approaches is to directly evaluate the performance of an exposure in terms of its ESG attributes. Result is then used to complement the standard assessment of financial risk categories. Indicators used for this assessment are typically calibrated at company level, taking into account granular sector level characteristics to capture the specific sensitivities to ESG factors of different segments and sub-segments of economic activity. Methods in this category covers all three aspects of ESGs, whilst many of the other approaches and tools tend to focus predominantly on climate risk to date. Exposure method can be applied to individual exposures and is a systematic approach for classifying exposures according to their specific ESG attributes. It provides banks with a tool to better understand their individual counterparties and to better understand the ESG performance of their existing portfolios, or potential future portfolios, before making an investment decision. While an ESG score provides insights into the ESG performance of a counterparty, it may not necessarily be translated automatically into financial risk. A known tools falling under this approach are ESG ratings and evaluations provided by credit rating agencies and specialised rating agencies (e.g., S&P ESG evaluation, Sustainalytics).

2.3. Climate Stress Test Methodologies

Climate stress tests are based on scenarios that map out possible future development paths of transition variables (e.g., carbon prices), physical variables (e.g., temperature increases) and the related changes in macro variables (e.g., output in different sectors, GDP, unemployment) and financial variables (e.g., interest rates). These scenarios are then translated into changes in portfolio (risk) attributes. Banks can use the macroeconomic and financial stress testing framework and integrate a climate component to make climate stress tests coherent with their existing methodologies. Since a climate-related scenario analysis is considered by banks as an appropriate tool to assess the materiality of the ESG risk drivers, a more detailed description of climate-related stress tests is provided in next two chapters. All three methods described above may provide tools for both the exposure origination analysis and the monitoring of existing portfolios but to varying degrees.

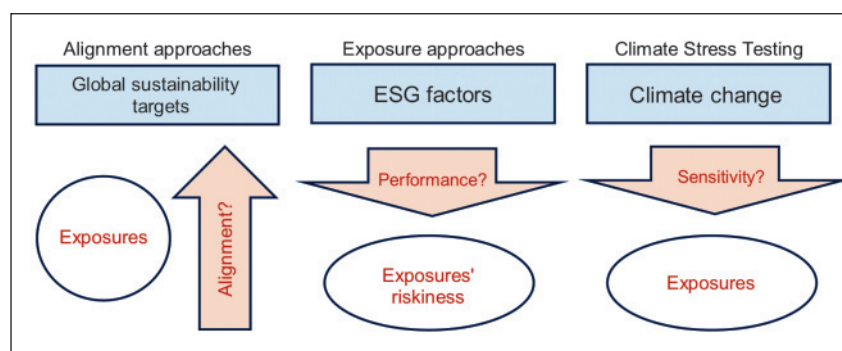
3. Features to be considered in the design and execution of climate risk stress-testing

Given the climate-related financial risks specific nature, their assessment has many specificities. Some of the key features which have to be taken

into account during the design and execution of climate risk stress-testing are listed below.

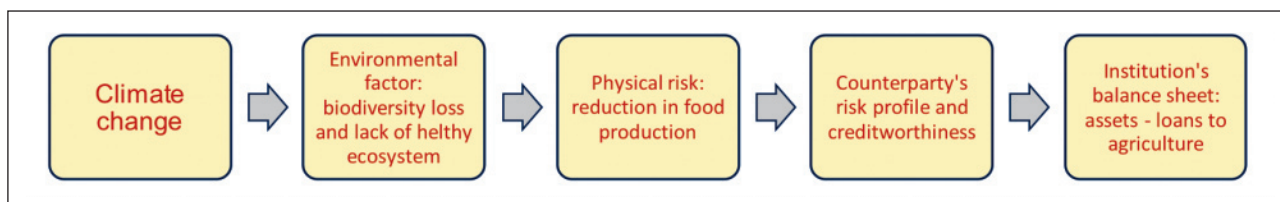
- a. Climate risk is split in two main types:
 - Transition risks, "risks to the company that arise from transition to a low-carbon and climate resilient economy".
 - Physical risks, "risks to the company that arise from physical effects of climate change". They can be categorised either as acute (if they arise from climate and weather-related events and an acute destruction of the environment), or chronic (if they arise from progressive shifts in climate and weather patterns or a gradual loss of ecosystem services).
- b. The ESG risk is not defined as a separate risk category - impact of climate-related financial risks materialises in the form of traditional risk categories: credit risk, market risk, liquidity risk, operational risk. The credit risk that is triggered by one or several ESG factors does not change the intrinsic nature of the risk type, it remains a credit risk. If it is important to identify situations where credit risk events are triggered by ESG factors, they do not become ESG risk events because they are induced by ESG factors, they are still credit risk events. The causal chains that

Figure 1. Overview of the three methodological approaches



Source: EBA Report on management and supervision of ESG risks for credit institutions and investment firms EBA/REP/2021/18

Figure 2. Impact of environmental factors through physical risk on the balance sheets of credit institutions and investment firms



Source: EBA Report on management and supervision of ESG risks for credit institutions and investment firms

explain how these risks impact banks through their counterparties and invested assets are called transmission channels (Figure 2).

- c. Climate risks can materialise in two ways (Figure 3), reflecting their potential double materiality:
- On the financial materiality side (outside-in perspective), the financial performance of a counterparty or the invested assets can be affected by environmental factors (for example, the introduction of a carbon tax may decrease the profitability of carbon-intensive businesses or decrease the competitiveness of their products).
 - On the environmental materiality side (inside-out perspective), the activities of the counterparties or the invested assets may have a negative impact on the environment, e.g., by emitting large volumes of CO₂ into the atmosphere.

The NFRD defines in its 2019 supplement environmental and social materiality separately from financial materiality (different from the TCFD framework where only financial materiality is being considered) while the EBA definition of materiality includes both aspects without separating them.

- d. Climate risks occur on a much longer timeframe than usual risks/scenario analyses requiring long term projections/impact assessments. As the horizons of the current stress test methodologies are not coherent with the climate risk occurrence horizon, it is required to integrate longer

horizons of climate scenarios into current methodologies.

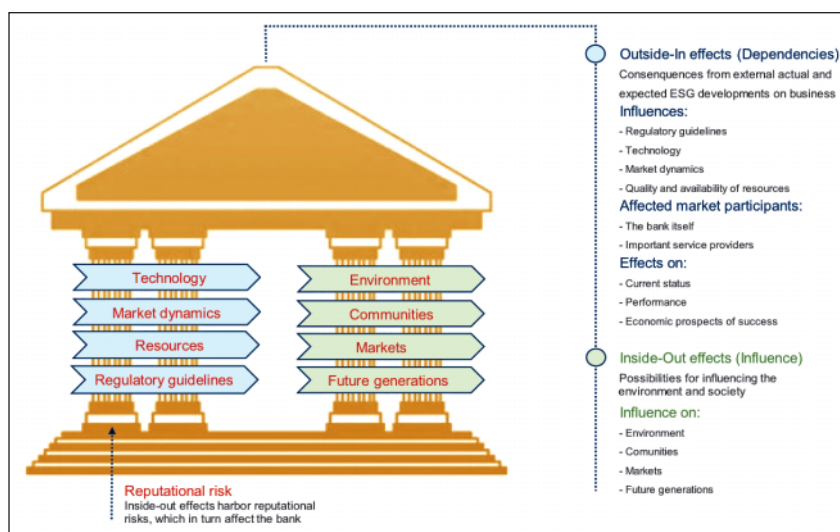
- e. Banks cannot really rely on historical data to predict the future and calibrate models as climate events and risks have not really occurred in the past or at least not at the pace and intensity it should now happen.
- f. To assess the potential impacts of both physical and transition risk drivers it is necessary to design several plausible scenarios. Results will depend on scenario hypotheses. Sufficient variability between the range of scenarios is required. Selection of a baseline scenario itself, to use as a reference, is not so obvious.
- g. A much more granular analysis than usual in stress-testing is required since economic impacts of climate risks vary significantly between sectors, geographies,

potentially counterparties. This implies challenges in terms of identification of impacted sectors, sector assignment particularly for multi-activity companies, calibration of sector (transition matrixes for example) and geography (real estate collateral for instance) specific stressed parameters. It has to be noted that calculation at sector level does not enable consideration of differences in terms of climate risk exposure between companies belonging to the same sector (for example in electricity sector there are different technologies to generate electricity).

4. Climate stress testing framework

The climate-related stress test methodology should include the following elements:

Figure 3: Dependencies & Influences of Climate Developments



Source: ESG risks in banks, KPMG International, 2021

- a. Portfolio Analysis
- b. Scenario Selection
- c. Quantification via Stress Test
Modelling including impact assessment

4.1. Portfolio analysis

Understanding the portfolio is a key step in building climate stress tests - risk exposures should be grouped through dimensions assumed to be the most relevant in terms of climate risk: sector, geographic location, maturity, etc. Through portfolio analysis, which consists of reviewing existing portfolio asset allocation in terms of defined sectors and sub-sectors, the most vulnerable sectors need to be prioritised.

For this purpose, three crucial analyses need to be performed:

- sector exposure needs to be checked to detect primary concern sectors,
- the geographical distribution of the portfolio needs to be assessed to verify the proportion of assets in zones which are more exposed to a substantial increase in physical risks (i.e., potential intensity of extreme weather events),
- as a methodological transformation is required to integrate longer horizons of climate scenarios, a maturity analysis of the portfolio is needed for choosing the horizon of the climate-related analysis - horizon selection should take into account both the maturity of the portfolio and expected time horizons at which climate risks will likely materialise.

4.2. Scenario Selection

Scenario analysis offers a methodological framework that can take into account the forward-looking nature of climate-related risks. Scenario analysis requires hypothetical but plausible scenarios to highlight the impact of climate risks on the financial institutions

and system. To perform stress tests, banks need to define downscaled climate scenarios.

The climate scenarios are usually defined along two dimensions, the climate outcome and the type of transition:

- the climate outcome usually corresponds to an increase in temperature compared to a reference period,
- the type of transition will be driven by assumptions regarding the speed and timing of policy action, the type of policies implemented, the progress in technology and shifts in behaviour from companies, investors, and consumers.

The scenarios will then be expressed in terms of transition variables (particularly carbon price and emission pathways) and physical variables (mainly changes in frequency and severity of weather events) (Figure 4). Scenarios will usually cover paths along a long-term horizon (at least 30 years) given climate risk realisation timeframe.

The NGFS⁵ Climate Scenarios have been developed to provide a common starting point for analysing climate risks to the economy and

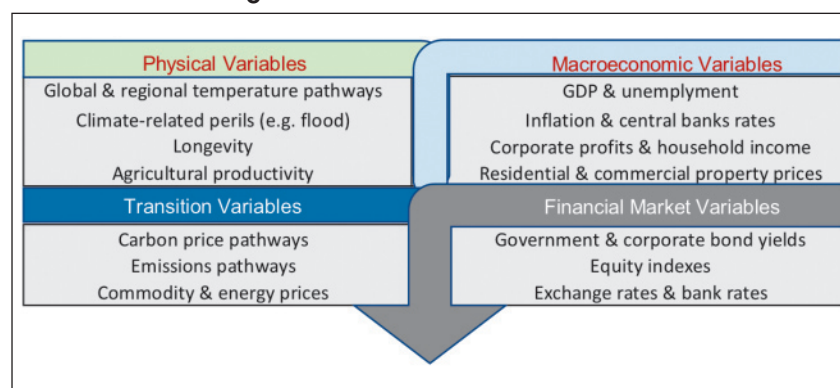
⁵ The Network for Greening the Financial System (NGFS) is a group of 66 central banks and supervisors and 13 observers committed to sharing best practices, contributing to the development of climate and environment related risk management in the financial sector and mobilising mainstream finance to support the transition towards a sustainable economy.

financial system. Although they were developed primarily for use by central banks and supervisors to integrate climate risks into financial stability monitoring, they may also be useful to the broader financial, academic and corporate communities.

The narratives of three of these scenarios are:

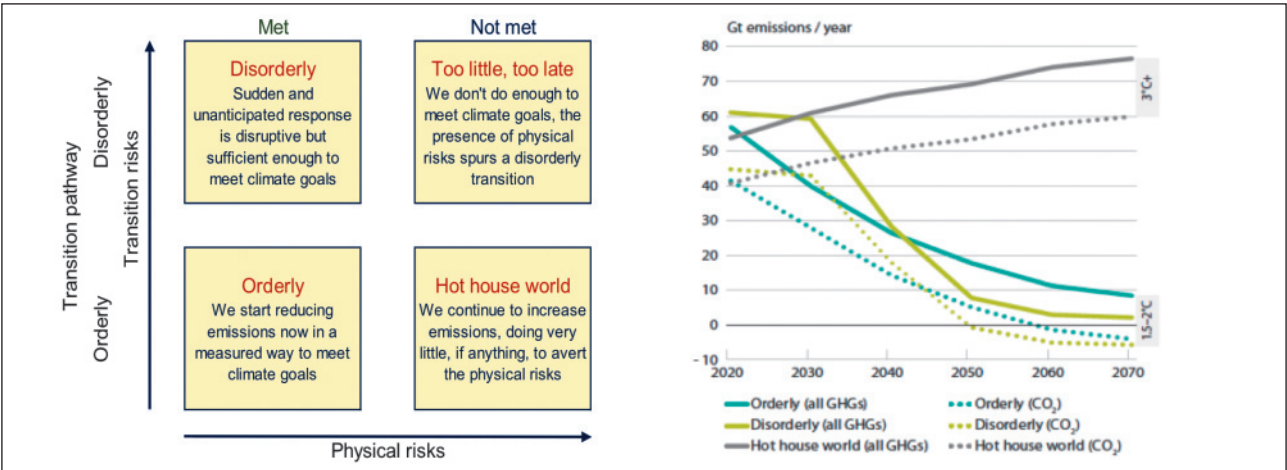
1. Orderly scenario assumes climate policies are introduced in an orderly manner and policies are implemented immediately. Net zero CO₂ emissions are achieved before 2070, giving a 67% chance of limiting global warming to below 2°C. Physical and transition risks are both relatively low.
2. Disorderly scenario assumes climate policies are not introduced until 2030. Since actions are taken relatively late and limited by available technologies, emissions reductions need to be sharper than in the Orderly scenario to limit warming to the same target. The result is higher transition risk.
3. Hot house world scenario assumes that only currently implemented policies are preserved and illustrates a failure to meet the 2015 Paris Agreement. Emissions grow until 2080 leading to 3°C+ of warming and severe physical risks. This includes irreversible changes like higher sea level rise.

Figure 4. Climate scenario variables



Source: Moody's Analytics

Figure 5. NGFS Climate Scenarios Framework / Representative Scenarios CO₂ Emissions



Source: IIASA NGFS Climate Scenarios Database

4.3. Quantification via Stress Test Modelling including impact assessment

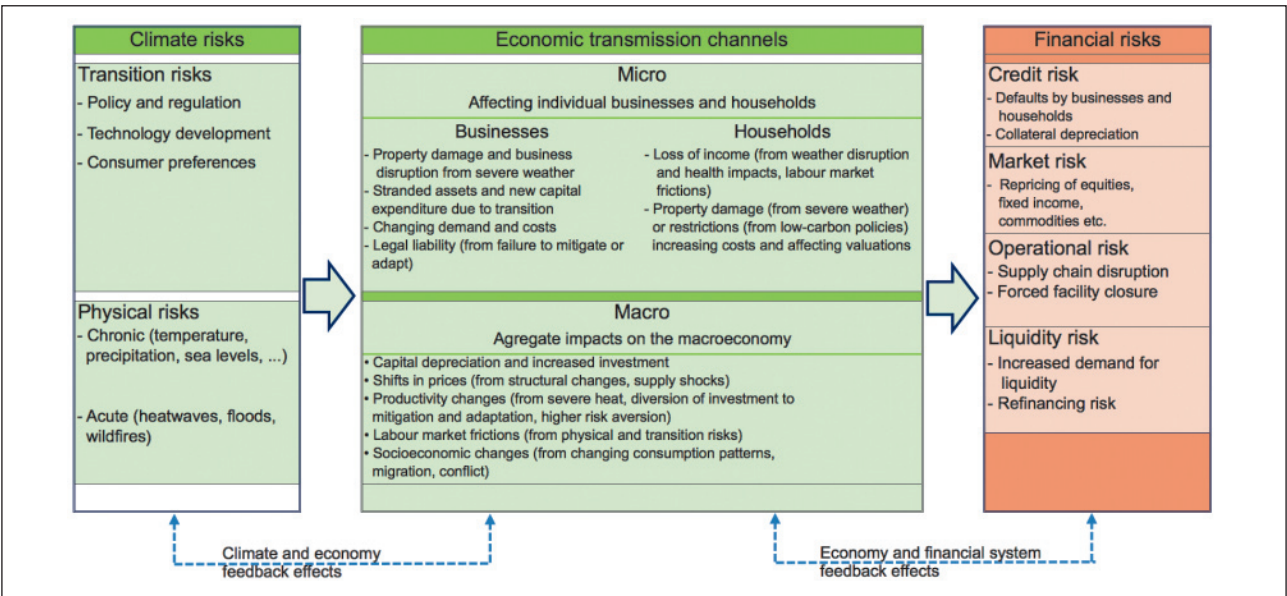
In order to assess financial impacts of above-described climate scenarios, these scenarios will need to be translated into macroeconomic and financial market variables and these variables will need to be calibrated at the appropriate granularity (sectoral, geographic) to be able to quantify adequately the financial impacts of the designed climate scenarios on the financial institution's portfolio. Climate risks could affect the economy and financial system through a range

of different transmission channels (Figure 6):

- transition risks will affect the profitability of businesses and wealth of households, creating financial risks for lenders and investors;
- physical risks affect the economy in two ways:
 - a. acute impacts from extreme weather events can lead to business disruption and can impair asset values,
 - b. chronic impacts, particularly from increased temperatures, sea levels rise and precipitation, may affect labour, capital and agriculture productivity, ultimately requiring

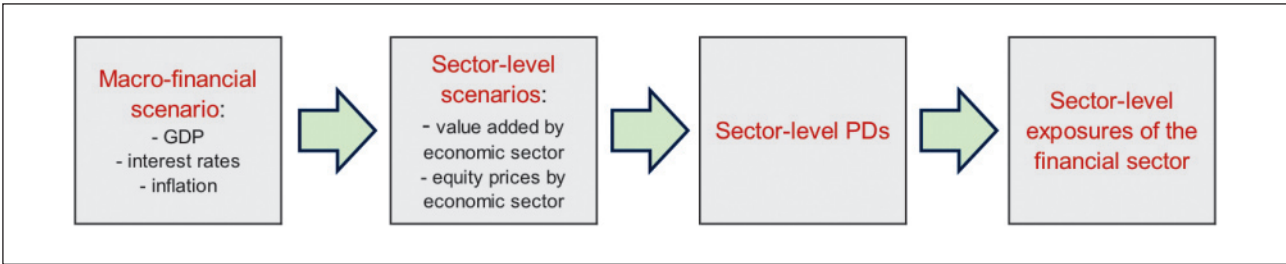
a significant level of investment and adaptation from companies, households and governments. Calibrate stressed risk parameters (transition matrices, LGDs, market shocks...) and then estimate impacts of the scenario on the reporting metrics chosen. The calibration approaches and stressed methodologies used by the institution for macroeconomic stress-testing will surely need to be amended/modified to cater for the specific features of the climate stress-testing described above. Once portfolio analysis is performed at the sector-level, the next step is to

Figure 6. Climate risks to financial risks transmission channels



Source: Network for Greening the Financial System

Figure 7. Sector-level approach to credit risk in climate stress tests



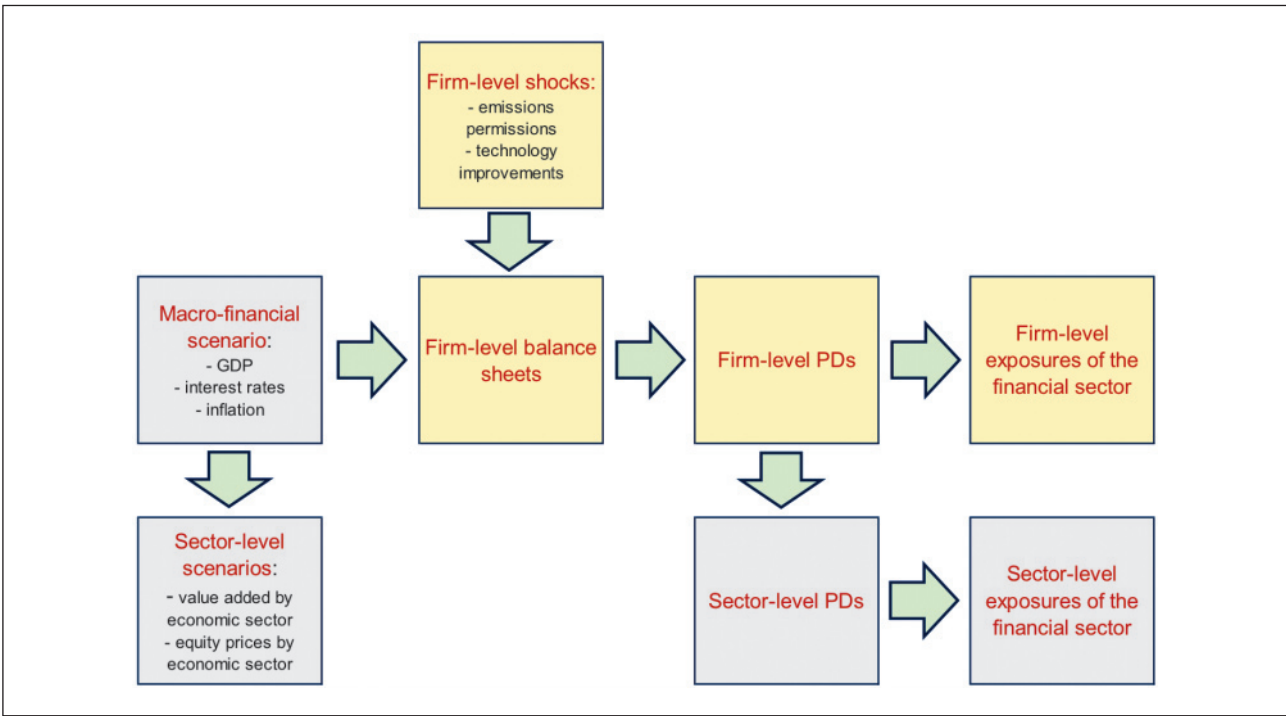
Source: ECB

map macroeconomic scenarios directly onto sector-level financial parameters, such as probabilities of default (PDs), as illustrated in Figure 7. Then, these sector-level parameters are used to update P&Ls and balance sheets of financial institutions with exposures broken down by sector. Main advantages of sector-level approach are relatively low data demands and relative ease of adaptation to the existing stress testing infrastructures. Furthermore, models relying on the data with very granular sectoral breakdowns can substitute well firm-level models for missing firm-level information. The drawback of this sector-level approach is that it ignores

important differences within industries. As firms' vulnerability depends not only on the type of economic activity but also on particular firm characteristics, such as the location of facilities and the geographical network of supply chains and sales markets, climate stress testing methodologies are moving towards firm-level models to fully explore the distribution of climate-related risks in the corporate sector (Figure 8). The upcoming ECB 2021 top-down climate stress test is an example of the extensive use of firm-level data. Modelling the economic impacts from climate change is subject to significant uncertainty. Transition risk may materi-

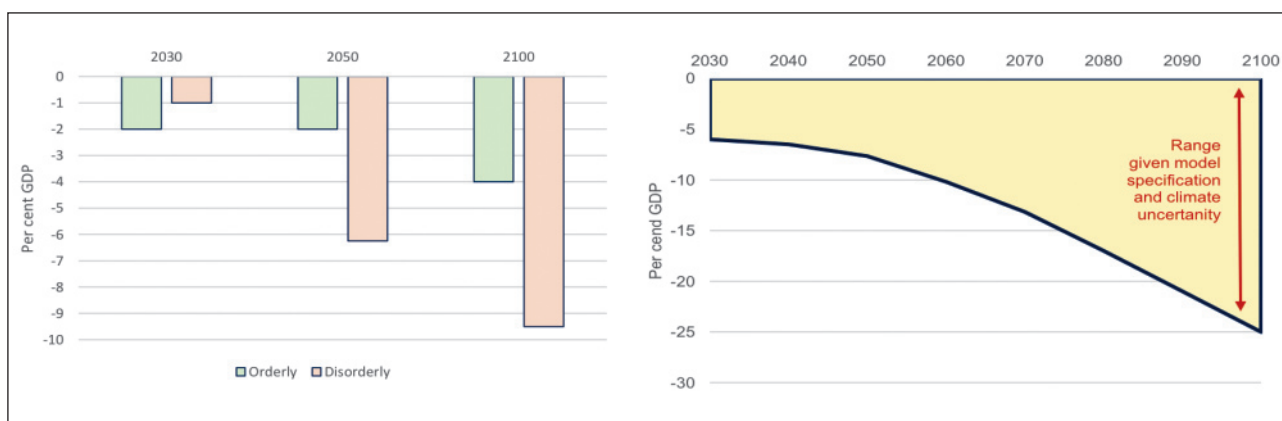
alise in ways that are difficult to foresee because of the complex nature and interconnectedness of climate policy, technological progress and consumer preferences. Measured as deviations from baseline economic growth assumptions impacts from transition risk in the scenarios are relatively small (4% GDP loss by the end of the century). Similarly, estimates of GDP losses from physical risk vary considerably depending on the scenario, assumptions about climate sensitivity and the method used to estimate economic damages. In the Hot house world scenario impacts from physical risk result in up to a 25% GDP loss by

Figure 8. Sector-level approach to credit risk in climate stress tests



Source: ECB

Figure 9. Cumulative GDP impact from transition risk (left) and physical risk (right)



Source: IIASA NGFS Climate Scenarios Portal/Calculations by PIK based on scenario temperature outcomes

2100. These estimates typically do not adequately account for all sources of risk, including low probability high impact events, sea level rise, extreme events and societal changes like migration and conflict. As a result, damages in this scenario will be larger than models suggest, particularly in regions with lower resilience and capacity for adaptation.

5. Concluding remarks

Although integration of ESG risks into risk models, as well as stress testing, are still at a very early stage, it is becoming essential for banks to improve their capabilities to assess and manage climate-related risks and invest on the design and execution of climate risks stress-testing. Climate risk assessment tends to involve the active engagement of bank's multiple departments: banks need to reorganise their governance to ensure that all aspects of climate risks are monitored, measured and communicated. Climate scenarios produce a number of useful outputs, but there are still gaps which limit their ability to fully assess macro-financial risks. The NGFS will continue to refine climate scenarios, including further sectoral granularity and to collaborate with industry to ensure the scenarios are suitable for wider use. Refinements in modelling approaches to better inte-

grate physical risks and to deal with long time horizons are also needed. Stress tests have so far focused on credit risk and on corporate and residential mortgage loans in particular, leaving market, liquidity or operational risks largely unstudied. More efforts and research in these areas are required.

Despite significant uncertainty connected with stress-test modelling, stress-testing is seen as the key tool to assess financial impacts of climate changes. Currently there is no single stress test model that can cover the full range of required outputs. In the interim it is suggested that banks use a suite of specialist models linked together in a coherent way.

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Current challenges and the future development of the Slovenian banking system

*Primož Dolenc, Meta Ahtik, Mitja Lavrič, Borut Poljšak, Mark Požlep, Franc Remšak, Iskra Sokolovska and Robert Volčjak**

The paper compares the main characteristics of the Slovenian banking sector and of the banking sector(s) of the euro area. This comparison allows for identification of key differences as well as the need and possibilities to overcome them. It further enlightens the importance of improving banks' cost and profit efficiency through digitalisation, consolidation and move towards greener products.

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1. Introduction

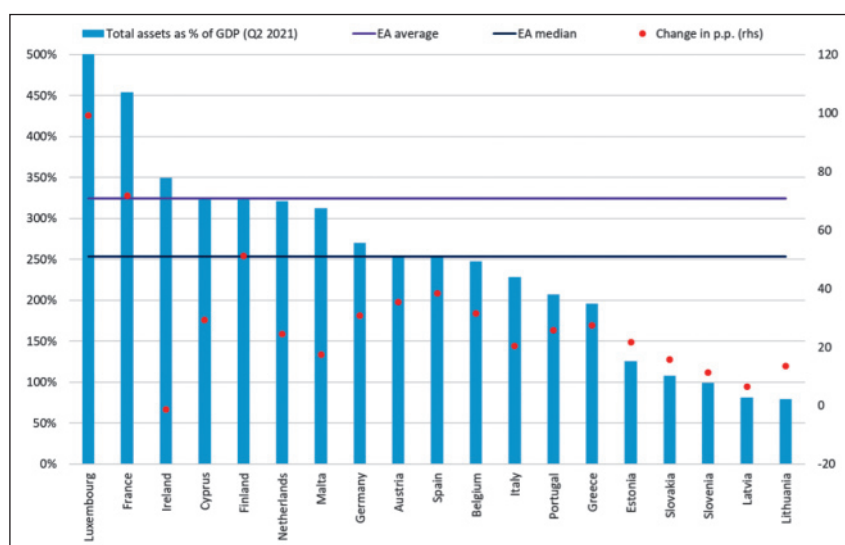
Banking business has experienced huge technical and societal changes that occurred in the since the origin of banking couple of millennia ago. Since the beginning, banking has been driving force of these changes. Nowadays banking finds itself at yet another crossroad that requires fast adoption to technological progress accompanied with major social and behavioural changes. In these circumstances, banks will have to make better use of the advantages they have over their non-bank competitors as well as include some of the FinTechs' good practices in their business activities. Slovenian banking system is not an exception. While overcoming lag behind some good practices and trends observed in the euro area in terms of traditional core banking activities, it should also encompass new innovative approaches to banking business.

2. Slovenian and euro area banking systems compared

In Slovenia, financial intermediation, measured by the balance sheet of the banking system is relatively shallow. In the first half of 2021, total assets of the Slovenian monetary financial institutions (excluding ESCB¹, hereinafter MFIs) amounted to EUR 49.1 billion, which represented around 100% of Slovenia's gross

* All Banka Slovenije. Primož Dolenc, Deputy Governor; Meta Ahtik, Director, Financial Stability and Macroprudential Policy; Mitja Lavrič, Senior Analyst at the Financial Stability and Macroprudential Policy; Borut Poljšak, Adviser – Analyst at the Financial Stability and Macroprudential Policy; Mark Požlep, Senior Analyst at the Financial Stability and Macroprudential Policy; Franc Remšak, Adviser – Analyst at the Financial Stability and Macroprudential Policy; Iskra Sokolovska, Senior Analyst at the Financial Stability and Macroprudential Policy; Robert Volčjak, Senior Analyst at the Financial Stability and Macroprudential Policy.

¹ Excluding the European System of Central Banks that consist of the European Central Bank and the national central banks of member states of the European Union.

Chart 1: Total assets of euro area MFIs as % of GDP


Note: The scale on the left hand side is cut at 500% of GDP. The value of the total assets of Luxembourg MFIs as percent of GDP stands at 493.4%. Change in percentage points is measured from the fourth quarter of 2019 to the second quarter of 2021.

Source: ECB Statistical Data Warehouse

domestic product (hereinafter: GDP).

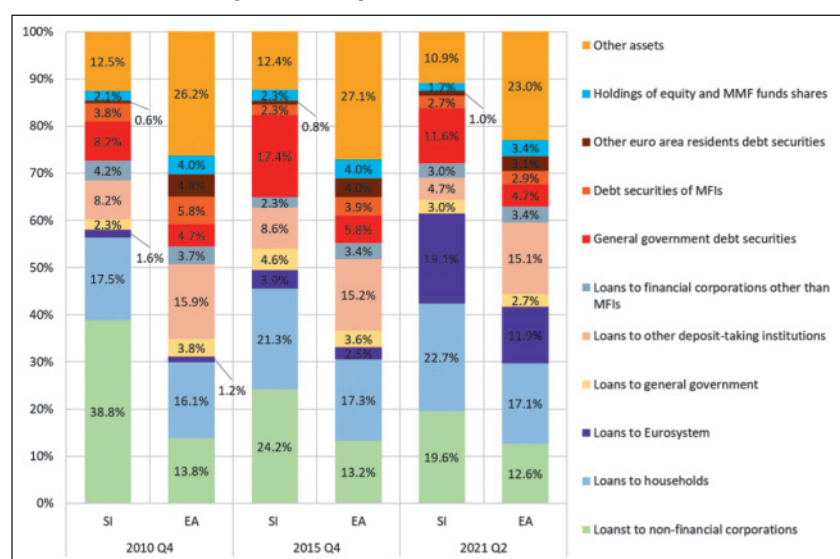
The average size of the banking system of the euro area (hereinafter: EA) countries was 324.5% (median value was 253.5%). The banking system of Slovakia measured through its share in GDP was slightly larger than Slovenian, while among the banking systems of EA only Latvian and Lithuanian were smaller. For the EA, MFIs are the most important financial intermediaries for households, non-financial corporations, and the public sector. However, since the global financial crisis, non-banks and financial markets are playing a greater role, particularly in providing funds for larger non-financial corporations (IMF, 2018).

Not only the banking system as a whole, but also individual banks in Slovenia are among the smallest in Europe. The average size of a bank in Slovenia with around EUR 3 billion represents about one tenth of the average bank size in the EA (median in 2020: EUR 5.7 billion), although being comparable to the average size of banks in Estonia, Slovakia, Austria and Lithuania. At the end of 2020, the median size of Slovenian bank was about EUR 2.0 billion based on con-

solidated data. Fragmented Slovenian banking system has been in the process of consolidation practically since independence. The number of banks decreased from 36 in 1994 to 16 (including branches) in 2021. The concentration of the banking system's total assets, measured by the Herfindahl index (hereinafter HI) reached its maximum of around 1500 points in 2004, but by 2015 it fell below 1000 points. Afterwards it started in-

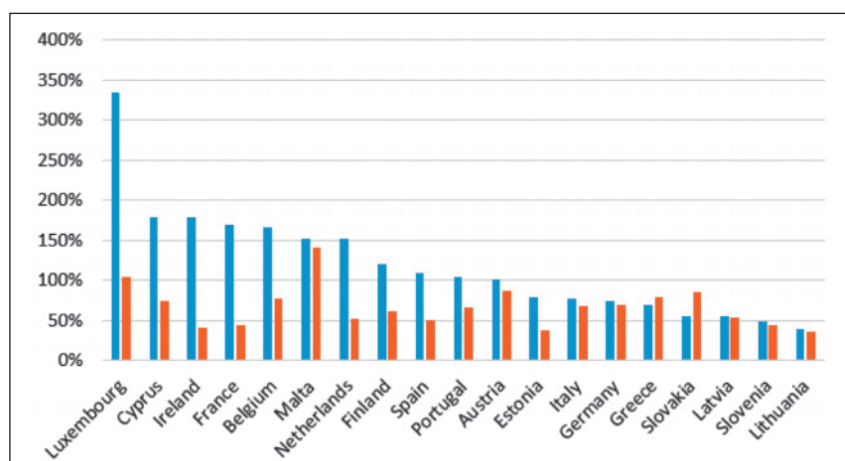
creasing again to exceed 1300 points with the merger of NKBM and Abanka in 2020. With the announced consolidation of relatively large banks, the concentration (HI) of the banking system would increase by around 400 points to unprecedented levels making the banking system moderately concentrated (DoJ, 2010). Compared with the Member States of the EA at the end of 2020 nine states had higher values of the Herfindahl index than Slovenia, after the above mentioned consolidation process only seven would have higher values. Is it worthwhile noticing, that Slovenia had quite concentrated banking system in terms of »share of five largest banks in balance sheet«, but this was mainly due to the substantial market share of the largest bank. Now the structure will considerably change in this respect. Loans to the non-financial private sector² account for almost half of the balance sheet of Slovenian MFIs. Among them the proportions of loans for consumption and loans to non-financial corporations (thereinafter: NFCs) ex-

² Non-financial private sector includes loans to households, non-financial corporations and other lending to households and non-profit institutions serving households.

Chart 2: Aggregate assets of EA MFIs (excluding the Eurosystem) as % of total balance sheet


Note: Other assets include fixed assets, external assets and remaining assets.

Source: ECB Statistical Data Warehouse.

Chart 3: Indebtedness of NFCs in the first quarter of 2021


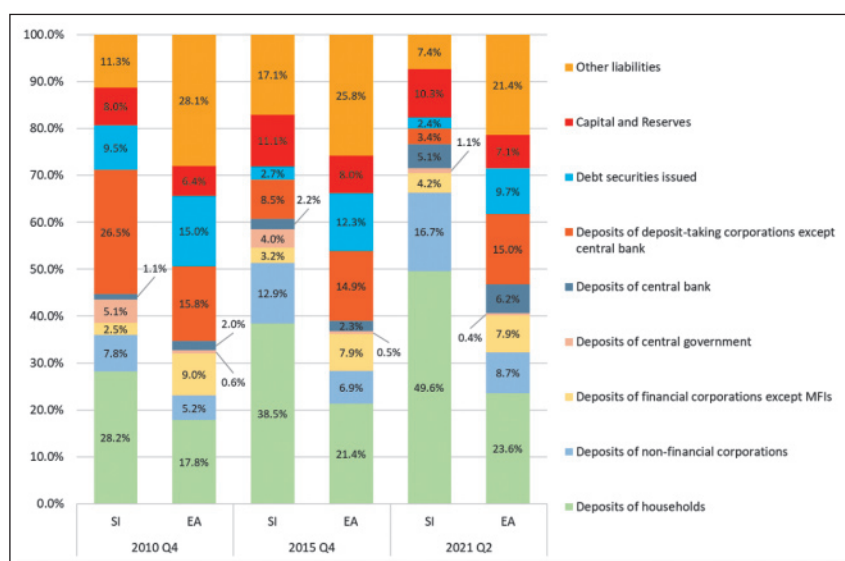
Source: Eurostat.

ceed those of the EA banking systems, the later mainly because of other funding sources that NFCs in EA tend to utilize. However, if we compare these asset categories as a percentage of GDP, the Slovenian banking system has among the lowest exposures being close to the EA average only with loans for consumption.³ High share of housing ownership on the other hand explains comparatively low share of housing loans in GDP in Slovenia.

³ On the other hand similarly developed banking systems, with the exception of Slovakia, exhibit much lower shares of loans for consumption purposes in GDP.

In the last decade, the asset structure of the Slovenian MFIs changed considerably. In the past, loans to non-financial corporations represented the most important exposure, while loans to households have taken this role in the recent period. The share of assets held with the Eurosystem has increased markedly. These changes indicate a change in bank business models⁴, where households are becoming a more important segment. NFCs in Slovenia have largely relied

⁴ Note that in Slovenia with one or two exceptions all the banks can be classified as universal banks.

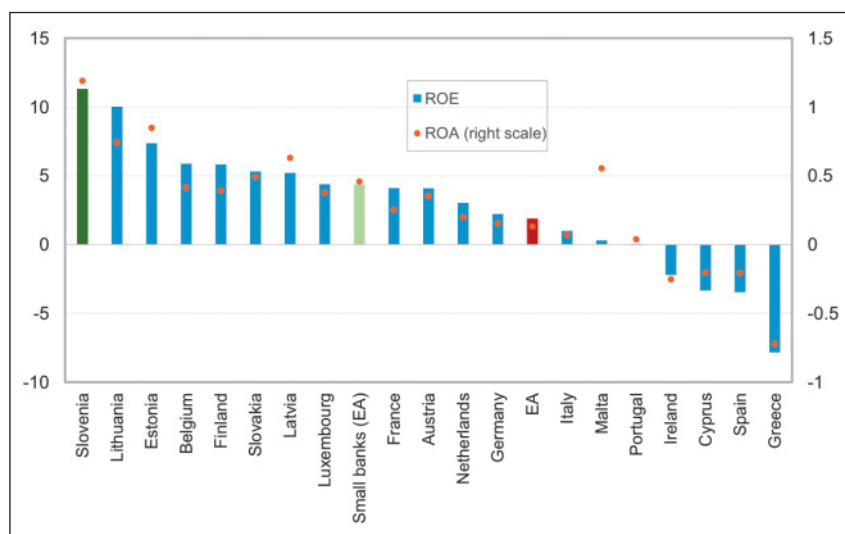
Chart 4: Aggregate liabilities of EA MFIs (excluding the Eurosystem) as % of total balance sheet


Note: Other liabilities include money market funds shares, external liabilities and remaining liabilities.

Source: ECB Statistical Data Warehouse.

on funding from abroad, source that became more prominent after the global financial crisis that affected also the ownership structure of Slovenian companies. Foreign owned companies mainly started to rely on banking services of banks of their parent companies. Another characteristic of Slovenian NFCs is relatively strong reliance on trade credit that in GDP represents around 26%, which is again close to the EA average. After significant deleveraging in the past decade, Slovenian NFCs are far less indebted than their EA counterparts in terms of both, the debt-to-equity ratio and the ratio of debt to GDP (Banka Slovenije, 2021b).

The structure of banks' liabilities has also changed significantly over the last decade. The Slovenian banking system is characterized by a marked increase in household deposits and a reduction of wholesale funding (mainly depicted as deposits of other deposit-taking corporations in Chart 4). In the second half of 2021, household and NFCs deposits accounted for almost 60% of banking sector liabilities or 64% of Slovenia's GDP. The share of household deposits in total liabilities in Slovenia is among the highest in the EA. The detailed breakdown of Slovenian households' financial assets reveals the continuing preference for currency and deposits, which account for almost half of the total, followed by equity and various insurance schemes. Financial assets of EA households are predominantly in the form of life and pension insurance (Banka Slovenije, 2021a). Despite that, the predominant sources of funding of EA MFIs are deposits of (wealthier) households, followed by deposits of other MFIs. In addition, other euro area banking systems, especially the more developed ones, make much more use of bond financing.

Chart 5: Return on equity (ROE) and return on assets (ROA) in 2020

Source: ECB, SDW (Consolidated banking data)

The Slovenian banking system achieved an above-average return on equity in the recent period (2019-2021) that amounted to 11.3% in 2020 and significantly exceeded the average value of EA countries (1.9%) or the value for EA banks of similar size⁵ (4.4%). Main reasons for high ROE of Slovenian banks were one-off factors affecting non-interest income and net releases of impairments and provisions that temporarily stopped in 2020 due to the COVID crisis, but, unlike in the majority of other EA countries, continued in 2021⁶.

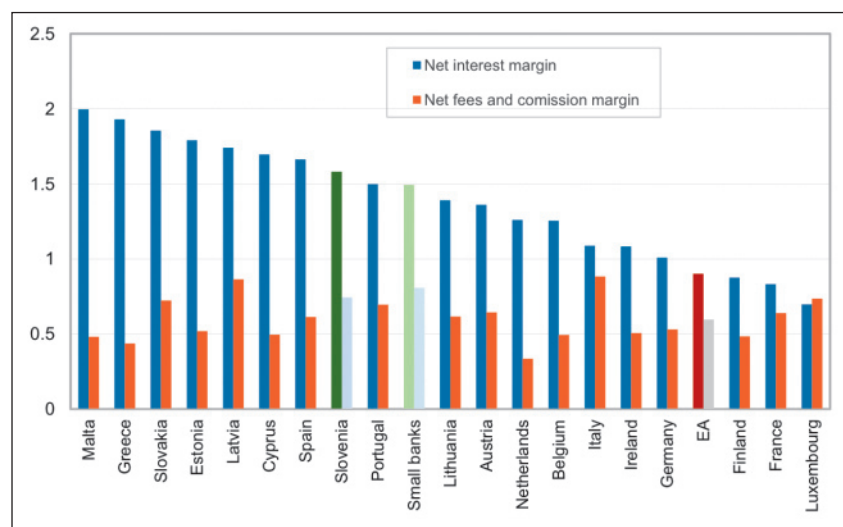
Banks in Slovenia, similarly as their EA counterparts, are facing the challenges in generating stable (net) interest income. Last 25 years have been mainly characterised by declining NIM. In December 1996, the NIM

stood at 5.88%. After reaching 2.18% in December 2014 net interest margin (hereinafter: NIM) has been declining steadily since 2015. The process has been reinforced by lower or even negative growth rates of credit to non-banking sector after the epidemic crisis. Compared to other countries, Slovenian banks have relatively high interest income, as well as very low interest expenses due to higher reliance on sight deposits and deposits with shorter maturities. While the NIM of Slovenian banks in 2019 reached a value slightly below the first quartile of

EA countries, it approached the median in 2020. However, it was comparable to the NIM of small banks in the EA.

Slovenian banks have been trying to compensate for the decline in their net interest income by increasing the non-interest component of their income. Similar behaviour has been observed in other EA countries as well (IMF, 2020b). Net non-interest income in Slovenia positively influenced by one-off effects exceeded the weighted EA average (0.82%), but was nevertheless comparable to the margin of small banks (1.08%) in 2020. Slovenian banking system achieved higher net commission margin than other EA banking systems, but it was lower than the margin of comparably sized banks in the EA (0.81%).

In Slovenian banking sector the operating costs as percent of total assets stand at 1.56%, below the average value of small EA banks (1.78%), and above the median of EA countries (1.32%). The value of the Cost-to-Income Ratio (hereinafter: CIR) in 2020 (59.5%) was comparable to the median of EA countries (59.5%), while it was below the weighted EA average (64.2%), and significantly

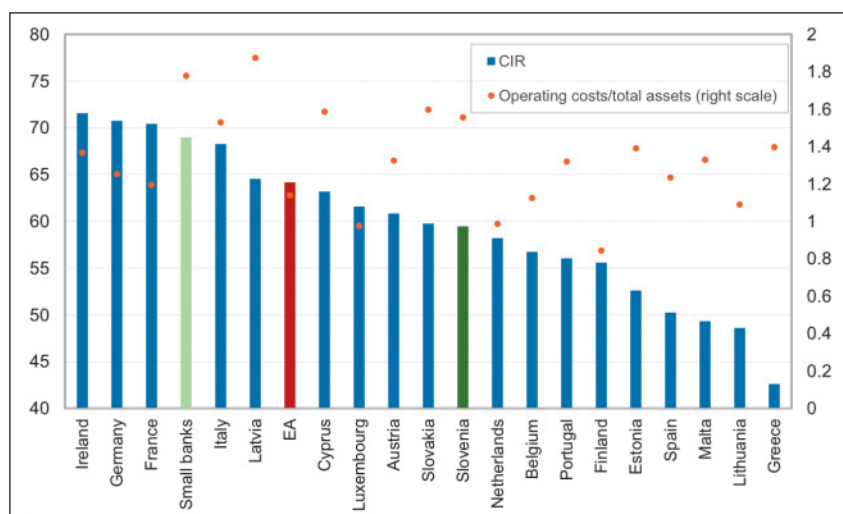
Chart 6: Net interest margin and net fees and commission margin, in %, in 2020

Source: ECB, SDW (Consolidated banking data)

⁵ Indicators of banking sector performance should ideally be compared with the values for banks of a similar size as they usually follow similar business models and face same issues when trying to achieve economies of scale and scope.

⁶ Note that in 2020 the return on equity before taxes would have stood at only 5.6% instead of 9.6% without one-off effects related to the merger of two banks. If we took into account also the long-term average of net impairments and provisions in gross income for the Slovenian banking system, return on equity would have been only 3.6%. Similar holds for the first-half of 2021, when the return on equity would have amounted to 3.6% instead of 10.6%, if long-term average of net impairments and provisions in gross income was generated. The figures refer to the solo balance sheet data of Slovenian banks. See also Bank of Slovenia (2021a and 2021b).

**Chart 7: Cost-to-income ratio (CIR)
and operating costs to total assets, in 2020, in %**



Source: ECB, SDW (Consolidated banking data)

below the average of the group of small banks (69.0%). Even though this comparison somehow puts Slovenian banks in positive perspective, one must note that some similar banking systems (Lithuanian and Estonian) in EA stand out with even higher cost efficiency. Optimising the cost structure thus remains an important challenge for Slovenian (and EA) banks.

3. Future path of the Slovenian banking system

Banks' short and medium term profitability will be determined by credit activity and the quality of their credit portfolios. Necessary medium and long term adaptations of banks' business models will have to focus on increasing gross income, cutting costs and improving banks' risk management and will be importantly influenced by digitalisation and the green agenda (Cardillo, 2021). This holds especially for universal banks as Slovenian.

3.1 Opportunities arising from bank balance sheet and income structures

As described in the previous chapter financial decisions of Slovenian households and NFCs importantly determine the asset and liability side of the

Slovenian banking system as well as its efficiency. However, banks could influence these financial investment decisions through carefully designed and focused development and marketing of new and existing products. Credit for housing purposes is under-represented in Slovenia in comparison with other EA countries, which could be partially explained with high housing ownership rates. Additional housing loan products dedicated to financing energy efficient and anti-seismic retrofitting measures supported by state or communal grants would help to overcome main deficiencies of existing housing stock.⁷ Banks could also step in by offering better financing conditions and reverse the trend of financing NFCs with trade credit which would increase their role in financing NFCs that diminished after the financial crisis of the previous decade. Knowledge based economy puts more emphasis on intangible assets, which puts firms from this industry into worse position regarding access to finance and borrowing conditions (Dell'Ariccia et al., 2020). As such types of firms are becoming more

⁷ More on financing instruments for this type of products in Bertoldi (2020) and in chapter 3.3.

widespread with the transformation of the economy, banks should put more emphasis on understanding their specificities which could also ease their access to finance and increase client base of the banks.

Banks also benefit from intense acquisition of soft information that is difficult to quantify, store and transmit in impersonal way, but importantly reduce information asymmetries (Cardillo, 2021) and represents one of their key advantages over impersonal FinTechs that mainly utilise only hard computer processed information. Maintaining the so-called relationship banking could be particularly important for supporting more conservative retail clients.

Banks could be more proactive also in managing the liability side of their balance sheets. Design of alternative long-term savings products together with other participants in the financial market could either change or exploit the inclination of Slovenian households towards deposits and at the same time assure sufficient support to existing pension schemes in the future. This could also diminish the need for the introduction of negative deposit interest rates that are a double-edged sword that on one hand increases banks' income but can also lead to the loss of clients that could in the future benefit from other products and services offered and charged by the banks. Banks try to compensate for the decline in their net interest income by increasing the non-interest component of their income (IMF, 2020a), which is also the case in Slovenia. Package products have become very common on the liability, i.e. deposit side (including transaction accounts), nevertheless they should (to extent allowed by the consumer protection legislation) be more broadly developed also on the asset side. This would enable banks to increase the net fee and commission

component of their non-interest income and boost their gross income. Cost reduction will, however, remain one of the most important ways to improve the efficiency of banks (IMF, 2020a). Digitalization as well as consolidation⁸ offer two most prominent ways for its accomplishment that will be, however, marked also with unpopular decisions of reducing banks' workforce and excessive branch network.

3.2 Digitalisation

Further digitalisation of the banking system has been emphasised as a necessity for quite some time. On one hand, it affects the cost side of the banking business (both by increasing operational costs in the short-term horizon and reducing them in the long-term), while on the other hand it could boost banks' income creation. More efficient risk management supported with advanced digital solutions would also increase profit generation. In addition, evidence suggests that greater cost efficiency (through digitalisation, for example) could enhance profitability of many banks, and should be combined with a tailored approach to updating business models (IMF, 2018). Digitalisation and FinTech have important implications on cost savings and bank business models (IMF, 2017b). By becoming increasingly present in the market, FinTech companies could be seen by banks either as competitors or as potential partners and best practitioners to learn from. However, according to the EBA (2021) survey banks consider FinTech companies more as a threat than an opportunity in the area of payments and retail brokerage. On the other hand, FinTech firms bring both opportunities and threats to retail banking, while opportunities prevail in the areas

of commercial banking, trading and sales. FinTech could potentially provide cost saving solutions to banks, for example, through more cost-efficient payment system and back office operations (IMF, 2017a). Slovenian banks report price to be the main competitive advantage of FinTech companies and so-called digital banks,⁹ as most of their services are currently free (Banka Slovenije, 2021b). Shifts in retail banking customer preferences resulting from digital finance will impose changes in bank business models (IMF, 2017a). Solutions offered by FinTechs attracted also customers to seek and demand similar products from their banks. On the other hand, banks as traditional institutions primarily use proven financial technologies in their business processes and models. In the past, banks' investments in digitalisation mainly focused on the upgrades and maintenance of existing information systems. According to the survey conducted by the Bank of Slovenia (2021b),¹⁰ banks believe that the new service providers represent competitive pressure and affect banks' profitability, strategic development and business models. Banks, which include technological innovations in their business models and processes, become more competitive,

both in relation to other banks and to FinTech companies. Consequently, majority of banks started adapting their business models by including payment and settlement services using online and mobile applications. Forced by Payment Services Directive (PSD2), banks are also introducing new financial technologies related to open banking/APIs.¹¹ However, banks are increasingly including technological innovations also in their long-term strategies.

The COVID-19 pandemic accelerated digitalisation plans with emphasis on distribution channels and new services to customers, as well as further digitalisation of internal processes, resulting in some lasting adjustments. Abundance of available data and greater and more affordable computing power encouraged the use of artificial intelligence in finance and banking, especially in asset management, algorithmic trading and financial services based on Blockchain technology (OECD, 2021). According to the survey conducted by the Bank of Slovenia (2021b) banks already plan to invest more in the development of mobile wallets, biometrics, and big data. While the former two help to improve relations with banks' customers, the latter are key for improving their lending activities, especially credit risk assessment (Cardillo et. al., 2021). Results of the survey show that banks do not pay enough attention to information solutions based on Blockchain, smart contracts and artificial intelligence, which can affect their future competitiveness in the market. Banks could use these technologies in the near future to offer additional

⁹ Digital online banks or neobanks that appeared in 2011 do business with customers exclusively via mobile apps or online platforms, as they have no physical branches. Contrary to other FinTechs they possess a banking license. Usually they offer the opening and management of a transaction account for households and businesses, while they plan to offer borrowing and savings services in the future.

¹⁰ The survey conducted among all Slovenian banks focused on new financial technologies and their impact on business processes and FinTech industry. The FinTech industry consists of various firms who are trying to improve on existing financial services by means of information technology and innovations. The firms aim to use technology in the financial sphere in the most innovative way possible. The use of new technologies focuses primarily on areas related to payment systems and transfers, crypto-asset trading, lending, insurance, etc. The FinTech industry largely aims to offer firms and consumers better, faster, and more efficient financial services. This is having an impact on the operations of banks and other financial institutions, particularly in the sense of the pressure from new service providers in the financial market.

¹¹ Under the PSD2 FinTechs have to follow the same rules as the traditional payment service providers (registration, licensing and supervision by the competent authorities), which enables them to offer their services across the EU. Banks that offers online access to accounts cannot reject to share certain data with FinTech companies or with other banks providing such services (European Commission, 2019).

⁸ Both of them will be presented in detail in the following chapters.

banking products like instant payments or cloud services making them more competitive towards both, other banks and FinTech industry. In the following years we can expect the entry of Big-Techs to the banking market (by obtaining banking license) which could represent another push towards reduction of prices of banking services (especially payments services or retail brokerage). Digitisation can also accelerate consolidation of the banking system and lower merger costs. However, digitalisation also brings caveats. More the banking processes gets digitised, more important cyber security will become and banks have to put enough emphasis on activities building resilience against cyber-attacks. If digitalisation replaces traditional services, banks' access to more traditional bank clients, especially elderly and less educated could be weakened. General suggestion to follow diversified business models and avoid herd behaviour applies here as well.

Banks should on the other hand also exploit their main advantage over FinTechs and digital banks that offer depersonalized, technology-based and software-mediated contacts. Personal contact typical for relationship banking that uses soft information is especially beneficial for new enterprises and in crisis periods, but could be used also to explore new, niche (including green) oriented consulting and investment services (Cardillo, 2021).

3.3 Green finance

The transition towards a more green business model is supposed to have less disruptive effects on banks' organization than the digital transformation (Cardillo et al., 2021). Anyway, the increasing importance of banks in supporting of green transition is a trend that will continue in the context of EU drive to achieve carbon neutrality

by 2050 (COM(2018) 773 final). Cardillo et al. (2021) identify three main channels through which banks can increase their role in the climate agenda: the reallocation of market portfolios via sustainable investment strategies; the direct financing to green companies/projects and the provision of specialised advisory services. Today several Slovene banks offer 'green loans', which can be used for the purchase and construction of energy efficient RRE and for investments in energy efficient systems (e.g. solar panels, heat pumps, recuperation systems, etc.) (Banka Slovenije, 2021b). The share of these loans is still low, in the first half of 2021 only 51 loans, less than 0.1 % of all new loans to households, were approved for energy efficient systems. In the same time only 250 (5 % of the total amount) housing loans secured by RRE were approved for purchase or construction of energy efficient RRE.¹² Although households account for around one-fifth of total carbon emissions, economy-wide decarbonisation requires ample investment in the NFC sector. A high share of industry in value added of 27% compared to an EU average of 19% indicates relatively higher transition risks,¹³ but on the other hand also the opportunities for banks to finance the greening of the brown sectors. Exposures to climate-sensitive activities (manufacturing, construction, electricity and transport) reflect the structure of the economy and amount to between one-third and roughly 60% of the

NFC bank loan portfolio. Banks should support further decarbonisation efforts, depending on the technological readiness of energy-efficient solutions across sectors (e.g. renewable energy in the electricity sector, e-mobility in the transport sector). Supporting green innovation is also a necessity and is encouraged to the extent viable in terms of the relevant credit risk parameters. Same applies to project financing focusing on green investment, as well as other types of projects.¹⁴ Banks should also improve data collection practices in this area and continue offering loans for energy efficient RRE and systems. The economic fallout from the COVID-19 crisis poses a challenge to decarbonisation efforts, as tighter financial constraints are associated with worse environmental performance, though it could also represent an opportunity to accelerate the transition to a low-carbon economy through climate policies and green investment packages (IMF, 2020c).

3.4 Consolidation

Consolidation¹⁵ represents another opportunity for improving economies of scope and scale. Optimal size of banks is increasing and especially small and medium-sized intermediaries may not be able to finance large IT investments (Cardillo et al., 2021). Conversely, there is also considerable empirical evidence that large banks

¹² Energy performance classes: A1, A2, B1 and B2. The banks are required to report energy efficiency of RRE pledged as collateral only for housing loans where the real estate collateral is in the form of a flat or a house, the loan purpose is purchase or purchase of land and construction and the RRE pledged as collateral is the one being purchased or constructed. Therefore, the share of loans for energy efficient RRE could be underestimated. This covers about 48 % of all new housing loans secured by RRE.

¹³ Transition risks occur when moving towards a less polluting, more sustainable economy. More in: Sokolovska (2020).

¹⁴ In year 2021 was the project financing increasing at the Slovenian banking level (annual growth is more than 27.5 %). The share of project financing in relation to the total financing by banks is over 3.2 %. Banks are approving for the purpose of the project financing the following: loans for commercial real estate (42 %) and loans for business activities (58 %).

¹⁵ Consolidation refers to the process of changing the governance of economic agents in a market, which usually leads to a change in the state of market concentration. In general, such consolidation of the banking system involves a "concentration" of its resources (capital) and thus of its management, either due to the smaller number of banks or due to the reduced rivalry between them (BIS, 2001). The primary method of bank consolidation comprises traditional mergers and acquisitions of banks (within individual countries and cross-border), where a bank with unified management emerges from two independent banks.

tend to be less efficient than smaller credit institutions (Bonin et al., 2005; Matousek, 2008; Sufian, 2010; Montgomery et al., 2014), however the relationship between efficiency and size is probably non-linear. The motives for consolidation are many, e.g. maximizing the value resulting from a reduction in costs and/or an increase in the merged bank's revenues; increasing economies of scale and increasing market power. Relatively strong tendency to consolidate in the banking sector itself exists, as large banks that enjoy "too big to fail" status have higher credit ratings (Morgan, Stiroh, 2005) and are therefore willing to pay merger premiums to fall into this category (Brewer, Jagtiani, 2013). Advantages persist despite the creation of the status of a so-called 'systemically important bank' that brings additional regulatory requirements for those banks (Vogel, 2020). An empirical analysis of the Slovenian banking system in the period 2004-2018 (Volčjak, 2018) showed that efficiency of the banking system in Slovenia in the studied period first increased with the growth of concentration, reached its optimum at the value of HI of 1440 points, and then began to decline. It is also shown that with the increasing concentration of the banking market, the stability of the banking system increased on average. However, it should be emphasized that on average the growth of the stability of the banking system has been declining with increasing market concentration. Also the theory does not have an unambiguous answer, as on the one hand bank mergers can stabilise both individual banks and reduce systemic risk, as consolidation can lead to increased diversification of bank assets and consequently larger capital buffers (Weiß et al., 2014), and on the other hand, despite the fact that diversification reduces the risk

exposure of individual banks, the system may become more vulnerable, as individual risks within the system are only reallocated but not eliminated and this reallocation of risks causes individual banks to become exposed to similar risks, making it easier for micro level shocks to be transmitted to the entire system (Wagner, 2010). Trends from abroad further point to another direction of bank consolidation, namely in connection with the development of new digital financial products. Smaller banks are consolidating in order to provide funding for the digitization of their products and services ("digital maturation"), but offering financial products and services via internet platforms may lead to less emphasis on mergers and acquisitions to achieve entry to the market and enables the specialisation of individual (niche) providers of financial products and services. Another possibility is consolidation of operations between banks and FinTech players, where the former incorporate new digital approaches and target new business segments while the latter acquire access to banking license (Deloitte, 2020).

4. Conclusion

Banks are facing several challenges in conducting their day-to-day operations. However, these challenges differ significantly from those faced a decade ago. In that period banks experienced lack of deposits which pushed them to pay excessive interest rates to stay properly funded. Nowadays they charge the depositors for keeping their money. Ten years ago they provided majority of funds to non-financial companies, currently they finance mainly households. Which challenges will be on the table in ten years? It is obvious that the only constant in (business) life is change. Ability to adapt to changes will be key for banks' future success. For conservative

and traditional institutions such thinking might be more difficult to encompass than for some other players in the financial world. In the short run banks will have to tackle the consequences of the pandemic, as well as challenges that have influenced their activities in the recent period, such as low interest rates and regulatory changes. Although it is difficult to predict how the banking business will look like in ten years or even longer it is sure that it will be marked with the digitalization of banks' business processes. When competing with FinTechs banks should build on their traditional advantages and at the same time encompass new technologies.

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Neobanks - eagles or pigeons of banking ecosystems?

*Timotej Jagrič, Dušan Fister, Aleksandra Amon and Vita Jagrič**

A massive disruption for the banking industry emerged with new entrants to the market, the neobanks. In this study we are interested in their nature. By examining the industry and macroeconomic data for over 60 countries we have found some interesting properties of the ecosystems where they prefer to settle. As by far the most important turns out to be that they are having favourable taxing environment. Further, they prefer economic ecosystems with high economic freedom, developed technological infrastructure, and developed financial markets. We argue that the role which will be given to neobanks in tomorrow's banking markets will depend on the legislative decisions but additionally also on the ability of the neobanks to conduct the lending effectively and profitably, and the speed of the classical banks' digital transformation.

JEL G21, C21

1. Introduction

The digital transformation of the economy is accompanied by the transformation of banking services as well. The innovative FinTech industry mostly consists of non-bank start-ups and companies, however, there are some of them which are upon the regulation a deposit institution – a bank with a banking licence. As they differ in their business model from the old banks, they are called to be neobanks. The essence of the model is in reducing operating costs by fully or to a large extent omitting the physical network of branches and thus be able to offer free or very cheap banking services. Their business is scalable and could easily profit from the growing economies of scale thus further enabling them to offer very attractive price lists to the customers. Further, not only the digital transformation of the economy is importantly changing the demand for the banking services, but we also think that there had been given a business opportunity already years ago by the four freedoms, in the banking case especially relevant are free movement of capital and services. The industry did not make full use of it – now the FinTechs and the neobanks will do it – the integration of the financial and banking markets in the euro area accompanied by the single supervisory mechanism enables them to set-up profitable business models across large number of national banking markets.

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When looking ahead and thinking about what role neobanks and the FinTech industry might take in the future we are wondering whether or not the neobanks are the new predators in the financial markets. Through the article we will examine which role will neobanks reprise in the future: will they emerge as eagles – on top of the food chain but still incredibly vulnerable to changes in their ecosystems – or will they turn out more like pigeons, settling for leftovers, never in the dominating role but always exceptionally flexible and surviving changes.

2. The changing landscape of the banking industry

Already in 1994, Gates claimed banking would be necessary, but banks were not, which appeared unimaginable in the '90s (Geschke & Fritschi, 2019, page 16), but no longer today. Digital technologies have changed the characteristics of financial relations in society, and it is supported by relocating the banking and financial products and services online (Heuser, 2021). Furthermore, online banking support has been present in the banking industry already for years and there has been a significant increase in efficiency and productivity resulting in many benefits for the banking customers have. Nevertheless, digitalization has resulted also in optimized internal business processes (Suprun, Petrishina, Sadovenko, Voloshanyuk, & Khodakevich, 2021, page 8).

Thus, it is about the business model risk what the conventional banks are faced with. And for too long the banking industry was too self-confident in its position in the financial market. The number of potential competitors was rather limited because of heavy entry barriers. However, new competitors have emerged, the neobanks, which may be with or without a banking licence. These banks are already considered to be a massive disruption for the industry (Temelkov, 2020, page 156).

The entry barriers in the banking industry were very high: present banks profited from advantages in capital, a well-established customer base, relevant networks, and access to the financial market. Neobanks, on the other hand, are able to omit some of them, like funding shortages as they successfully are attracting investors' capital gaining traction, particularly in Europe (Geschke & Fritschi, 2019, pages 16-17). Fintech banking industry is currently having the typical properties of young markets: competition among small enterprises, business models being screened out, successful start-ups are merging or being taken over (Heuser, 2021). An increase in demand for fintech services in the areas related to servicing individuals is present. Fintechs are active also in lending to start-ups, and in asset management (Fedotova & Mamengayev, 2021, page 4).

Although the established banks are rapidly catching-up with digitalisation in all areas of its activities (Feyen et al. 2021), there are remaining some features of how they conduct business, where the neobanks turn out to be more competitive. These features are (Heuser, 2021): transparent information on pricing, fees, and the percentages of profits, offering its own investment products rather than market-best solutions, or too high fees in general and in particular for trading services (Heuser, 2021). Some aspects of the business behaviour of conventional banks lies in its legacy, what for they are not able to automatize and digitalize the majority of their processes in a very short period of time (Corander, 2021, page 53) while on the other hand neobanks continuously adapt their business offers to the changing consumer preferences. Further, slow implementation of new technologies in the banking industry can in some cases also be a consequence of very conservative views of bank managers, and bank's customers as well (Mukhamedov, Maramygin, Mokeeva, & Rodicheva, 2020, page 1).

There are multiple options for implementing modern technologies into banking industry. One can be in creating a neobank, with its own banking licence. The neobank typically has no branches and provides its services exclusively online, via website and mobile applications and is called a digital or virtual bank. Some of their features are: an application for the bank's target groups is its main communication channel and it's been frequently updated, offering courier system for card products and documents delivery, a large staff of developers and other IT specialists, 24-hour technical support, cooperation with mobile payment systems. Second option is building a neobank from scratch with a classic bank. Another option is cooperation with a fintech company or an acquisition of one and its integration into the existing bank (Musaev, Khobotova, Knyazeva, Katunina, & Puzina, 2021) and (Mukhamedov, Maramygin, Mokeeva, & Rodicheva, 2020).

With increasing neobanks' popularity, the need for proper regulation arises as neobanks and fintech companies are only in few cases a bank upon the banking regulation. As reported by Stalder (2021) for the case of regulating platforms these attempts often give them even more leverage. The regulation should ensure more competition, transparency, and interoperability and prevent from platforms as private companies conducting sovereign tasks and thus becoming even more powerful. In the case of neobanks, besides solvency risk, there are the other areas of regulation being a challenge due to the changed mode of activity, the digital ecosystem, like privacy and data protection or

cyber-fraudulent money laundering schemes (Koibichuk, Ostrovska, Kashiyeva, & Kwilinski, 2021, page 262). An example of these concerns is the realization of money-laundering risk in German neobank N26. The incident has raised doubts about organization deficiencies and lack of implemented processes. Despite German financial supervisory BaFin warnings and other measures, N26 did not react in time and is now facing a risk of restricting new customer business, as well as possible ban on further customer funds, fines or even a temporary closure of the bank (Nestler, 2021). Further, the regulation of a neobank has to solve the moral hazard with its risk appetite which could be larger when compared to the conventional banks (Koibichuk, Ostrovska, Kashiyeva, & Kwilinski, 2021, page 254).

There are some important competitive disadvantages of neobanks apart of the riskiness of its business mode as well: a difficulty to build a brand trust resulting from the missing personal contact and lack of tradition, unless the neobank is backed by a conventional bank (Valero, Climent, & Esteban, 2020, page 13). Whilst this currently represents an advantage for conventional banks, it might fade away over time. An disadvantage of its business model is also that it requires big numbers of customers to get economies of scale and be profitable (Gouveia, Perun, & Daradkeh, 2020, page 125).

There has been a significant transformation of the financial markets' architecture, like modern financial institutions operate in a virtual space, and they are developing and implementing the advanced technologies. Under the influence of environmental factors, these processes are expected to accelerate further and become even complicated (Fedotova & Mamengayev, 2021, page 6). The power of platforms arises from its organization of connections allowing efficiently in complex ecosystems (Stalder, 2021). Neobank follow this trend by offering services 24-hours 7 days a week globally and connecting diverse services from other areas out-side banking, like insurance, accounting, trading and lifestyle services. Heuser (2021) sees the clue of a successful structural change in either the new ones taking over, or the old ones to change and taking in the new ones. This might be the case now with the banking ecosystem.

3. Dataset

Following our goal to investigate what may influence the appearance of new neobanks on the observed markets, we first gathered data on number of neobanks in different countries or later turned out, its proxy. Additionally, data on different properties of these markets were gathered. In doing so, data for more than 90 indicators for 65 countries

was collected. Further on we present only those indicators (explanatory variables), which we have found to have statistically significant impact on the indicator of number of neobanks in the countries (dependent variable). Regarding the latter, as we could not find a variable, which would directly measure the number of neobanks in selected countries we therefore decided for a proxy variable. We chose to use The Global Fintech Index (GFI) referring to the whole fintech sector. We are aware that by doing so the explanatory power of the final model is reduced, but on the other hand, the proxy measure gives more than just information on the number of companies, and it of course includes also neobanks.

3.1 Dependent variable - The Global Fintech Index (GFI)

The Global Fintech Index (GFI) is the first global index using a common set of metrics and the same algorithm to create a score that ranks the fintech ecosystem reflecting the quantity and quality of the fintech industry including the business environment of the location. As an index on the country-level it reflects the scale and development of the fintech industry (Lyons, Kass-Hanna, & Fava, 2021, page 5). GFI refers to over 230 cities, 65 countries, containing over 7000 companies worldwide (Jiao, Shahid, Mirza, & Tan, 2021, page 2).

The GFI includes businesses that apply a technologically enabled innovation explicitly prepared for the provision or distribution of financial services (Findexable, 2019, page 14). The index considers the number of companies (Findexable, 2019, page 15), including all present fintech companies, fintech hubs, co-working spaces, accelerators, global influencers, etc. (Lyons, Kass-Hanna, & Fava, 2021, page 5). The quality of the industry is reflected as its evaluation based on factors such as size, growth, investment, web presence, monthly visits, customer base, website ranking, events, international collaboration, number of unicorns, etc. (Lyons, Kass-Hanna, & Fava, 2021, page 5). Business environment is taken into account in the GFI by including the global measures like World Bank's Doing Business Report (Findexable, 2019, page 15) to reflect the ease of doing business and location's attractiveness by considering factors like technology infrastructure, critical mass, regulatory environment (such as incentives for start-ups and payment portals) (Lyons, Kass-Hanna, & Fava, 2021, page 5). In the absence of yet widely accepted and standardized measures of fintech industry, this index can be seen as a tool to assess fintech ecosystems and make cross-country comparisons (Lyons, Kass-Hanna, & Fava, 2021, page 2).

3.2 Explanatory variables

Moving on to the explanatory variables used in the model, first one is financial development for which we used Financial Development Index. The latter captures both financial institutions (FI) and financial markets (FM). Under financial institutions, there are banks, insurance companies, mutual funds, pension funds, and other types of nonbank financial institutions, while financial markets include mainly stock and bond markets. Financial development is reflected by size and liquidity of markets, the access to services, the efficiency financial services providers, and the level of activity of capital markets (Sahay et al, 2015, pages 5-11). The value of the index is normalized between 0 and 1 (Sahay et al, 2015, page 12).

Next, there are 4 explanatory variables which reflect a dimension of the economic freedom (The Heritage Foundation 2021a): Business Freedom, Financial Freedom, Fiscal Health, and Investment Freedom. The first one, Business Freedom, measures "the proportion to which the regulatory and infrastructure environments coerce the efficient operation of businesses" (Miller, Kim, & Roberts, 2021, page 458). Most common barriers for starting new business or running business productively and profitable, are licensing new business and overall burdensome and inessential regulations, the first ones being the most important (The Heritage Foundation, 2021b, page 15). The quantitative score is given for each country ranging between 0 and 100, with 100 reflecting a country with the most business freedom. The score is based on 13 sub-factors, all of which are weighted equally. The factors taken into consideration are (Miller, Kim, & Roberts, 2021, page 458):

- starting a business as number of procedures, in time, in costs, in minimum capital required;
- obtaining a license as number of procedures, in time, in costs;
- closing a business as measured in time, in costs, in recovery rate;
- getting electricity as number of procedures, in time, and in costs.
- These sub-factors are converted to a scale of 0 to 100 which is based on the ratio of the country data relative to the world average. The result represents the country's relative position in business freedom compared to other countries (Miller, Kim, & Roberts, 2021, page 458).

The second variable from the group expressing the level of the economic freedom is Financial Freedom. This variable reflexes the level of banking efficiency alongside with the level of the political independence. In general, state ownership of banks and other financial institutions is known to re-

duce the competition and reduces the access to credit. On the other hand, an open banking environment with efficient transmission of funds contributes to the economic development by encouraging competition of businesses and promoting entrepreneurship. Financial regulation which promotes financial transparency supports efficiency and competition, and reduces costs of financing (Miller, Kim, & Roberts, 2021, page 463). This variable ranges from 0 to 100 and considers factors like: the level of government regulation of financial services, the degree of state intervention in banks and other financial firms through direct and indirect ownership, government influence on the allocation of credit, the extent of financial and capital market development, and openness to foreign competition (Miller, Kim, & Roberts, 2021, pages 463-464).

Third variable of the group which comes from the Index of Economic Freedom is Investment Freedom. A free and open investment environment is supporting the businesses and thereby promotes economic growth. On the other hand, restrictions reduce the efficient allocation of resources leading to loss in productivity and the size of the business efficiency (Miller, Kim, & Roberts, 2021, page 17). The variable we use here, assesses a variety of regulatory restrictions. From the ideal value of 100 points, they are deducted if there are restrictions found in a country's investment regulations (Miller, Kim, & Roberts, 2021, pages 462-463).

The fourth variable from the group expressing the level of the economic freedom is Fiscal Health. The variable reflects the position of the public finance. Unsustainable public finances with high deficits in the budget and growing public debt leads to the erosion of a country's general fiscal health leading to macroeconomic unbalances, inducing economic uncertainty, and consequently limiting economic freedom. Public finances are a tool of economic policy for encouraging economic growth, or for countercyclical interventions or long-term growth strategies. But high level of public spending also could have negative impacts, like raising interest rates, crowding out private investment, limiting government's ability for further interventions in future economic crises (Miller, Kim, & Roberts, 2021, page 15). This variable is calculated from the two sub-factors: average budget's deficits as a percentage of GDP for the last three years, and the second one debt as a percentage of GDP. The first one takes 80% of the total and the second one the remaining 20% (Miller, Kim, & Roberts, 2021, page 457).

As explanatory variables we also used: tax burden as a percentage of GDP and average corporate tax rate. Together with the variable of Fiscal Health, all three variables

reflect fiscal environment. And the latter, seems, as we will see in the results section, to have a large impact on the dependent variable.

Another explanatory variable used in the model is Frontier Technologies Index (FTI). The index is composed of five blocks: ICT deployment (includes the prevalence to ensure that everyone has access, captured by internet users as a percentage of the population and the quality of infrastructure measured by the mean download speed), skills (from education and from workplace: expected years of schooling, and the extent of high-skill employment), R&D activity (the number of publications and patents filed on the 11 frontier technologies in a country), industry activity (aiming to capture ongoing activities related to the use, adoption, and adaption of frontier technologies) and access to finance (measured as domestic credit to the private sector as a percentage of GDP). The index values are available for 158 countries (UNCTAD, 2021, pages 137, 144-145). Index is formed by first imputing data next, removing missing or extreme outlier values, and then transforming variables with very skewed distributions using a log transformation. Next, the Z-score standardization is conducted and normalized to the range of 0 to 1. Next, a principal component analysis (PCA) is used, and the final index is derived by assigning the weights with rotation to the three principal components, and then standardized and normalized to the range of 0 to 1 (UNCTAD, 2021, pages 145-147).

Final explanatory variable, which is included in the model, is share of foreign direct investment (FDI) in GDP. This indicator was calculated based on the data for FDI inflow in millions of USD and GDP for observed year. All data was gathered from World bank and IFS. The variable can be interpreted as an indicator for the openness of the country. Based on the description of the variables, we can expect some multicollinearity effects in the model. But as we will

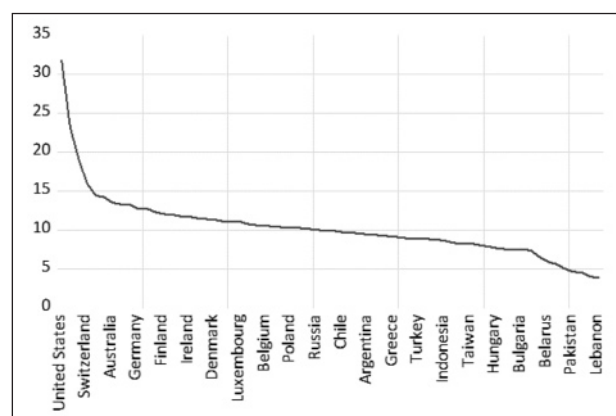
further on see, these effects are not as important as the impact of these variables on the dependent variable.

3.3 Statistical analysis of included variables

Basic statistical analysis was performed for the dependent and explanatory variables and is presented in Table 1. Probably most important finding of the statistical analysis is that many variables show non-normal distribution. Since this is true also for the dependent variable, we investigated its properties in more detail.

In Figure 1, graphical analysis of the dependent variable is given for the analysed sample of countries. The following important features came from the statistical and graphical analysis of the dependent variable and must be considered in the process of econometric modelling. First, in this case we are dealing with cross-section data and the dependent variable indicates a nonlinear behaviour. Next, the dependent variable is a score measure and although the dependent variable is continuous numerical variable it is bounded between two values. And at last, the score values do not repeat.

Figure 1: Graphical representation of dependent variable



Source: Own graphical presentation, data source Findexable (2019).

Table 1: Statistical analysis of selected variables

	Mean	Median	Max.	Min.	Std. Dev.	Skew.	Kurt.	J-B Prob.
GFI	10.4312	9.983	31.789	3.941	4.2748	2.3780	12.3165	0.0000
FINANCIAL DEVELOPMENT	0.5342	0.5262	0.95683	0.1087	0.2250	0.0163	1.9347	0.2251
BUSINESS FREEDOM	72.7317	73.6	94.4	44.3	11.4520	-0.2460	2.5099	0.5309
FDI_SHARE_IN_GDP	0.0285	0.0108	0.65712	-166	0.0913	5.2946	37.293	0.0000
FINANCIAL FREEDOM	60.1587	60	90	20	16.5092	-0.4807	2.8001	0.2820
FISCAL HEALTH	75.7888	83.3	99.6	0	27.1742	-1.5356	4.3339	0.0000
INVESTMENT FREEDOM	68.3333	70	95	20	17.7346	-0.7544	2.7661	0.0468
UNCTAD FTI	41.7777	34	128	1	32.7824	1.0322	3.3670	0.0031
TAX BURDEN OF GDP	25.9015	27.9	46.1	0.1	11.5721	-0.0657	1.9506	0.2303
CORPORATE TAX RATE	22.6349	23	35	0	6.8408	-0.6148	3.7707	0.0630

Source: Own calculations, source of data: Findexable (2019).

Table 2: Regression results

Dependent Variable: LOG(GLOBAL_FINTech_TOTAL_SCORE)

Method: Least Squares

Included observations: 63

Variable	Coefficient	Standardised Coefficient	Elasticity at Means	Prob.	Centered VIF
C	2.948134	NA	1.294641	0.0000	NA
1/FINANCIAL_DEVELOPMENT	-0.073399	-0.303385	-0.077387	0.0006	2.5203
1/BUSINESS_FREEDOM	-23.30875	-0.157660	-0.144567	0.0694	2.6353
1/FDI_SHARE_IN_GDP	-0.000637	-0.217337	-0.034633	0.0011	1.4359
1/FINANCIAL_FREEDOM	-17.38565	-0.373118	-0.141523	0.0041	5.6183
1/(1+FISCAL_HEALTH)	-0.602570	-0.208475	-0.009532	0.0020	1.4967
1/INVESTMENT_FREEDOM	18.08975	0.332980	0.128664	0.0038	4.4155
1/UNCTAD_FRONTIER_TECHNOLOGIES_INDEX	1.177187	0.463716	0.037371	0.0000	1.2261
1/TAX_BURDEN_OF_GDP	0.247541	0.847275	0.022423	0.0561	68.5111
1/(1+CORPORATE_TAX_RATE)	-2.837718	-0.939416	-0.075457	0.0337	67.7712
R-squared	0.854459	Mean dependent var		2.277183	
Adjusted R-squared	0.829744	S.D. dependent var		0.366403	
S.E. of regression	0.151185	F-statistic		34.57317	
Sum squared resid	1.211423	Prob(F-statistic)		0.000000	
Ramsey RESET Test F-statistic Value: 2.523782 Probability: 0.0682		Heteroscedasticity Test: Breusch-Pagan-Godfrey F-statistic Value: 0.635098 Prob. F(9,53): 0.7619			

Source: Authors' calculations.

4. Results

To overcome the problems, which arise when using dependent variable with properties as described in previous section, we used a specific functional form of regression model. By selecting log-reciprocal regression model, we were able to satisfy all major assumptions of the least square estimator. The results are presented in Table 2.

Results suggest that all selected variables are statistically significant with p values below 1% in most cases. We also calculated standardized coefficients, which can be used to explain which variable has the largest impact on the dependent variable. The estimated R-squared value is 0.85, which is for models based on cross-section data extremely high and indicates good explanatory power of the model. Further on the model as a whole is statistically significant (F-test) and there seems to be no problem with heteroscedasticity (Breusch-Pagan-Godfrey test).

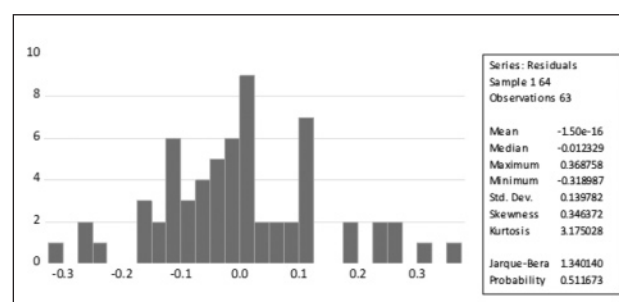
Probably most important two tests are normality test and RESET test. Results for normality test are reported in Figure 2. Jarque-Bera statistic is not significant and indicating that there is no problem with non-normal distribution of residuals. Also the results for the RESET test (reported in Table 2) show no major specification problems, but there is some room for improvement. We also tested for the presence of multicollinearity. We, therefore, report Centred VIF in Table 2. As expected, especially variables of tax environment are

highly correlated. This is also the reason for higher p values for these variables, but the effects are not damaging. We, therefore, follow in this case an econometric rule, which suggests not to perform any additional measures since that would reduce the quality of results.

The results of the model estimation led to few surprisingly interesting findings. They can be stated as follows:

The relevance of the tax environment. The highest impact on the presence, the number, and the size of the activity of the analysed type of companies has the tax environment. The impact of taxation was in the model captured by two explanatory variables: corporate tax rate and tax burden as share of GDP. The analysed neobanks and fintech companies apparently avoid high taxation environment and will be present in low taxation ecosystems.

Figure 2: Results for normality test



Source: Authors calculations.

No linkage to macroeconomic performance. The appearance of new fintech companies and therefore also neobanks seems not to be linked with classical macroeconomic performance measures. Macroeconomic unbalances are unlikely to influence the presence and the extend of the activity performed by analysed companies.

The relevance of the technological development and the financial market development. Important factors, which influence the development of observed companies are also technological development of the country and financial market development. These features were captured in the model by the explanatory variable Financial Development Index and by the Frontier Technologies Index.

The relevance of the business environment. The business environment reflected in economic freedom is also important. In the model these features are represented through more than one variable, like business freedom, investment freedom and financial freedom.

The relevance of the economy's openness. The openness of the country plays important role in explaining the number of observed companies and their development on the market. We capture these influences through a variable reflecting the share of foreign direct investment as share of GDP.

5. Conclusions and discussions

The here presented study is a result of research activity on the Institute for finance and artificial intelligence, where we develop new methods in the area of artificial intelligence (i.e. mathematical models of third generation of neural networks, dedicated hardware for third generation of neural networks, field-programmable gate array (FPGA) implementation of AI methods) and its software support for implementation in the financial industry and other economic sectors as well. The study presented here emerges from the area of the Institute's activity devoted to the examination of the implication of new technologies and continues the trajectory of past studies presented by the Institute's members and colleagues in *Bančni vestnik*.

We were interested in the character of the new entrants to the banking market, namely the neobanks. To illustrate the nature of their ability to survive we tried to find out, whether they are more likely resemble to eagles or to pigeons. Throughout the empirical analysis we made some interesting findings.

Upon our empirical results we find that at this stage it is probably too early to determine the nature of the neobanks, however we have found some interesting properties of the ecosystems where they prefer to settle. The neobanks are in greater extend present in economies with specific business environment characteristics. As by far the most important

turns out to be that they are having favourable taxing environment. Here we are wondering whether it might be an indication that these banks are like many big tech companies very much optimizing the tax costs and will therefore contribute to the problem of harmful taxing competition which does not contribute to the sustainability of welfare states. Further, neobanks prefer economic ecosystems with high economic freedom, developed technological infrastructure, and developed financial markets. The banking ecosystem has been changing very rapidly in the recent years and is expected to change even more dramatically in the next years. We argue that the role which will be given to neobanks in tomorrow's banking market will depend not only on the legislative decisions influencing the factors which we have identified empirically, but additionally also on two further important factors. Among these, the first one we estimate to be the ability of the neobanks to conduct the credit activity effectively and profitably. And the second one, we argue to be the speed of the classical banks' digital transition in a way that they capture the benefits of the neobanks' business models in their own business activities. The latter would enable them to become more profitable and thus remain attractive for investors and preserve the depositors while closing the business opportunities for new entrants to attract them. As stated by Feyen et al. (2021) the leading banks have already been rapidly closing gaps in digitization to new entrants. However, it might not be with the same speed in all individual national markets.

Further, we believe, that the here recognised character of the neobanks can lead or contribute to a form of differentiation of the banking markets as the path of the changes in the market organization might differ importantly across countries. If for some markets it is indeed very likely that the "barbell" market structure (Feyen et al. 2021) would result, the path may be much different in very small markets, like e.g. in Slovenia. These markets differ very much in all characters which we found to play an important role for the neobanks. Therefore, if in mature markets leading traditional banks are including or acquiring some forms of fintech's businesses or companies, the question in small markets is whether the big players would grow from the existing incumbents of small markets or might the role of the big players be played by new entrants to the small markets from big players which grew to it first in other markets. Another aspect is, if the neobanks would be operating headquartered in other markets, what implications would this make to the small markets. Small markets with national or geographical specialties would not offer to benefit heavily from economies of scale and scope, therefore there

might even faster happen a disaggregation in business areas. Who will be able to take the profitable business areas and more importantly, who would be left with riskier financial products lines? Our results support market participants, regulators, market supervisors, and scholars in their recently very active discussion on the topic by offering them new insights and arguments. To the market participants in developing efficient business models for the future. To the supervisors in the discussion on the market development influenced by the neobank and fintech entrants when safeguarding the financial stability as well as taking into consideration the challenges of money laundering, consumer protection and privacy.

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Redefining finance for sustainable natural resource management

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The world is facing the triple planetary crisis of climate change, biodiversity loss, and pollution, driven by unsustainable use of natural resource. Therefore, we must decouple consumption of natural resources from human well-being, which means building a 'circular economy'. The Recovery and Resilience Facility for economic recovery from the COVID-19 pandemic and the EU's Green Deal are important instruments for centralising circular economy in government decision-making, and these crucial policy directives send important signals to the financial system. Public and private finance need to support a shift to sustainable resource use through long-term thinking: private finance can create value by sustainable, circular enterprise. Some investors are already moving in this direction and are pushing for better disclosure and risk management. Public finance, central banks especially, has a crucial role in creating the right regulatory environment for private actors. Central bank mandates should reflect the need to shift to a financial system which supports sustainable use of natural resources. Ultimately, it is in the financial system's interest to support our planet, societal well-being, and stability.

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1. Unsustainable natural resource use is the origin of planetary crises

The planet is facing a triple crisis on an unprecedented scale. Climate change, biodiversity loss and pollution are no longer challenges of the future for our descendants to cope with. We are seeing their impacts right now. Human activity has already warmed the climate by an average of 1°C¹, and we are experiencing the devastating consequences: during the summer 2021, extreme floods claimed hundreds of lives in multiple global regions^{2,3,4}, and uncontrolled wildfires destroyed entire towns^{5,6}.

Meanwhile, destruction of the natural world continues at pace: wild animal populations have declined by almost 70% in just 50 years⁷, and one million species are threatened with extinction, more than at any other time in human history⁸. Human invasion of nature has been linked to the origins of the Covid-19 pandemic and will likely lead to further severe zoonoses if not curtailed⁹. Crucial ecosystems are being pushed to the point of no return:

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¹ IPCC (2021), Climate Change: The Physical Science Basis (https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Full_Report.pdf)

² BBC News (2021), Europe floods: Merkel shocked by 'surreal' devastation (<https://www.bbc.co.uk/news/world-europe-57880729>)

³ BBC News (2021), India monsoon: 110 dead after heavy rainfall in Maharashtra (<https://www.bbc.co.uk/news/world-asia-india-57938839>)

⁴ BBC News (2021), China flood death toll rises sharply to over 300 (<https://www.bbc.co.uk/news/world-asia-china-58056667>)

⁵ BBC News (2021), Greece wildfires: Hundreds more evacuated as uncontrolled fires rage (<https://www.bbc.co.uk/news/world-europe-58138614>)

⁶ The Guardian (2021), Second western Canada town destroyed by 'exceedingly aggressive' wildfire (<https://www.theguardian.com/world/2021/aug/06/canada-wildfire-monte-lake-climate-crisis>)

⁷ WWF (2020), The Living Planet Index (<https://livingplanet.panda.org/en-us/>)

⁸ IPBES (2019), Nature's Dangerous Decline: 'Unprecedented' Species Extinction Rates 'Accelerating' (<https://ipbes.net/news/Media-Release-Global-Assessment>)

⁹ Gibb et al (2020), Zoonotic host diversity increases in human-dominated ecosystems, *Nature*, 584, 98–402 (<https://www.nature.com/articles/s41586-020-2562-8>)

ecologists predict that the Amazon rainforest could reach an irreversible 'tipping point' if deforestation destroys 20% of the 1970 forest cover causing it to turn to a grassland ecosystem, unable to maintain the cycles of rain which keep the forest alive today, with disastrous consequences for water cycles across the entire region. This point is fast approaching: to date, we have destroyed 17% of the Amazon¹⁰. Add to this our unsustainable waste and pollution patterns: air pollution causes seven million premature deaths every year¹¹, while ocean plastic waste is seriously harming hundreds of marine species¹².

The triple planetary crisis is making **instability the norm**. We are transgressing planetary boundaries and run the risk of leaving the safe operating space in which human societies have evolved. The planetary boundaries framework outlines nine earth systems maintaining the stable conditions of the Holocene, in which humanity has thrived for the last 11,500 years. This stability enabled the development of agriculture, and all major civilisations. Maintaining it should be societies' ultimate goal: yet we have already transgressed four of the nine boundaries.¹³

All three aspects of the triple planetary crisis share **common origins**: human activity and the unsustainable economic model based on our careless and unsustainable use of natural resources. Extraction of fossil fuels, metals, minerals and biomass, and use of land and water. IRP data shows that the extraction and processing of natural resources drives 50% of global climate change, mainly via the production of fossil fuel products, biomass, steel, and cement. They also cause 90% of global land-related biodiversity loss, mainly due to agriculture, timber production or ocean resource use. Natural resource industries (such as steel or coal) are also behind one third of global air pollution, as well as water and land pollution¹⁴.

Global natural resource extraction has tripled since 1970, now over 90 billion tonnes per year, with high-income countries consuming most: G20 countries use over 70% of those resources¹⁵. These trends are set to continue. The IRP data show that if we do not take transformative

measures, resource needs will double by 2060¹⁴, with disastrous consequences for the triple planetary crisis. Without an urgent change in direction, annual carbon emissions will increase by 43% by 2060, forest area will decrease by 10%, and other natural areas by 20% (due to agricultural expansion)¹⁴.

We cannot decarbonise all that production, and make our economies and societies sustainable, without massive trade-offs. Therefore, the only realistic chance for reaching our 2030 and 2050 targets is to deploy all measures possible to address this likely increase. While we strive to improve our well-being, we must reduce demand or additional virgin natural resources as much as we can – we must **decouple** well-being and economic growth from natural resource use and environmental impacts. This is important for all, but urgent for high-income countries.

Contrary to many people's perception, technology has so far not managed to turn the alarming trends around. **Global resource productivity**, meaning the GDP produced per ton of resource, has not improved since 2000. In G20 countries, consumption productivity has improved very little. High-income countries consume over 10 times more of our planet's finite resources per capita than the lowest income countries, causing over 7 times more global environmental impacts.

The SDG for sustainable consumption and production, **SDG12**, often gets misunderstood as a lesser priority. It is one of the goals with the least funding and least progress data available. I have heard more than once from governments, as well as business leaders, that they consider sustainable consumption and production a lesser challenge next to climate change and biodiversity management – they see it as an extra burden. SDG12 is not at all additional, but at the very heart of the climate, biodiversity, and pollution solutions. Through smarter production and consumption of natural resources we can tackle the root drivers of the triple planetary crisis in an integrated way.

Circular economy is an effective instrument to deliver the necessary decoupling well-being and economic growth from resource use and environmental impacts. It is therefore a critical tool to enable more sustainable consumption and production. Incentivising remanufacturing, repair, reuse, recovery and recycling, as well as better product utilisation and introduction of new business models, will be essential in reducing resource consumption while retaining material value and creating societal value.

We must **link resource use to fundamental human needs** and optimise the systems which deliver them, rather than linking it to consumption for its own sake. For example, people do not necessarily need cars to get from one place

¹⁰ Lovejoy and Nobre (2019), Amazon Tipping Point: Last Chance for Action, *Science Advances*, 5, 12, eaba2949 (<https://advances.sciencemag.org/content/5/12/eaba2949>)

¹¹ WHO (2021), Air pollution (https://www.who.int/health-topics/air-pollution#tab=tab_1)

¹² IUCN (2018), Issues Brief: Marine Plastics (https://www.iucn.org/sites/dev/files/marine_plastics_issues_brief_final_0.pdf)

¹³ Steffen et al (2015), Planetary boundaries: Guiding human development on a changing planet (<https://science.sciencemag.org/content/347/6223/1259855>)

¹⁴ International Resource Panel (IRP) (2019), Global Resources Outlook (<https://www.resourcepanel.org/reports/global-resources-outlook>)

¹⁵ OECD (2021), Towards a more resource-efficient and circular economy: The role of the G20 (<https://www.oecd.org/environment/waste/OECD-G20-Towards-a-more-Resource-Efficient-and-Circular-Economy.pdf>)

to another; they need mobility. We need to consider whether current material uses are in fact needed. Much currently extracted material goes into underutilised cars, inefficiently built cities, and poorly maintained machinery. For example, the average European car is parked 92% of the time, 1.6% looking for parking and 1% caught in congestion. And when it is in motion, only 1.5 out of five seats are actually occupied¹⁶. We need to be smarter in designing the systems which deliver people's needs so they deliver multiple other benefits simultaneously.

We are in an **unprecedented time**, on many levels. Not only are we seeing the effects of climate change and biodiversity loss hitting citizens harder every day in all corners of the world we are also fighting a pandemic and must prepare for economic recovery. Across the world, governments have taken action to protect public health, and are now taking action to boost their economies in a way not seen in decades. This is a great opportunity to create positive lock-ins for more resilient, fairer and healthier economic models, for both people and planet. That is what is truly meant by the term 'circular economy'; the right policies and economic incentives to produce greater societal value and human well-being, while using fewer natural resources to do so. Countries which have set clear targets for resource consumption have seen increases in innovation, as it creates a clear ambition and planning security for circular innovators as well as investors.

2. Covid-19 recovery: Implementing the EU Green Deal is Europe's 'lifeline out of the pandemic'

Some are saying that the **post-Covid world** will not be the same again. It will be very much the same. We will hopefully just understand it better. Thus, we need to rethink the way we are managing the risks, as individuals and collectively, as private companies and public policy makers, locally and globally. We need to collaborate more to build resilient societies and be better prepared. And if anything is clear, it is the fact that the role of science in policy making should strengthen. Covid-19 has been a global human catastrophe, exposing the fragility of our current systems. As it is highly likely that Covid's leap from animal to human hosts occurred due to habitat invasion and unsustainable land use⁹, it serves as another powerful reminder that sustainable natural resource use is absolutely essential for future stability. Therefore, Covid's recovery cannot simply return our economic systems to business as usual. Recovery needs to be completely aligned with sus-

tainability policy; in the European context, this means comprehensive implementation of the EU Green Deal and its action plan 'Fit for 55'.

The **European Green Deal** is unprecedented in its ambition, aiming not only to reach net-zero emissions, but also to decouple economic growth and human well-being from emissions and resource use. Crucially, it aims to do all this while decreasing inequality, leaving no one behind. It does not place net-zero into a climate policy silo; instead, the Green Deal was explicitly coined by von der Leyen and the EU Commission as the EU's new 'growth strategy' rather than the new environmental and climate package, therefore mainstreaming sustainability across all policy areas¹⁷. SYSTEMIQ and the Club of Rome recently analysed the European policy developments in their **System Change Compass** report – Implementing European Green Deal in time of Recovery¹⁸. While acknowledging the vision and ambitious targets the report is questioning the implementation potential since drivers and pressures that cause environmental damage are not sufficiently addressed, perspective to guide decision-making is not systemic enough and Implementation is put at extra risk due to COVID-19 recovery.

Fit for 55 is the Green Deal's implementation policy package, detailing how net-zero will be reached; beginning with how to achieve 55% emissions reductions by 2030. It is a comprehensive suite of policies, and important sign for business and investors alike. It goes far beyond the usual target setting for 2050, giving a concrete plan, and therefore offering investment security for innovative finance. It also gives an extremely clear message to European public financial institutions like the European Investment Bank (EIB) and the European Central Bank (ECB).

A particularly striking aspect of Fit for 55 is the updated **Energy Efficiency Directive**, which states that total energy consumption from both businesses and individual consumers must decrease by almost 40%¹⁹. This emphasises the importance of decoupling in the Green Deal's overall goals: the 2030 and 2050 emissions targets cannot simply be achieved by substituting fossil-fuel based energy with clean energy, or with marginal efficiency gains in industrial processes. To achieve the necessary consumption reductions, a deep systemic shift is required: for example, moving

¹⁷ European Commission (2021), A European Green Deal: Striving to be the first climate-neutral continent (https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en)

¹⁸ Club of Rome and SYSTEMIQ (2020), A System Change Compass: Implementing the European Green Deal in a time of recovery (<https://clubofrome.org/wp-content/uploads/2020/10/System-Change-Compass-Full-report-FINAL.pdf>)

¹⁹ European Commission (2021), Delivering the European Green Deal (https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en)

¹⁶ Ellen MacArthur Foundation (2015), Growth Within (https://www.ellenmacarthurfoundation.org/assets/downloads/publications/EllenMacArthurFoundation_Growth-Within_July15.pdf)

from improvements in mass production processes towards new business models where functionality, longevity of materials, and maintenance of services are the features which create dematerialised value.

Big policy directives like these send important **signals to the financial system**; encouraging financial actors to redefine priorities and offering stability to sustainable investors. If the financial system is to undergo a fundamental transition to support sustainable natural resource use, it can use system change principles to guide its future actions.

When it comes to **signals given to financial sector the System Change Compass** has outlined five principles. First, the financial system (including public and private actors) needs to target societal outcomes and set its goals in terms of function to society; this means looking beyond quantitative proxies, and towards long-term benefit to human well-being and planetary health. Second, actors need to prioritise sustainable consumption through demand-side measures, reducing absolute resource demand, and increasing demand share for sustainable solutions, including new models of value creation. Third, aim to complement demand reduction measures with supply-side productivity improvement measures, such as renewable energy and sustainable production practices. Fourth, the financial system needs to avoid rebound effects; preventing unintended consequences by, for example, ensuring decisions are informed by high-quality data on how societal outcomes influence each other. Fifth and finally, financial actors need to come together around shared goals; public and private financial institutions and their regulators each using their capital, expertise and regulatory levers to ensure the system contributes to human well-being and planetary health. In the following section, we explore progress already being made in this direction, and how financial actors can go further.

3. The financial system needs to support a systemic shift to sustainable economic activities, underpinned by sustainable natural resource use

Value creation through sustainable enterprise

Economic activity depends on investment; therefore, **investors have enormous power** to determine the type of economic activity taking place. Currently, financial flows towards natural assets and sustainable economic activities are dwarfed by financial flows which harm nature and contribute to climate change²⁰. Clearly, this balance needs to

shift. There are growth-focused green business opportunities, such as service-as-product models, or greener methods of delivering existing lifestyles, such as electric cars, sustainable materials in packaging, green construction materials and more. Investors are already supporting these green enterprises: for example, AgDevCo is an impact investor financing sustainable agribusiness in sub-Saharan Africa, benefitting 381,000 smallholders in its first five years²¹.

Agriculture is also benefitting from product-as-service models: companies are offering subscriptions or 'pay-per-use' for farm machinery which is expensive to purchase outright. Farmers are using HelloTractor in Africa, and EM3 Agriservices in India²².

These opportunities should be capitalised on, but there is a **risk of rebound effects** if system thinking is not properly applied. For example, construction with high-quality green materials will not lead to truly green cities if urban sprawl development continues, if cities are not built and reorganised with sustainable space functioning logic in mind. Take the ride-hailing app Uber, which was created in part to solve the problem of vehicle underutilization but has in fact also created a market for low-occupancy vehicles, often used for short journeys, and as an affordable alternative to the greener option of public transport. Airbnb is another known example: aiming to ensure spare residential space is utilised, it has in fact created a market for spare residential space, exacerbating the problem it was intended to address. Many in principle good solutions have unintended side-effects which needs to be properly regulated. Employing the Systems Change Compass principles can avoid consequences like these and provide the necessary consistency.

Alternative opportunities exist. Entrepreneurial models such as cooperatives, communities and blended finance models look to innovate value creation and profit distribution. Cooperatives are enterprises governed and owned by the people who use them, making them fully accountable to those they serve. Examples include agroforestry cocoa production in Brazil²³, production of coffee in Ethiopia²⁴, or factory workers in Buenos Aires, who took their workplaces over when the Argentinian economy

²⁰ Dasgupta (2021), The Economics of Biodiversity: The Dasgupta Review (<https://www.gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review>)

²¹ Blended Finance Taskforce (2020), Better Finance, Better Food: Case Study Catalogue (<https://static1.squarespace.com/static/5acdc066c258b4bd2d15050b/t/5fbf3f84cb3e0f577144b404/1606369299711/Better+Finance%2C+Better+Food+-+Case+study+catalogue.pdf>)

²² Blended Finance Taskforce (2010), Infra 3.0: Better Finance, Better Infrastructure (<https://static1.squarespace.com/static/5acdc066c258b4bd2d15050b/t/5cb46ddc71c10b4ea8d91875/1555328487716/Infra+3.0+FINAL+Taskforce+Spring+Meetings+-+digital.pdf>)

²³ Partnership for Forests (2020), A sweet taste for forests (<https://partnerships-forforests.com/wp-content/uploads/2020/10/A-Sweet-Taste-for-Forests-2020-Web-version-final.pdf>)

²⁴ Partnership for Forests (2019), How coffee can save Ethiopia's forests (<https://partnershipsforforests.com/2019/01/29/how-coffee-can-save-ethiopia-forests/>)

collapsed in 2001²⁵. Community enterprises are established to serve local shared needs and address shared challenges. They have proven effective in a wide range of contexts, including urban community hubs and sustainable production enterprises. Community hubs in London are helping local people start communal enterprises and use the profits they generate to deliver positive impact in their neighbourhoods²⁶. In Sumatra, a socially inclusive rubber production enterprise is transforming a heavily degraded landscape through reforestation, which also has the advantage of producing sustainable rubber²⁷. Community models often lead to better stewardship of natural resources; one example is the Fish Forever program in the Philippines, which has grown fish populations in the fishing communities where it operates²⁸. Some investors are already recognising the benefits of community fisheries: the Meloy Fund for Sustainable Community Fisheries is an investment fund investing debt and equity into enterprises supporting sustainable fishery and coastal management. As well as having positive impact on fishing communities, it aims to improve management of 1.2 million hectares of coast²¹.

The role of private finance

Private investors often avoid greening portfolios, investing in opportunities like those highlighted above, stating that they have a duty to maximise short-term return for their shareholders rather than to contribute to societal goals more broadly. But whilst this argument has held up historically, the pandemic and triple planetary crisis have shown us that financial activity that is of detriment to society is also of detriment to its shareholders, and some investors are beginning to realise that the two are inextricably linked. As the pandemic began to grip the world in 2020, global capital markets went into freefall. But the most resilient stocks were those that were deemed more sustainable. It is not yet widely recognised that financial activity which serves the well-being of people – including the well-being of our planet – is what will ultimately drive sustainable returns for shareholders through providing long-term consistency and stability. And this is because private investors have evolved to take a short-term view, ignoring the con-

sequences of unsustainable investing on long-term value creation. What is needed is a **shift from short-termism to more long-term thinking**.

If there is anyone that the private finance community listens to, it is **Blackrock CEO Larry Fink**. In both this and last year's CEO Letter, he outlines that climate risk is investment risk and highlights how we have begun to see the direct financial impact as "energy companies take billions in climate-related write-downs on stranded assets and regulators focus on climate risk in the global financial system"²⁹.

Climate change is a global phenomenon, and the finance community are not immune to its impact. The sooner they act, the better off they are, and will be.

We have reached a point where mainstream portfolios are heavily exposed to the risk of a **sudden sentiment shift in the financial sector** – a sudden major change in asset values due to a change in perceived value, known as a Minsky moment. In this situation, climate risk becomes a major concern due to an unprecedented event forcing upon us the reality of the situation. This sentiment shift is likely to cause a crash of enormous proportions for companies that are not well-placed to fight the crisis, in turn damaging investor returns for those that have not considered the long-term impacts of climate change and shifted out of harmful investments. It is not only the fiduciary duty of investors to act now to protect client assets, but there is also a ripe opportunity for the finance sector to champion sustainability leadership and shift the entire economy in a safer direction which will best protect clients and also ripe opportunity.

There is cause for hope: investors have increasingly been pushing for better corporate disclosure and alignment with standards like the Taskforce for Climate-related Financial Disclosures (TCFD) or Sustainability Accounting Standards Board (SASB). With TCFD reporting becoming mandatory in the UK this year, other countries and regions are likely to follow suit, making ESG investing more available to the average investor. It has been found that around 60% of the world's 100 largest public companies support or report in line with the TCFD recommendations³⁰. More and more investors are also signing up to initiatives such as the Principles for Responsible Investment (PRI) – at present there are 3,575 signatories made up of asset owners, investment managers and service providers that all commit to integrating ESG considerations into investments. The PRI principles state that signatories must act in the long-term interests of beneficiaries and follow the ideology that ESG issues affect the performance of

²⁵ The Guardian (2016), Occupy Buenos Aires: the workers' movement that transformed a city, and inspired the world (<https://www.theguardian.com/cities/2016/mar/10/occupy-buenos-aires-argentina-workers-cooperative-movement>)

²⁶ Coin Street Community Builders (2021), (<https://coinstreet.org/>)

²⁷ Partnerships for Forests (2019), Enhancing livelihoods and supporting wildlife conservation through sustainable natural rubber production (<https://partnershipsforforests.com/partnerships-projects/enhancing-livelihoods-and-supporting-wildlife-conservation-through-sustainable-natural-rubber-production/>)

²⁸ Ocean Panel (2020), Ocean Solutions That Benefit People, Nature and the Economy (<https://www.oceanpanel.org/ocean-action/files/full-report-ocean-solutions-eng.pdf>)

²⁹ Black Rock (2021), Larry Fink's 2021 letter to CEOs (<https://www.blackrock.com/corporate/investor-relations/larry-fink-ceo-letter>)

³⁰ Allen and Overy (2021), Towards TCFD (<https://www.allenoverly.com/en-gb/global/news-and-insights/publications/towards-mandatory-tcfdd>)

investment portfolios. The sector has also been driving an increase in issuances of green bonds, sustainability-linked loans and other 'green' products. Sustainable bond issuance reached its highest level to date in 2020, and Moody's forecasts a huge increase of 32% on 2020 issuance in 2021³¹. And last but not at all least, private investors, including Blackrock, are setting net-zero targets and requiring investees to do the same³².

In November this year, parties to the UNFCCC will convene in Glasgow at COP26 to agree on new global climate targets. The crucial role of the financial system has been recognised: the **COP26 private finance workstream**, led by ex-Governor of the Bank of England (BoE), Mark Carney, aims to build a private finance system for reaching net zero by strengthening climate related reporting and risk management, helping investors align their portfolios with net zero, and mobilising private financial flows to emerging and developing economies – including to new market structures and models of value creation³³.

The role of central banks

Private investors have a crucial role in greening their portfolios through supporting innovative opportunities, but they are acting within a regulatory framework which incentivises concentrated profit maximisation and does not always recognise environmental risk. To understand how the transition towards redefining finance for natural resource management can happen, we need to look to **regulators of the whole financial system**. Thanks to their key roles in maintaining price stability and consumer confidence, and setting direction for private finance, central banks are uniquely positioned to facilitate this transition. Central banks are publicly owned institutions, whose mandates are set by their governments. So, in theory, they should reflect the long-term interests of the societies they serve. Central banks influence the economy in two major ways: monetary policy and financial regulation.

Monetary policy aims to control price stability, preventing massive inflation or deflation. This involves adjusting interest rates and buying and selling financial assets, like government bonds. Buying these assets to get more money into the economy is known as 'quantitative easing'³⁴. Interest rates have a huge direct impact on consumption: because raised interest rates lower the value of cash, they encour-

age consumers to spend on goods which will hold their value, rather than holding onto cash which will not. Ultimately, this is linked to increased natural resource use. Central banks' second major responsibility is **financial regulation**: micro-prudential, regulating individual financial institutions; and macroprudential, regulating the financial system as a whole. Macroprudential policy empowers central banks to maintain stability, preventing bubbles and economic shocks³⁴. Central banks have a crucial role in setting the direction for private finance, determining how markets act, forcing markets to recognise and respond to risks. Given the stability focus of central banks' main aims, financing sustainable natural resource use should be a primary objective: as discussed above, current unsustainable resource use is already causing huge instability, which will only grow in severity without systemic change.

Central banks have the **capacity to change their mandates** to cope with the most pressing challenges of the day. Some are now updating mandates to reflect central banks' role in combatting climate change and nature destruction. After WWII, the Bank of England (BoE) became directly involved in channelling funds to companies which found it difficult to raise funds externally (through vehicles such as the Financial Corporation for Industry). Encouragingly, governments are expanding central bank mandates to include supporting the transition to a net-zero economy. A 2020 analysis of 135 central bank mandates³⁵ found that only 12% operated under a mandate which explicitly referenced sustainability. However, there has been progress over the last year: the BoE expended its mandate in March 2021, and the European Central Bank (ECB) has drawn up an ambitious climate action plan to do the same³⁶. ECB now plans to include climate-change considerations into asset purchases and broader monetary policy: climate risk will now be considered in assessments of assets raised as collateral by applicants for Eurosystem credit; climate-relevant risks are also taken into account in the ECB's due diligence for corporate sector asset purchases and will disclose climate-related information of their corporate sector purchase programme (CSPP) by 2023³⁷.

³¹ Moody's (2021), Trends in sustainable bonds issuance and a look ahead to 2021 (<https://www.environmental-finance.com/content/the-green-bond-hub/trends-in-sustainable-bonds-issuance-and-a-look-ahead-to-2021.html>)

³² Blackrock (2021), Innovation on the road to net zero (<https://www.blackrock.com/uk/individual/about-us/road-to-net-zero>)

³³ Carney (2020), Building A Private Finance System For Net Zero: Priorities for private finance for COP26 (https://ukcop26.org/wp-content/uploads/2020/11/COP26-Private-Finance-Hub-Strategy_Nov-2020v4.1.pdf)

³⁴ New Economics Foundation (2017), Central Banks, Climate Change and the Transition to a Low-Carbon Economy (https://neweconomics.org/uploads/files/NEF_BRIEFING_CENTRAL-BANKS-CLIMATE_E.pdf)

³⁵ Dirkau and Volz (2020), Central Bank Mandates, Sustainability Objectives and the Promotion of Green Finance (<https://www.soas.ac.uk/economics/research/workingpapers/file145514.pdf>)

³⁶ ECB (2021) Press Release: ECB's Governing Council approves its new monetary policy strategy (<https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210708~dc78cc4b0d.en.html>)

³⁷ ECB (2021), The ECB's monetary policy strategy statement (https://www.ecb.europa.eu/home/search/review/html/ecb.strategyreview_monopol_strategy_statement.en.html)

This will represent a shift from its current bond purchases; a 2019 study found that 63% directly finance carbon-intensive sectors³⁸. Though it is an extremely encouraging signal, the ECB's climate action plan has received criticism for being too vague to effectively prevent financial flows to big fossil fuel users.

In addition, central banks have been conducting **research and analyses to better understand the climate risks commercial banks face**. For instance, more than 50 central banks have banded together to form the 'Network for Greening the Financial System' (NGFS), which recently published climate scenarios to stress test the system³⁹. Building on this, the ECB and French Central Bank jointly conducted another economy-wide stress test and concluded that "there are clear benefits in acting early. The short-term costs of the transition pale in comparison to the costs of unfettered climate change in the medium to long term". The BoE is also due to undertake a similar exercise, the results of which are due in May 2022.

The **topic of natural resource management** however is one that is not widely understood, and thus a key next step is in understanding nature-related physical, transition and liability risks. The Dasgupta Review and Cambridge Institute for Sustainability Leadership (CISL) Handbook for Nature-Related Financial Risks⁴⁰ have attempted to do this, as well as the Taskforce on Nature-Related Financial Disclosures (TNFD) which aims to help companies disclose these nature-related risks. The Dutch Central Bank was the first to highlight the loss of biodiversity as a material financial risk in 2020⁴¹. Norges Bank, the world's largest sovereign wealth fund, recently published its expectations of how companies it invests in should treat biodiversity and ecosystems: expectations include integrating nature-related risks into risk management, disclosing nature-related dependencies, and reporting associated metrics and targets⁴². All central banks must adopt this thinking going forward.

4. Next steps

According to the Dasgupta Review, our unsustainable engagement with Nature can be traced to institutional failure and the failure of contemporary economics to acknowledge that we are embedded within Nature, and not external to it. So, for the beginning, it would be good to acknowledge that we **humans are part of nature** and start behaving accordingly.

What would this mean in policy terms? Redefining consumption from owning to using, redefining production from mass sales to providing efficient functionalities, redefining core economic incentives such as taxation, subsidies, and public procurement. It would also mean making integrated well-being the objective across all policies, measuring sustainability with a lifecycle perspective, harmonising efforts across all policy areas, including defence, looking at innovation in categories of economic ecosystems that provide societal functions, rather than in categories of production sectors. And what would be the **next steps linked to financial sector?** To encourage central banks, and the governments who determine their mandates, to fundamentally embed action on sustainable natural resource use, we need to ask the right questions of their next steps. Their overall objective is economic and societal stability; given the triple planetary crisis, this must mean responding to climate change and nature destruction. For monetary policy, can central banks go beyond their current commitments to prioritise investment which stimulates sustainable resource use? On the financial regulation side, can central banks make it a mandatory requirement for all financial institutions to publish credible transition plans aligned with the Paris Agreement goals and planetary boundaries? Can emission heavy investments be defined as too risky to be viable?

On the private finance side, there is broad agreement on the next steps in the climate transition, but movement is still slow. Investors should be championing climate leadership by setting near and long-term environmental and social targets across all portfolios and ensuring that targets take into consideration natural resource management. We should also expect increased active engagement with transitioning investees rather than simple exclusionary tactics, and requirements on all investees to set net-zero targets and disclose against standards like the TCFD. Furthermore, investors should seek to participate in more blended finance transactions that de-risk typically risky clean infrastructure projects in order to directly support the net-zero shift as well as ramp up issuance of green bonds, sustainability-linked bonds and other green products. Finally, financiers must re-think the meaning of fiduciary duty, and whether they are fulfilling it with their current portfolios and investment

³⁸ Positive Money Europe and Veblen Institute (2019), Aligning Monetary Policy with the EU's Climate Targets (<http://www.positivemoney.eu/wp-content/uploads/2019/04/Aligning-Monetary-Policy-with-EU%E2%80%99s-Climate-Targets.pdf>)

³⁹ Network for Greening the Financial System (2021), NGFS Climate Scenarios for central banks and supervisors (https://www.ngfs.net/sites/default/files/medias/documents/ngfs_climate_scenarios_phase2_june2021.pdf)

⁴⁰ CISL (2021), Handbook for nature-related financial risks: key concepts and a framework for identification (<https://www.cisl.cam.ac.uk/resources/sustainable-finance-publications/handbook-nature-related-financial-risks>)

⁴¹ De Nederlandsche Bank (2020), Indebted to nature: Exploring biodiversity risks for the Dutch financial sector (<https://www.dnb.nl/media/4c3fqawd/indebted-to-nature.pdf>)

⁴² Norges Bank (2021), Expectations to Companies: Biodiversity and Ecosystems (<https://www.nbim.no/en/the-fund/responsible-investment/principles/expectations-to-companies/biodiversity-and-ecosystems/>)

strategies. With fiduciary duty comes fulsome risk analysis, which fundamentally demands taking a longer-term view. Deep changes in the **financial system** are needed. The financial system and the real economy are deeply connected, and dependent on one another. It is in the financial system's interests to operate in a manner which supports and protects our planet, while contributing to societal goals, ultimately supporting societal well-being and stability – which means ending support to unsustainable natural resource use. Real system change will require a broader conception of what value is. Mark Carney discusses this in his 2021 book 'Value(s)': he argues that market values, and an overreliance on market forces by governments and regulators, have led to a society that is unable to express what is really important to it. Carney suggests seven key values – solidarity, fairness, responsibility, reliance, sustainability, dynamism, and humility – which lead to three elements of a good society: fairness between generations, income distributions, and life chances. He argues that governments who most overlooked these values were the least prepared for Covid-19, and that they are making the same mistake with climate change⁴³.

But the **need for change is already being recognised** – as demonstrated by central banks updating their mandates, and the ECB publishing their climate action plan. What is needed now is greater precision from central bank strategies on how their action on the planetary crisis and its drivers can have maximum impact.

⁴³ Carney (2021), Value(s): Building a Better World for All (<https://www.waterstones.com/book/values/mark-carney/9780008421090>)

It all starts with understanding that for the first time in human history, we face the emergence of a single, tightly coupled **human social-ecological system of planetary scope**.

We are more interconnected and interdependent than ever, and our individual and collective responsibility has thus enormously increased. Sharing sovereignty, which means cooperating more, joining our forces, is the best and only way to manage our collective future.

There is already a high level of agreement that a transition to a more sustainable society and economy has no reasonable alternative, but ultimately, it will be about the **speed and scale of the transition**. It will be about addressing the drivers and pressures that cause the challenges we are facing, about providing systemic perspective to guide decision-making, and about channelling sufficient investments aligned with recovery needs to support that transition.

To remain credible, countries with the highest consumption footprint and most trespassing planetary boundaries, Europe included, must lead by example. We are in a race against time, and we must prove that we are as intelligent as we claim.

In this transition, the financial sector plays a central role. We should all understand that only together can we provide effective answers to the many challenges we are collectively facing. If the financial sector were to follow only attractive short-term interests without contributing to public needs and a sustainable future, it would be in the very words of the famous Finnish writer Arto Paasilinna: A Charming Mass Suicide.

Bringing life to value, or how banks and ESG can make the difference in the post-pandemic economy

*Laurent Mortreuil and Ines Mortreuil Rogic**

The current crisis (health, environment) questions the foundations of the 'liberal capitalist' economy in which the banks are perceived as the main actors. The pandemic is a tragedy for the victims and must lead to an opportunity for the advent of new corporate governance and a more sustainable economy: the search for the common good in the company, the systematic application of the principle of subsidiarity, the concern of solidarity. In this article, we will address the role banks play in making value(s) alive in the long run. Think and act approach, balancing strategy and operations, need appropriate performance indicators so that the 'banking for Good' mindset, in response to the ESG framework and post-pandemic expectations, may bear abundant and healthy fruit. In that purpose, we will look at the very core of the economy and address several strategic issues for business development such as performance management, organisational design and culture, thus putting an emphasis on social and governance pillars as they support day-to-day business operations.

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Let us start with the long-term ownership mindset. This is how we would sum up the common feature of banks and ESG. This is also what many initiatives imply when they invite to think about the 'post-COVID era'. For the last two years, this aspiration to build "a better world" has been reflected in an interesting amalgamation: the post-COVID era seems inseparable from ESG orientations. Not surprisingly, banks naturally fit this orientation: for 4000 years, banking practices – from their beginnings to the modern conception of the banking profession - have accompanied and made happen the evolution of society and the development of economies.

Throughout the history of mankind, production, acquisition and exchange of goods and services have been affirming their intrinsic or created value (from the Latin 'valere' as 'merit, courage, virtue'). So here we are at the heart of the economy, the definition of which can be based on this simple question: **how do people interact with value?** In this sense, the ESG framework can be considered as an instrument helping evaluate choices and prioritize actions with a view to a result, for the common good.

Whether we call them strategic or humanist, the ambitions of sustainable development reflect the awareness specific to human beings made for relationships: people can successfully meet the challenges of post pandemic reconstruction only by joining efforts.

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We think in terms of generations before and after us, as we are being a part of a shared story. In parallel, we think and see the world through the lenses of values. Indeed, the intelligence and the free will with which human beings are endowed allow us to make choices for our survival: a person attributes value to what exists and therefore evaluates, values, and compares. Finally, one decides, consciously or unconsciously, on the basis of a certain grid of values and personal criteria as one's indicators for a choice such as ethical (good and bad), cognitive (knowledge and know-how), material (needs and resources), emotional (attachments), psychological (motivations), aesthetic (through the senses) or cultural (norms and traditions).

The analysis of the etymological meaning of economics (Greek 'oekonomia'), leads us to retain expressions like 'household management', 'the law of the house' or 'house building'. In terms of the environmental set of values in the ESG scope, one would consider the planet Earth as being this 'household', « our common home » that we need to manage and take care of. In terms of Social, this 'house building' would concern the well-being and talent management of our people firmwide, but also the support to community facilities neighbouring our business or the resources we provide for improvement of health and education in remote areas, etc. The Governance criteria would find itself reflecting the « law of the house », where one would value ethical behaviour and exemplarity in doing business, among dozens of other examples.

We will note, however, that each of these dimensions will necessarily meet objective requirements (common to all) and introduce subjective values (specific to the person and / or organization), the whole containing the global economic construct. Being aware of that complexity helps recognize **the most valuable contribution of the ESG framework: broadening of the systemic mindset throughout the business.**

Economy obeys rules and regulations and can be seen through the experience and interpretation of those rules and regulations. In doing so, it is based on two dynamics: the relationship (human) and the transaction (material). Each of these dynamics is associated in a particular way with time: the relationship is turned towards the future and the construction (echoing a human desire to act for a better world); the transaction is one-off and, being limited in time, quickly turns into the past as a fact, easily called a statistic (in need of evaluating the action and its fruits).¹

¹ The dynamics behind financial relationship and financial transaction have been thoroughly analyzed by Prof. Paul H. Dembinski. Dembinski, PH 2009, 'Finance: Servant or Deceiver? Financialisation at the Crossroad', Palgrave Macmillan, London.

Banks integrate all these economic principles and contribute to the creation of value simultaneously through regulation and its interpretation, relationship and transaction. This is the very core of their operational model, and the heart of their service to the global economy through their customers. Banks help their clients analyse the past and envision the future, assessing the feasibility of the path and / or choosing the best option to create the greatest possible value for all.

ESG and the pitfall of the "E"

ESG is not meant to be reduced to counting sheets of recycled paper or solely to calculating the carbon footprint. No bank will mark its competitiveness because of a "greener" back office. However, the "E" dimension seems the most obvious, the most widespread and the most measured, but also the most communicated as it joins the image of the brand, to the point of sanctioning it publicly as harmful or hoisting it on the podium of companies that care about the continuity of humanity. This "E" prism attracts, challenges and motivates, just as it pressurizes and anguishes.

Indeed, if excluded from the broader ESG framework, these environmental indicators can produce the opposite effect of the desirable value – being separated from the business, from the very core of the banking profession and the intrinsic value of the company, they quickly turn into a pricy investment, more of a liability than an asset on the company's balance sheet and of limited or no value in the local and global economy.

The good news is that banks know how to count, and their business makes them particularly sensitive to performance, real or potential. Still, they remain as exposed and challenged as any other organization in the shaping of their own organization and their process to achieve greater value creation.

Therefore, it is essential to address the entire scope of the organization and the purpose of its mission for the economy in general while examining what is at stake for banks in the application of global ESG ambitions.

The "S" and the "G": guiding successful change in business relationships

There is no growth without innovation. Under different terms - transformation, change, redesign - organizations undertake what they believe is necessary to accomplish their mission. This is the healthy mechanism of creating value.

However, among thousands of changes that are undertaken in the world every day, one can easily affirm that not all of them provide (expected) value. In many cases, instead of

creating it, actions taken reduce or even destroy existing value. And in most cases, no change is made, despite the investment (expense) incurred. This reflection brings out what seems a legitimate question: **How can we be sure that, at the end of the day, the change we undertake will produce the desirable value for common good?**

In one of their articles, McKinsey & Company report a startling finding: in only 21% of 1 311 organisational redesigns observed, leaders reported complete successful change, meaning they met objectives and improved performance.² The most significant improvement, the article reports, is observed on performance management (47%), business processes (45%), roles (44%), governance (39%), culture (36%) and management process (36%).

Wanting to change without knowing why, what, and how to do it offers a poor perspective. From our experience, a solid step towards a fruitful change is a step back from a day-to-day routine in order to shine a new, comprehensive light on current processes and culture as well as on specific competitive resources and market opportunities. Being aware of the organizational identity and of its specific business performance signature, reveals the company's value as a resource that leaders, teams, investors, and customers can build upon.

Those components fit with the ESGs Social and Governance ambitions. In fact, those two dimensions carry the essence of the business differentiation, as they work their way through strategy, diversity, and culture.

When speaking about culture, one should keep in mind that culture is not an instrument or a tool for managers, nor it is a material for a colourful communication support for CEOs. Rather, it is that something – carrying specific set of values and behaviours – that emerges when two, three or more people get together, for a specific reason. It is at the same time solid and flexible, structured and capable of adjustments. And because the culture is so strongly connected to what the organisation does and goes through, it should be reflected in the performance management indicators and inform strategic decisions.

The collapse of Lehman Brothers is a tragic but very instructive case to show how far a culture can go as it was altogether the force behind the overall success and the force that buried the downfall of the bank. The values carried by the Lehman Brothers' culture – meritocracy, excellence,

elitism, competition – were the same at all levels of the organization as executives, middle management, rank and file sought solutions to the crisis, all of them according to their own priorities. The "how" we will solve the problem was never discussed; the "why" we will succeed – because we are the best – was their leitmotif. The very absence of the thought of the fall dragged it on. "Too big to fail" has not even been on people's minds.³

On the other side of the scope, we could stand out Starbucks as the company promotes the culture "of warmth and belonging, where everyone is welcome".⁴ This competitive advantage of the famous coffee brand allowed its skyrocketed expansion on the Chinese market after a few years of a very poor start. The change came when the management decided to offer healthcare to their employees' parents, thus allowing the culture to express through results in a consistent way.

Through the lenses of culture and its impact on performance, the two examples above make us witness the reciprocity at work between the inside and the outside of the company. The quality of the relationships among hierarchy and teams is closely related to the quality of a company's relationship with the customer since culture tends to consistency and makes behaviours reflect its underlying values.

The ESG framework make us push this "symmetry of attention" further and make it relevant for the entire stakeholders' ecosystem of the company. Would it be concerning people, customers, investors, administrators, regulators, competitors or non for profit, all relationships as well as transactions – in other words, managed performance – take their roots in culture.

This is where the responsibility and the accountability take centre stage. As culture is expressed through actions, it means that at one point one decides about what has value, and that decision makes one accountable and responsible for the results that will follow action.

So, when we decide to adopt or to foster the long-term ownership mindset, being determined to act in an ESG compatible manner, we necessarily need to think about what culture and what performance indicators will make our strategy produce valuable results for common good, that is for every stakeholder separately and for all stakeholders as a community, simultaneously.

² McKinsey and Company (2014), 'The secrets of successful organizational redesigns: McKinsey Global Survey results', July 1. Available at: <https://www.mckinsey.com/business-functions/organization/our-insights/the-secrets-of-successful-organizational-redesigns-mckinsey-global-survey-results> (Accessed: 30 August 2021).

³ Burr, WH (2020), 'Laissez Fairy Tales: Consensus, Cohesion, and Corporate Culture During the Collapse of Lehman Brothers', Loyola University Chicago. Available at: https://ecommons.luc.edu/cgi/viewcontent.cgi?article=4774&context=luc_diss (Accessed: 10 September 2021)

⁴ Starbucks (2021) Culture and values. Available at: <https://www.starbucks.com/careers/working-at-starbucks/culture-and-values> (Accessed: 10 September 2021)

The implementation of ESG for banks: setting priorities for business performance

As strategy is inseparable from performance, which in turn is inseparable from its measurement, determining the right indicators for the activity leads to ensuring its differentiation and its competitive advantage, for sustainable and responsible construction vis-à-vis all stakeholders.

To define, or confirm, appropriate performance indicators, we should go back to value and ask ourselves a few questions: How do we define value? What has value? How do we create and bring value inside and outside the company? What makes the company realize its competitive advantage by creating this value? And is everything of value (equally) important?

This purpose-related inquiry is close to a bank's way of doing business and serving customers, since banks evaluate investments and financial capacities on daily basis while obeying rules and regulations. Those strengths that underly the very expertise of the banking profession place banks among the most natural and impactful relays for the ESG scheme.

Next to the definition of value and the translation of the company's purpose into actions that should meet the 'E', the 'S' and the 'G', stand relevant performance indicators that guarantee the value we have set forth. In the previously mentioned McKinsey & Company study, 9% of all respondents worldwide reported that change and redesign efforts "did not meet objectives and/or hurt performance".

Similarly, in our experience, we frequently observe the gap between the ideal that executives wish to attain and the management and business process in place and/or the management preparedness to go for that ideal. The priorities are not straight, or everything seem like a priority in an organization where the purpose of the company – the "why?" behind the business – is not nested in the organizational design. That brings around tensions and burn outs as well as an unclear view of where the company is heading to. In turn, performance management does not work with adequate numbers, the ratios go all wrong and the growing opportunity could look either too optimistic or be hidden among indicators that do not tell the real story. As a consequence, teams are not sized appropriately, a company loses market shares, a fund depends heavily on business angels and public investors without creating any value for the beneficiaries, executives miss ideas and opportunities for building more integrated value chains, or they close their business since they were not equipped to anticipate rapid economic shifts.

The challenge with implementing the ESG framework, for banks and beyond, could be compared to the 'best-in-class' behaviour, meaning doing everything right, throughout all existing criteria, ideally at all levels of requirements and simultaneously. While the ambition for common good is a virtue, it cannot get traction in bringing that ideal to life if it does not consider the good of the company as the first one to serve. Missing that target changes the focus for all other aims in the company's ecosystem.

The remedies for that could be found in setting priorities in a clear but humble way. The priorities in implementing ESG must be aligned to the company's own definition of value, for inside and outside stakeholders, and be consistent with the company's business and strategy. In a nutshell: the first mission of any organization is to do well their job; the mission of a bank is to do banking! Thus, with the executive sponsorship and management buy-in, and supported through an efficient performance measurement system, the creative energy is concentrated on three to five priorities that, in turn, progressively redesign the organization and improve overall business performance.



Quentin Matsys (1456/1466–1530) «The Moneylender and his Wife»

In conclusion: banks play a significant role in shaping the future

With the rising and broadening consciousness about the positive effects of sustainable development, especially with millennials among their employees, customers, investors, competitors and regulators, banks have an amazing opportunity to share their expertise when it comes to defining performance and building strategic roadmaps, allowing for ideas they examine to become an economic reality. The ESG framework promotes that opportunity in a systemic way, allowing banks to explore innovative approaches to redesign their organisations for a long-term positive impact. Your organisation will make a difference by the way its purpose comes alive and is cultivated in your people's behaviour, and by the manner in which your way of doing business is actually perceived by all stakeholders.