



FRANCE

SELECTED ISSUES

January 2021

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European Department

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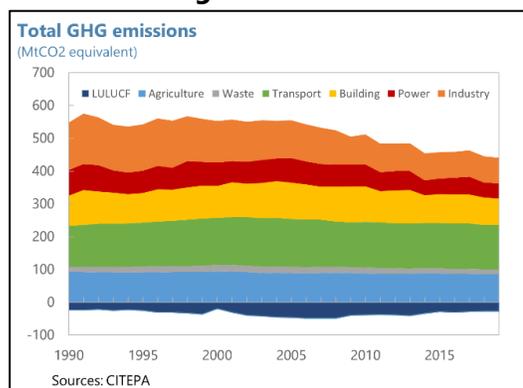
CLIMATE MITIGATION POLICIES IN FRANCE¹

France is an advocate for global action on climate change policies. It has made important strides in reducing greenhouse gas (GHG) emissions in the context of EU-wide policies. However, emission reduction at the national level has been uneven and existing policies are expected to fall short of what is needed to attain ambitious targets, especially in the transport and building sectors. Measures in the Plan de Relance will contribute toward reducing emissions whilst newly established green budgeting can be an important step toward climate-conscious decision making. To accelerate emission reductions and transition to a more sustainable growth model, France could further optimize tax and subsidy structures and increase carbon prices over the medium-term—an important element to ensuring efficient reduction in GHG emissions across the economy. Parallel efforts at European and global levels could complement and amplify the effectiveness of these policies.

A. Introduction

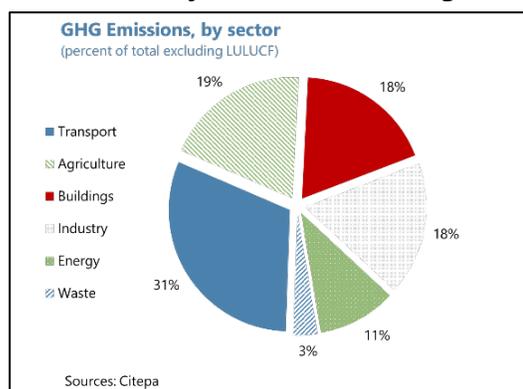
1. France is the second largest GHG emitter in the EU but belongs to the low emitters when measured relative to output.

Together with most large advanced economies, France is one of the twenty biggest GHG contributors worldwide. However, the high absolute GHG emissions are largely due to its size and level of income. Controlling for these, France is a low emission country. The low-emission intensity is to a large extent explained by the higher share of nuclear power in energy generation. Compared to the EU average, France's GHG emission contribution is higher from agriculture, buildings, and transport, but lower from energy.



2. Through national legislation, France enshrined ambitious objectives for reducing GHG emissions to reach carbon neutrality by 2050.

France is signatory to various multinational climate agreements (e.g. Paris agreement 2015, UN Sustainable development goals on affordable and clean energy, Europe 2020 and 2030 strategy). The latest agreement, the EU Green Deal pledges to reduce EU greenhouse gases even faster (55% below 1990



¹ Prepared by Sebastian Weber (EUR). This annex draws in part on analysis published in two EUR Departmental Papers ([Sectoral Policies for Climate Change Mitigation in the EU](#) and [EU Climate Mitigation Policy](#)).

levels by 2030). Through national laws² France committed to GHG emission targets equal or in excess to its international commitments (see text table).

B. Targets and Emissions Reduction Progress

3. France operationalizes its emission objectives by setting sectoral multi-year emission targets. Climate related objectives are broken down into specific sector targets set on a 5-year cycle through the National Low-Carbon Strategy (SNBC) and the Multiannual Energy Program (PPE). The first SNBC was passed in 2015 and the PPE in 2016. The targets of the first SNBC have not been met and have been revised up in the second SNBC in 2019 (adopted in 2020), especially for transport and building-related emissions (see Figure 1). The aim is to reduce emissions by 30 percent in the transport sector, 49 percent in the building sector and 18 percent in the agricultural sector between 2015 and 2030.

4. As in other EU countries, France follows a two-pronged approach for achieving its targets. The main tool for meeting emissions targets in the power and industry sector is the EU-wide Emission Trading System (ETS). Non-ETS sectors (transport, building, agriculture, waste and smaller manufacturing industries) are covered under the European Effort Sharing Regulation, which assigns country-specific emission targets for the non-ETS sectors. Currently, France is required to reduce emissions in the non-ETS sectors by 37 percent in 2030 relative to 2005.³ The main policy tools to encourage attainment of this target include environmental taxes and subsidies, standards and regulations, and direct government investment.

5. Emissions are on track to meet 2020 commitments, but additional efforts will be needed to achieve new 2030 targets and carbon neutrality by 2050. The High Council on Climate (HCC)⁴ concluded that France has failed to meet its 2015 and 2018 targets in several sectors, including transportation, housing and agriculture. Furthermore, according to the last HCC report, and an EC (2020) study, under existing policies, France's efforts fall short of what is needed to

Emission targets	
Reduce by 40% GHG (rel. to 1990 level)	Be net emission neutral by 2050.
Efficiency and demand targets	Cleaner energy targets
Increase by 32.5% energy efficiency	Reduce by 40% the consumption of energy from fossil fuels
Improve buildings efficiency (e.g. State sector – reduce energy consumption by at least 40% by 2020 and their GHG emissions by 50%)	Increase renewable energy usage to 32% (23% by 2020) in the overall energy mix and 40% in the production
Reduce by 20% energy consumption and half it by 2050 relative to 2012	No licenses for fossil fuel extraction and end to all existing concession by latest 2040.
	End sales of thermal vehicles for cars and light commercial vehicles by 2040
Note: Targets for 2030 unless noted otherwise.	

Policy Measures	Example
Environmental tax	Carbon tax set up by the Finance Law 2014
Subsidies and public aid for the low-carbon transition	Fiscal incentives to move to renewable energy and renovate houses energy efficiently.
Standards and regulations	Minimum heating efficiency requirements for public and social housing.
Direct government investment	Public transport infrastructure and support to develop recharge points for electric cars.

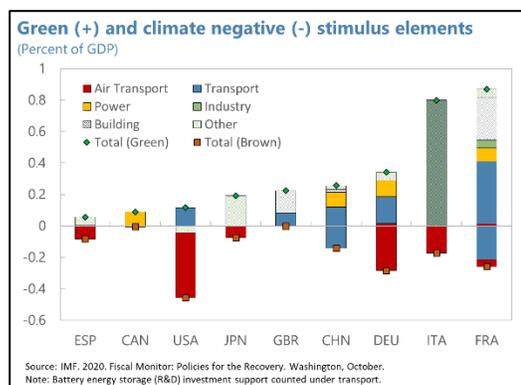
² E.g., *loi pour la transition énergétique pour la croissance verte and loi sur la sortie progressive de la production d'hydrocarbures sur le territoire français à l'horizon 2040*. France's advocacy for action on climate change is also reflected by Banque de France's function as the secretary of a central bank "Network for Greening the Financial System".

³ This target will be updated once there is agreement at the EU level on the new EU Green deal targets.

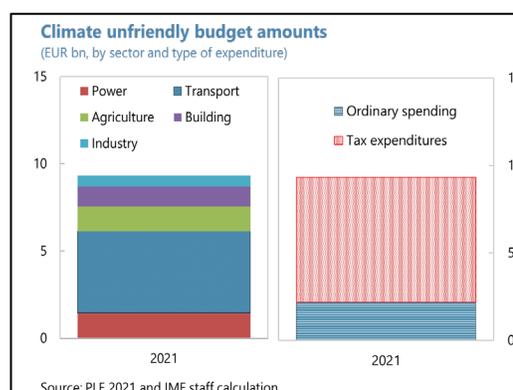
⁴ The HCC is an independent body tasked with issuing recommendations to the Government on the implementation of policies to reduce France's GHG emissions in keeping with its pledges, and publishes annual reports analyzing whether the country is on track.

achieve its emission goals.⁵ Preliminary estimates suggest that the COVID crisis and related reduction in economic activity could contribute to a drop in GHG emission by about 9 percent relative to 2019 (two-thirds of which from lower transport emissions). However, this decline is expected to be temporary and reverse in part.⁶

6. Measures in the recovery plan contribute toward closing the gap. About one-third of the funds committed in the *Plan de Relance* is destined for the green transition. The amounts go primarily to the sectors with the highest emissions: transport and buildings. Funds for the green transition in the agriculture sector are limited. With this recovery stimulus, France leads globally in terms of greenness of the fiscal package in response to the COVID-19 crisis (see IMF Fiscal Monitor 2020, Box 1.2), to a large extent ensuring that the crisis is not a lost opportunity.



7. The first green budget provides the foundation toward continued environmental-conscious fiscal policymaking going forward. In its now mandatory annual green budget exercise, the government has quantified that its 2021 budget provides EUR 38bn in environmentally friendly measures, EUR 5bn of mixed character, and 10bn that are detrimental to the environment (compared to EUR 30bn, EUR 5bn and EUR 11bn in 2020, respectively). The difference is largely explained by the green spending under the recovery plan and a downward revision of tax expenditures for environmentally unfriendly measures. The government estimates the environmentally friendly measures of the *Plan de Relance* will reduce emissions on a cumulative basis by almost 30MtCO₂eq by 2030 (close to 1 percentage point lower).

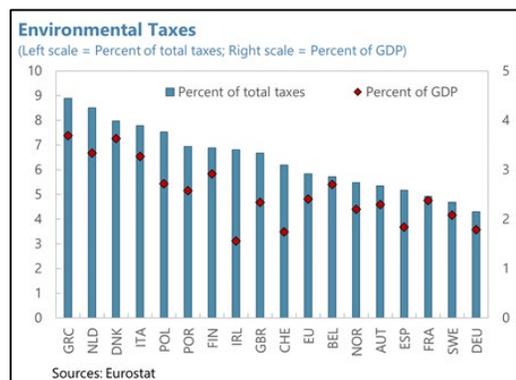


⁵ EC (2020) considers under existing policies that France would be 11 percent above the non-ETS sector target by 2030; the HCC (2020) concludes that the “newly published SNBC presents increased carbon budgets compared to the previous version of the strategy, confirming a reduction in short-term climate ambition, and fails to shed light on the policy instruments necessary to implement its objectives and targets.” See also IMF (2019).

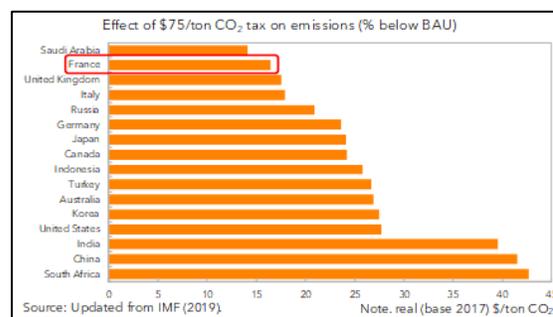
⁶ The level of GDP is projected to be lower in 2030 compared to pre-COVID estimates, which will imply lower emissions. In addition, some of the structural shift that has reduced emissions (e.g., remote working) may continue to reduce emissions lastingly. However, uncertainty around these effects is large.

C. Policy Considerations

8. Robust environmental taxation should be a key plank of the climate mitigation strategy. France raised less than 2½ percent of GDP in fiscal revenues through environmental taxes, corresponding to about 5 percent of total tax revenues in 2018. Despite multiple taxes, this is low by international comparison and changed little over the last 20 years. According to the *Conseil des Prélèvements Obligatoires* (2019), taxation on petrol has increased less than purchasing power historically and energy taxes as a fraction of the overall petrol price have declined over time from 80 percent in 1995 to 63 percent in 2018, of which only 8 percent are accounted for by the carbon-tax component. Furthermore, carbon taxation varies significantly across sectors: The effective carbon tax cost on transport is estimated to be four times higher than in the service sector, nine times higher compared to industry, and 15 times higher compared to agriculture.⁷



9. Once the economic recovery is on firm ground, a more comprehensive carbon pricing policy could ensure efficient emission reduction across the economy. Since 2015 there has been some increase in environmental taxation, including through the carbon component targeted at sectors lagging in emissions reduction: transport and building. However, plans for further increases were suspended after the “yellow-vest” protests in 2018.⁸



The lack of alternative measures of similar breadth and efficiency put more weight on second-best options. Increasing carbon prices to €65 (\$75) per ton (lower than what was initially foreseen for 2020) could raise revenues from carbon taxation to 0.7 percent of GDP in 2030. The economic efficiency costs are estimated to be minimal (0.08 percent of GDP in 2030) and more than offset by domestic environmental benefits, including reductions in deaths related to local air pollution. However, reaching emission targets by only relying on carbon taxation would require an unprecedented—and likely politically infeasible— increase in the carbon tax given its limited coverage and the importance of atomic energy in France. In this respect, a further alignment of prices by phasing out subsidies and tax expenditures to brown energy sources (e.g., for fuels used in agriculture and forestry, in road and non-road sectors; see also Figure 2) would further help adequately reflect emission costs.

⁷ Higher taxation – in addition to carbon taxation - of transport is warranted because transport has environmental externalities not present in all other sectors (e.g., local pollution, congestion, accidents).

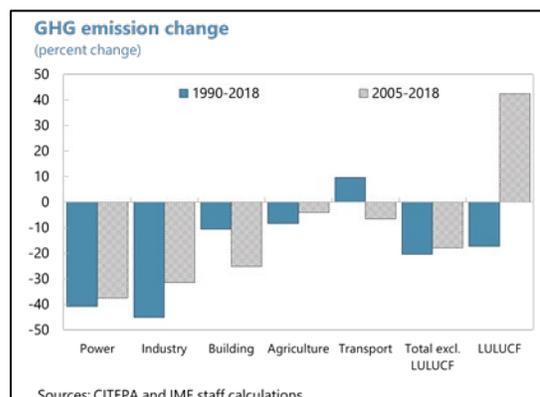
⁸ The domestic carbon tax on transport and building fuels is frozen at €45 (\$53) per ton.

10. Additional revenues should be used to cushion the impact on the most vulnerable.

Higher carbon taxation has been shown to disproportionately affect low income households and have other distributional consequences (e.g. rural versus urban households).⁹ Resuming the carbon price increase over the medium-term should thus be accompanied by measures addressing its regressive effects and providing assistance to the most vulnerable households affected. Complementary policies at the EU level would buttress France's efforts to ensure a level playing field.

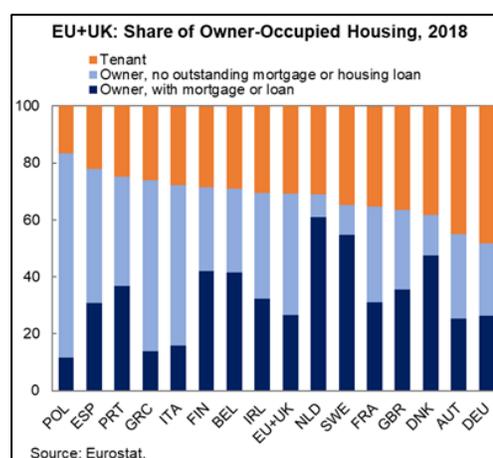
11. These policies could complement improved incentives to transition faster to alternative fuel vehicles.

Transport is the only sector that witnessed an emission increase over the last three decades. To turn this trend more quickly, the government aims at increasing electromobility substantially, with 35 percent of new vehicles in 2030 projected to be electric vehicles, while aiming for full zero emissions vehicle sales by 2040 (EC 2020). A crucial tool to shift demand to cleaner vehicles is the feebate system, which taxes polluting and subsidizes zero-emission cars at purchase. The recovery plan increased existing fiscal incentives for cleaner cars further. This has helped increase the share of electric vehicle (EV) purchases in total purchases from 5 percent in 2019 to about [10] percent in the first eight months of 2020. This is still well below rates attained in Nordic countries and the Netherlands and the share of EVs in the total existing fleet is still less than 1 percent. Hence, current policies may prove insufficient to reach the target at the given replacement speed of old cars. Additional impetus could be provided by integrating a revenue-neutral feebate into vehicle excises, which would provide continuous incentives for clean vehicles with no fiscal cost or tax burden on the average motorist. Investment into the charging stations could also help overcome concerns about road network coverage (see Figure 3).



12. Additional policies for bolstering effective residential renovations could be explored.

The initial emission-reduction targets of the first SNBC were not met (see Figure 1). While some progress has been made in reducing GHG emissions in the building sector, the potential for further emission reductions through renovation and retrofitting remains significant (see Figure 4). Achieving this will require large-scale investment efforts. The *Plan de Relance* includes funds to improve energy efficiency of public buildings (EUR 4bn) and an increased envelope devoted to supporting private residential building renovations (EUR 2bn). While an important step, continued resource allocation in future years will be needed given identified



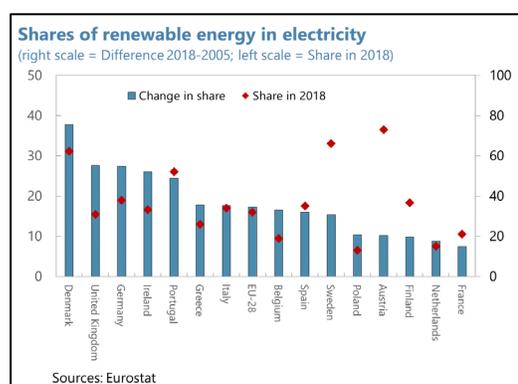
⁹ See *Conseil des Prélèvements Obligatoires* (2019), HCC (2020) and IMF (2020).

financing needs to upscale the existing housing stock to energy efficient housing and ensure electrification in line with the governments' goal to end coal and oil heating by 2028. Priority should be given to deep retrofitting for buildings with the lowest energy performance where the return to investment is largest. To accommodate the process, there is a need to develop a market for deep retrofits that includes advice, monitoring, financing, auditing, and investment in human capital. On-bill financing of energy efficiency investments and revenue-neutral energy-dependent housing taxation could further help address renter-owner obstacles to emission-reducing renovation investments.

13. In the medium term, further consideration could be given to how the agricultural sector can contribute to achieve the net zero emission goal. France is the country with the largest emissions from agriculture in the EU. Emissions in the sector have declined by less than 10 percent since 1990. Its relative emission intensity per value added (measured by the ratio of the sectors share in total emission to the sector's share in value added in the economy) is among the highest globally and has increased since 2005. Almost half of the emissions in the agricultural sector derive from livestock and about 10 percent from fuel usage. While the *Plan de Relance* includes measures to encourage a shift to less emission intensive activities (and support for re-forestation), additional measures could be taken to reduce emission from livestock, including by demand management, eliminating fuel-related tax expenditures and providing fiscal incentives (e.g., subsidize output in lower emission farms with tax revenues levied on emission intensive farms). Going forward, considerations on further incentivizing carbon sinks may become relevant.

14. Increasing renewable energy usage will help underpin the green transition. Despite important progress and meeting emission reduction targets in the power sector, France will likely not attain its 2020 target of increasing renewable energy consumption to 23 percent (and 32 percent in 2030). Following an increase by some 8 percentage points since 2005, France stood at 17 percent in 2018, at the low end compared to peers. In order to make net carbon neutrality compatible with the stated ambition to reduce reliance

on atomic energy, an accelerated adoption of renewable energy production is needed. It is uncertain whether the financial support provided in the *Plan de Relance* for the development of green hydrogen will contribute significantly to this end given the early stage of this technology. Additional policies may be needed. A complimentary policy is a surcharge on power (and industry) emissions such that the combined price with the EU ETS reaches a level consistent with the targeted economy-wide price of carbon (e.g., at least €65 per ton by 2030). This would provide additional incentives to help ensure that reduced reliance on atomic energy would go along with increased renewable power generation.



References

Conseil des Prélèvements Obligatoires (2019), La fiscalité environnementale au défi de l'urgence climatique.

EC (2020) Assessment of the final national energy and climate plan of France

HCC (2019) Agir en cohérence avec les ambitions, Rapport Annuel June 2019

HCC (2020) Redresser le cap, relancer la transition, Rapport Annuel July 2020

IMF (2019). Fiscal Monitor: How to Mitigate Climate Change. Washington, October 2019.

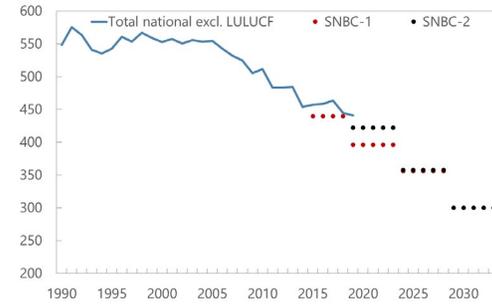
IMF (2020) EU Climate Mitigation Policies. Washington, September 2020.

IMF (2020) Mitigating Climate Change, WEO Chapter 3, Washington, October 2020.

Figure 1. Emissions and Targets

Total GHG emissions and targets

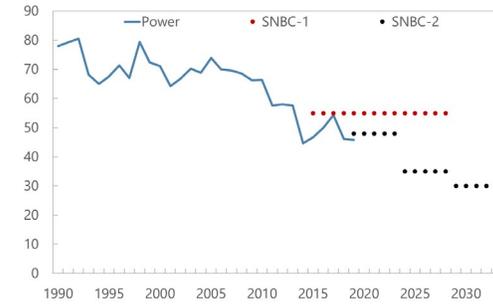
(MtCO₂ equivalent)



Sources: CITEPA

Power GHG emissions and targets

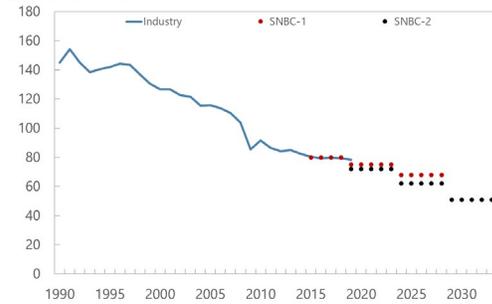
(MtCO₂ equivalent)



Sources: CITEPA

Industry GHG emissions and targets

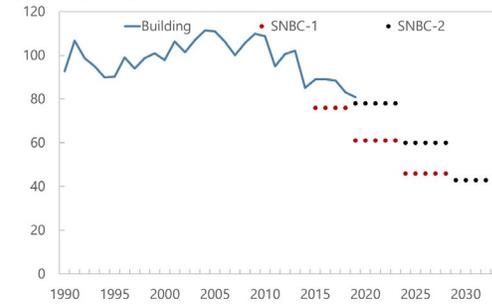
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Sources: CITEPA

Building GHG emissions and targets

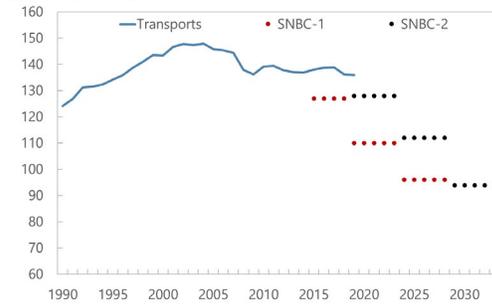
(MtCO₂ equivalent)



Sources: CITEPA

Transport GHG emissions and targets

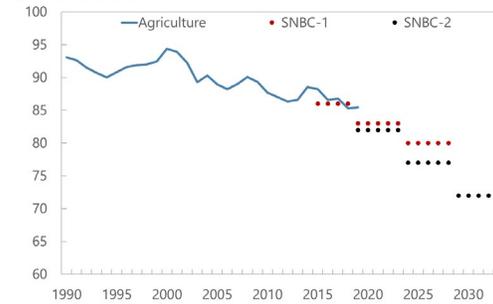
(MtCO₂ equivalent)



Sources: CITEPA

Agriculture GHG emissions and targets

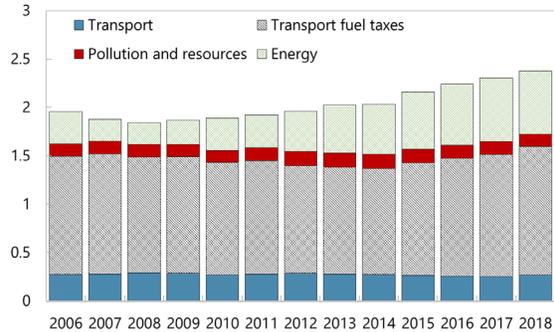
(MtCO₂ equivalent)



Sources: CITEPA

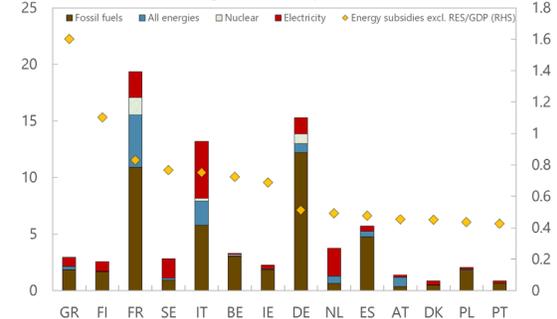
Figure 2. Environmental Taxes and Subsidies

Environmental taxes
(percent of GDP)



Sources: Eurostat and IMF staff

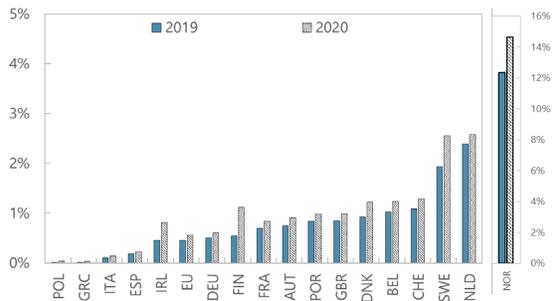
Fossil fuel and other energy subsidies in 2018
(Left scale = EUR bn; right scale = percent of GDP)



Sources: EC (2020) report on the State of the Energy Union

Figure 3. Transport

Zero and low emission car adoption
(percent in total fleet, 2020 data up to August)



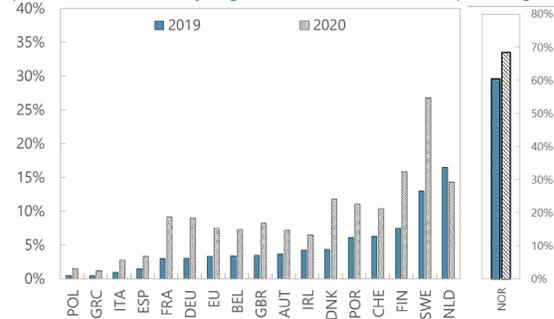
Sources: European Alternative Fuels Observatory

Fast public charging points
(per 100 km highway, 2020 data up to August)



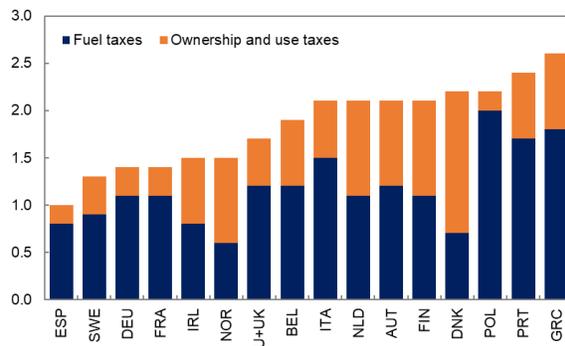
Sources: European Alternative Fuels Observatory

Newly registered zero and low emission cars
(percent of total newly registered cars, 2020 data up to August)



Sources: European Alternative Fuels Observatory

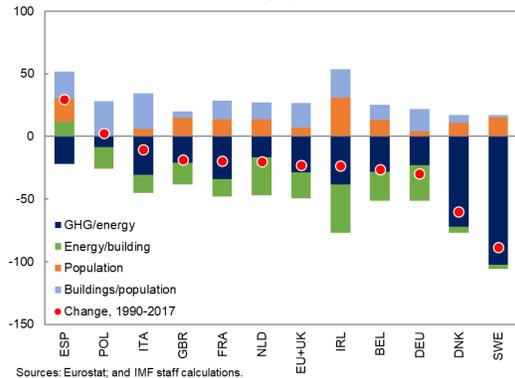
Fiscal Revenues from Road Transport, 2017
(Percent of GDP)



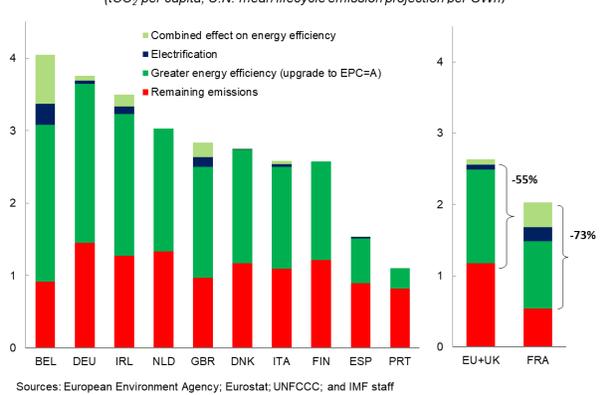
Sources: Eurostat; DG MOVE 2019; and IMF staff calculations.

Figure 4. Buildings

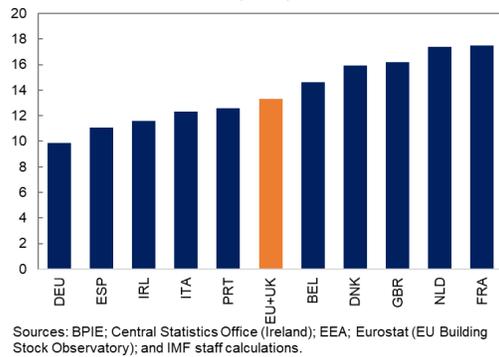
EU+UK: Decomposition of GHG Emissions in Residential Housing (Percentage points)



EU+UK: Potential Emission Reduction from Renovation/Retrofitting (EPC=A) and Electrification (tCO₂ per capita, U.N. mean lifecycle emission projection per GWh)



EU+UK: Amortization Time of Investment in Renovation/Retrofit (EPC=A) (Years)



EU+UK: Total Investment Needs for Retrofitting and Electrification (Percent of GDP)

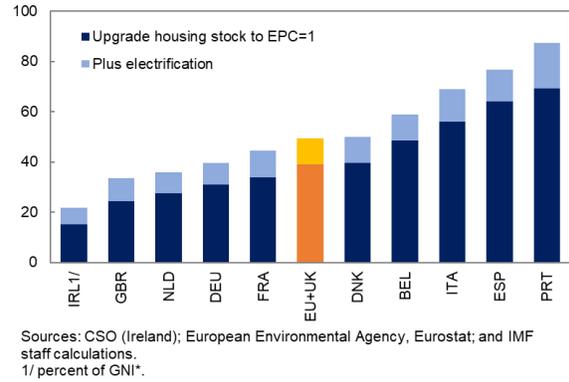
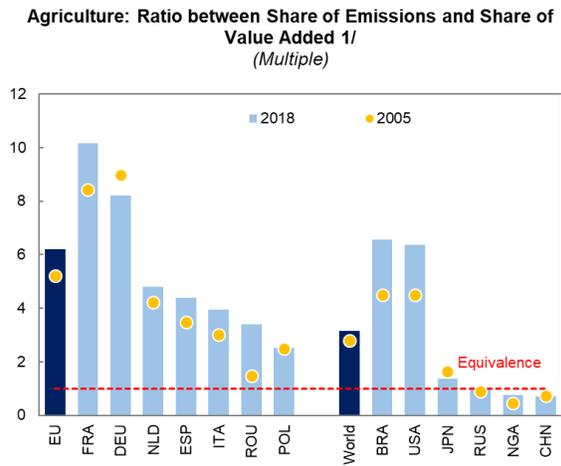
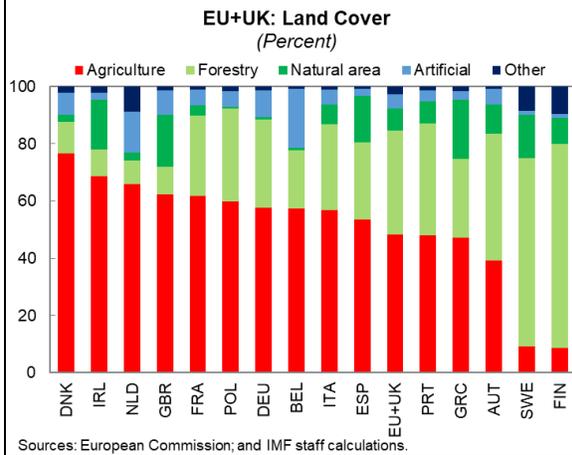
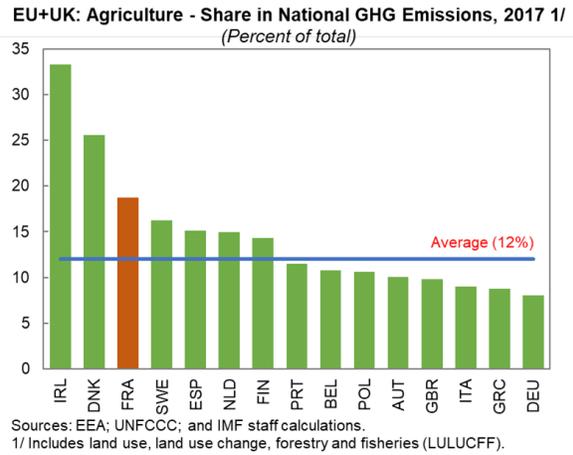
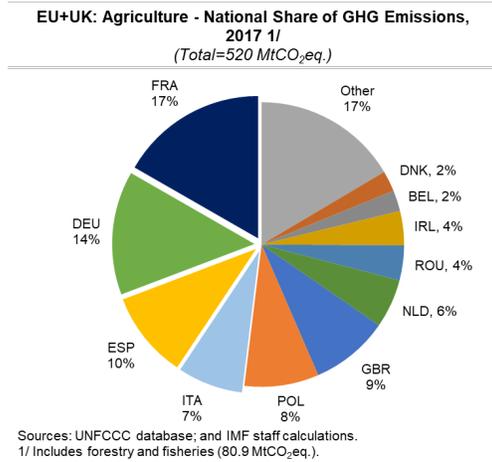


Figure 5. Agriculture



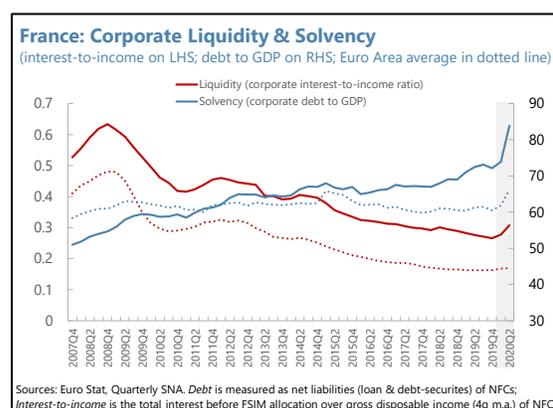
FIRM DYNAMISM AND PRODUCTIVITY IN FRANCE – THE ROLE OF CREDIT¹

The Covid-19 crisis adversely affected French firms' balance-sheets, leaving their liquidity and solvency in a precarious position. The increased debt from the crisis can affect firms' future productive capacity. Experience from the previous crisis suggests that the positive "cleansing" effects of the crisis on aggregate productivity was dampened by internal productivity losses of continuing firms and especially those riddled with excessive debt. As the recovery takes hold, targeted lending support could increase the efficiency of credit allocation. Temporarily supporting firm financing needs through equity-like instruments, that are well-targeted based on viability and need, could also help mitigate debt overhang that would otherwise slow recovery.

A. Introduction

1. The Covid-19 crisis adversely affected the liquidity and solvency position of French corporates.

Relative to European peers, corporate credit was already on an upward trajectory before the crisis but spiked during the first half of 2020. This was partly spurred by increased liquidity needs, as firms' disposable incomes fell during the lockdown period and raised the corporate interest-to-income ratio. The provision of state guaranteed loans enabled firms, especially small and medium enterprises (SMEs), to fulfill their liquidity needs but also accelerated the increase in credit, accounting for 10 percent of total corporate sector loans within a short period.



2. A key question is how the build-up of debt can affect firms' productive capacity as well as economy-wide business dynamism. While credit provides crucial support to the firm's production process it can also weigh on its capacity to invest and its future productive potential. The extent of such a 'debt overhang', whereby a buildup of debt deters new investment (as the benefits may accrue to creditors), becomes especially binding during downturns (Lamont, 1995). In addition, excessive debt can lead to the creation and sustenance of so-called "zombie-firms" which have persistently high level of indebtedness but low profits. The existence of zombie firms can also generate economy-wide negative spillovers through credit congestion effects and hinder the efficient allocation of resources towards more dynamic, higher productivity firms (Cabellero et. al., 2008). These credit distortions may reduce the efficacy of resource reallocation dynamics in recessions,

¹ Prepared by Manasa Patnam (EUR).

which would otherwise present strong Schumpeterian opportunities to replace less by more efficient firms (see for e.g. Barlevy, 2003; Caballero and Hammour 2005).

B. Dynamism and Allocative Efficiency: Experience from the Past Crisis

3. Changes to aggregate productivity can be decomposed into the firm-specific factors as well as factors related to firm entry and exit dynamism. Using data on SMEs from ORBIS² for estimation, the analysis conducts dynamic decomposition of aggregate productivity change employing the method proposed by Melitz and Polanec (2015). The change in productivity, as measured using the Levinsohn-Petrin (2003) method, can be decomposed as follows:

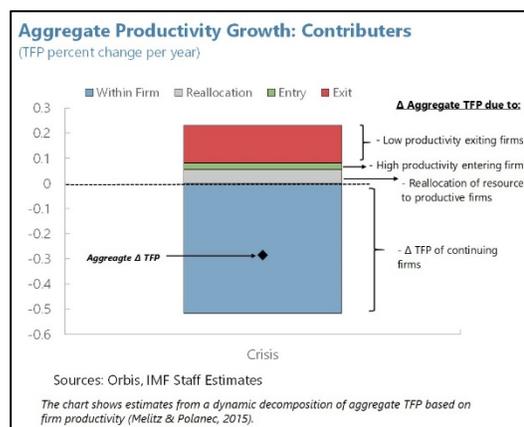
$$\Delta P_t = \Delta \bar{P}_{Ct} + \Delta cov_{Ct}(\theta_{it}, p_{it}) + \theta_{Et}(P_{Et} - P_{Ct}) + \theta_{E\tau}(P_{C(t-\tau)} - P_{X(t-\tau)}) \quad (1)$$

where P_t represents the aggregate productivity level in year t ; Δ denotes changes between $t - \tau$ and t ; and C , E , and X denote the group of continuing, entering, and exiting firms; θ_{it} and p_{it} is the value-added market share and firm productivity level. θ_{Gt} is the share of group G and P_{Gt} and $\Delta \bar{P}_{Gt}$ are the corresponding weighted and unweighted average productivity ($G = C, E, X$). The first term captures the contribution of within-firm productivity changes of continuing firms. The second term reflects the inter-firm resource reallocation towards more productive continuing firms. The last two terms capture the contribution of entering and exiting firms, respectively.

4. Experience from the previous crisis suggests that firm dynamism did exert a “cleansing effect” in France, but this effect was dampened by continuing firms’ loss of productivity.

Productivity declined by 0.3 percent per year during the Global Financial Crisis (GFC) period (2008-2012). This loss can be decomposed into the following components: First, a dominant -0.52 percent within-firm adjustment effect which reflects the inability of continuing firms to adjust production process in response to the shock. Second, a +0.17 percent firm dynamism effect, whereby lower productivity firms exited (+0.15 percent gain) and higher productivity firms entered (+0.02 percent gain). Finally, a +0.06 percent inter-firm reallocation effect which exerted a positive influence on aggregate productivity from resource reallocation from the least to most productive firms.

Qualitatively, these results are comparable to those obtained from France for all companies (not just SMEs) as well as from other European countries. Ben-Hassine (2019), finds large internal productivity losses during the crisis period, for all French firms, indicative of the difficulties experienced by firms in France in adjusting their production scale rapidly and effectively. Carreira and Teixeira (2016) find

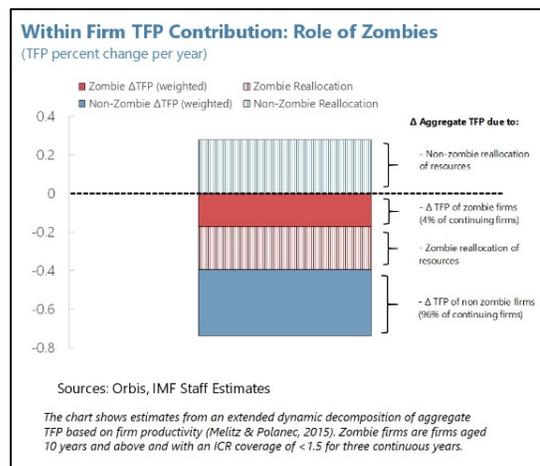


² ORBIS data were cleaned following steps that are based on Kalemli-Ozcan et al (2015) and Gopinath et al (2017). SMEs i.e., enterprises employing less than 250 persons, comprise 99.9 percent of firms in the non-financial sector, and generate 55.8 percent of value added and 64.1 percent of employment (EBA, 2019).

a dominant negative within-firm effect with a positive effect exerted by resource reallocation and entering firms in Portugal during the crisis (2008–2012).

5. The productivity loss for continuing firms is significantly larger for firms with excessive debt, exerting a sizeable drag on aggregate productivity.

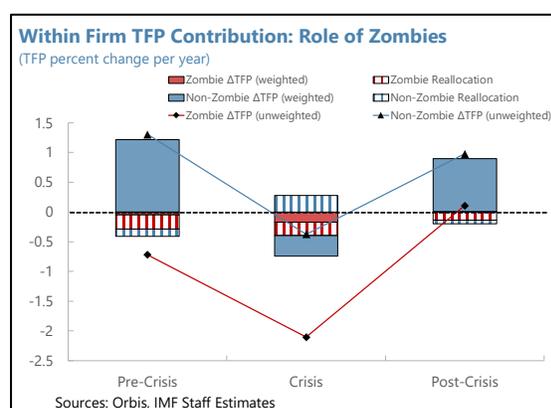
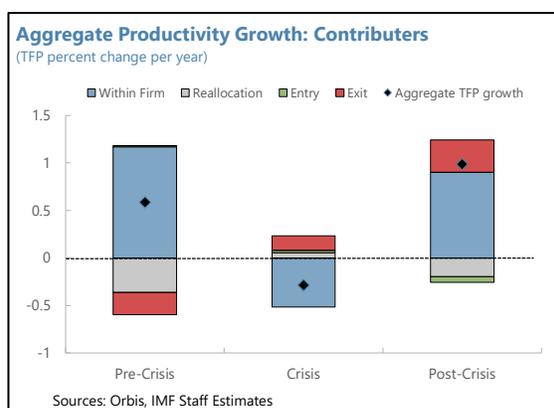
A further decomposition of the within-firm adjustment is made based on two types of firms: zombie firms i.e., firms aged ten years and above with interest coverage ratio below 1.5 for three successive years, and the remaining non-zombie firms.³ The total incumbent adjustment effect of -0.52 percent can this be disaggregated into the loss of productivity of -0.35 percent and -0.17 percent from non-zombie and zombie firms respectively. The latter effect exerts a material drag on aggregate productivity despite the small share of zombie firms. This is because, while zombies SMEs represent 4 percent of all incumbent SMEs, their mean productivity loss is six-fold higher. Further, the +0.06 percent of inter-firm reallocation can also be explained by a positive allocative efficiency from non-zombie firms, weighed down by a negative allocating efficiency from zombie firms.



6. These results mirror the evidence found on debt overhang issues in European countries.

For instance, Duval et. al (2020) show also that firms with weaker pre-crisis balance sheets experienced a highly persistent decline in post-crisis productivity growth accounting for about one-third of the within-firm productivity slowdown. In similar vein, Kalemli-Ozcan et al. (2018) find that firms with higher leverage reduce investment more. More recently, Demmou et. al., 2020 also find that firms that entered the GFC with a higher financial leverage ratio experienced a sharper decline in investment. Overall, comparing pre- and post-GFC crisis years, the results suggest that incumbent firms' productivity dynamics exert a dominant role in determining aggregate SME productivity, but the role of exiting firms increases post-crisis. Zombie firms experience higher productivity losses (or lower gains in non-crisis years) and congest reallocation— but these effects are materially important only during the crisis. Regarding post-crisis years, using a more updated and comprehensive database David et. al. (2020) find that while French productivity gains were mostly achieved by continuing firms before the GFC, it is the Schumpeterian effect that contributes most to post-crisis productivity gains between 2011 and 2017. This could suggest that these effects could play a more important role after the Covid-19 crisis compared to the previous crisis.

³ This decomposition can be obtained by splitting the first two terms of Equation (1), the unweighted firm productivity mean ($\Delta \bar{P}_{ct}$) and inter-firm resource allocation ($\Delta cov_{ct}(\theta_{it}, p_{it}) = \sum_i (\theta_{it} - \bar{\theta}_t)(p_{it} - \bar{p}_t)$), by the two types of firms. The decomposition of the unweighted productivity mean is equivalent to regressing the within-firm adjustment on a dummy indicator for whether a firm is classified as a zombie and re-weighting the coefficient by the zombie share. The decomposition of the inter-firm resource allocation term centers the market-share and productivity, based on the entire sample of continuing firms.



C. Credit Allocation and Firm-Exit during the Covid-19 Crisis

7. Excessive debt issues could present renewed challenges to aggregate productivity dynamics in the current crisis, which has been marked by a major scale-up of state lending support. The necessary broad-based policy support, through loan guarantee programs, helped prevent a disruption of credit supply to the economy. However, attention should be paid to the targeting⁴ and effective utilization of guaranteed debt going forward. While there is mixed evidence on the efficacy of previous state lending programs, some insights on the design of such programs can nonetheless be drawn. Successful programs have typically been well targeted (both on viability and need), of limited duration, and offered support beyond liquidity (e.g., guarantees on investment loans). For instance, in the case of Korea where the use of guaranteed loan programs is widespread, Oh et. al. (2009) find that the program registered lower productivity growth among recipient firms. Inefficient targeting and persistent dependence on the program were identified as likely factors contributing its ineffectiveness. Similarly, in Europe, Blasio et. al. (2017) analyze the Italian Fondo di Garanzia program extended during the GFC and find little to no impact on the investment and sales of recipient firms. The French Sofaris and Oseo-Garantie programs had positive effects on business creation and employment but increased default risk (Lelarge et. al. 2010, Barrot et. al., 2019). Lelarge et. al. (2015) note that some of the positive effects can be attributed to the high access fee for loan take-up which served as a strong selectivity criterion. Spain's mutual guarantee scheme has been judged to offer some positive effects for VSMEs but only during recessions (Martín-García and Santor, 2019).

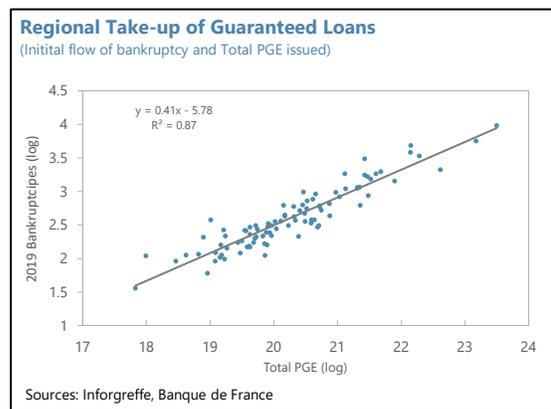
8. During the Covid-19 crisis, firms were supported by a program of public guarantees for bank loans (*Prêt garanti par l'État, PGE*) and direct aid. These support schemes were aimed at mainly providing liquidity support to firms at the onset of the pandemic. As of end-November, about 42 percent of PGE availability had been used (approximately €130 billion), making France one

⁴ In addition to issue related to targeting and adverse selection, credit guarantee programs can also trigger moral hazard problems. Yoshino and Hesary (2016) propose for governments to set up optimal credit guarantee ratios based on macroeconomic conditions and vary it for each based on their soundness, to ensure the stability of SME lending. In Chile, the small enterprise guarantee fund determines this the guaranteed percentage through an auction.

of the countries with the highest take-up rates of loan guarantees among peers.⁵ The guaranteed loans have a grace period of up to two years and can be reimbursed over up to six years. Direct aid to small and micro enterprises, as well as for self-employed, was also provided to cover turnover losses through a solidarity fund (*Fonds de solidarité*).

9. Early patterns from the PGE program allocation suggest that take-up was higher in regions with larger initial levels of bankruptcy.

The aggregate insolvency rate has dropped by 33 percent during the crisis in France.⁶ This could suggest an unintended effect of the loan-guarantee schemes, which could have been used in part to refinance non-viable companies. Since aggregate insolvency rates could have dropped for several other national factors related to the lockdown (e.g., court closures, extension of insolvency registration deadlines), we use data on regional insolvencies and take-up of state support to control for such factors. High frequency data from the exhaustive business registry in France (*Infogreffe*) is used to compute the flow of companies registering for insolvency in 2020 and compare it to the same period in 2019. Regional totals are obtained by aggregating insolvencies based on the location of each business declaring insolvency. The data on insolvencies is then combined with information on the regional take-up of both state guaranteed loans and aid to small enterprises. The figure shows that the take-up of state guaranteed loans was higher in regions which experienced a larger initial flow of insolvencies (in 2019).⁷ These regions may naturally have had a larger share of firms in need of support when the pandemic hit. Next, the following difference-in-difference specification is used to examine the link between ex-post insolvencies and state support:



$$Insolvency_{it} = \alpha_i + \beta GL_{it} * Post_t + \mu Post_t + \theta E_i * Post_t + \delta Covid_{it} + \varepsilon_{it} \quad (2)$$

where for region i and year t $Insolvency_{it}$ is the total flow of insolvency registries and GL_{it} is the total amount of state-guaranteed loans; E_i is the total number of firm establishments in region i which controls for size-dependent effects on insolvencies. The region fixed effect α_i controls for unobservable factors specific to a region while the variable $Post_t$ captures the common effect of the crisis and policy changes. The variable $Covid_{it}$ captures the region-specific stress associated with the Covid-19 pandemic, as proxied by the number of Covid related deaths. This allows to control for the differential magnitude of Covid shocks across regions, and to some extent, the varied containment restrictions applied, with some regions exiting lockdowns earlier than others. The identification assumption underlying Equation (2) is therefore that, conditional on the level of Covid stress,

⁵ IMF, [Global Financial Stability Report, October 2020](#) for a cross-country comparison of guaranteed loan take-up.

⁶ As of end-September; see insolvencies data from [Banque de France](#) for more details.

⁷ The trend-line is robust to normalizing both indicators, on insolvencies and PGE take-up, by the number of firm establishments within the region.

regions would have experienced common trends in bankruptcy filings, absent the differences in take-up of state support.

10. Regions with higher take-up of state guaranteed loans experienced lower bankruptcy filings.

The difference-in-difference regression specification is used to test whether regions with a higher take-up of state support saw a change in their insolvency filings, controlling also for the extent of the pandemic within that region (equation 2). The table shows that a 10 percent increase in state guaranteed loans reduces a regions bankruptcy filing by 4.5 percent (column 1). The result holds even after accounting for other state support (direct aid to enterprises), suggesting no offsetting impact from other instruments (column 2). Finally, the last column also interacts the total effect of state support by whether a region has a high (above-

median) share of low ICR firms⁸; the results indicate that these regions see an additional reduction in bankruptcy filings by 1.9 percent, relative to other regions, suggesting that firms with vulnerable balance sheets (pre-crisis) could be driving some of the overall effect. The results should however be interpreted with caution and could suggest either that insolvencies may surge when government credit support schemes expire or that some pre-crisis (technically) insolvent firms are being kept afloat.⁹ If the latter effect materializes, this could create an unintended consequence where state lending support can increase the presence of zombie-firms that could potentially congest capital allocation in relevant sectors during the recovery phase.

Take-up of State Support to Firms & Insolvencies			
	Insolvency Filings (log)		
	(1)	(2)	(3)
<i>PGE (log) * Post</i>	-0.44*** (0.17)		
<i>PGE + Aid (log) * Post</i>		-0.45*** (0.17)	-0.27* (0.16)
<i>PGE + Aid (log) * Post * High Share of low ICR</i>			-0.19*** (0.06)
<i>Covid Deaths (hundreds)</i>	0.02* (0.01)	0.02* (0.01)	0.02* (0.01)
Observations	188	188	188
r ²	0.35	0.35	0.37

Note: Estimates from a panel regression controlling for the number of establishments in each region; standard errors clustered by region and time reported in parentheses. The dependent variable is the log of total insolvency filings in a region between Jan-Sept of years 2019 (pre-period) and 2020 (post-period). PGE is guaranteed loan amount; High share of low ICR is a dummy variable indicating whether the region's share of firms with interest coverage ratio below 1.5 is above the national median (ORBIS data).

D. Policy Considerations

11. Temporarily supporting firm financing needs through equity-like instruments, that are well-targeted based on viability and need, could help mitigate debt overhang that would otherwise slow recovery.

Broad-based liquidity credit support to companies may not be sustainable for long and will need to be narrowed in scope and eventually phased out. Given the highly uncertain outlook, it may also be the case that private capital may not be readily available or

⁸ Using the ORBIS data for 2017 firms are classified based on their latest ICR, into low (1.5 and below) and high (higher than 1.5) ICR. The firm's geographic location is then used to aggregate the share of low and high ICR firms by region. A region is then classified as having a high share of low ICR firms if its share is above the national median.

⁹ Banque de France's credit rating data, measuring the firm's ability to meet its financial commitment, show that firms rated between excellent and fair comprised 9 percent of the total PGE beneficiaries but 42 percent of the total amount. The rest was distributed among companies that were rated fairly poor and below, or unrated (see [Banque de France, 2020](#) for details on the rating system).

in sufficient quantities. During the recovery phase, state support for financing instruments with less senior claims and/or possessing equity-like features could provide much needed support to firm balance sheets and lower the risk of costly defaults. The government could also gain some upside to compensate for the increased risk. Key features that a well-designed equity-like financing program could consider are: (i) *selectivity*, which could ensure any problems related to adverse selection are mitigated, (ii) *pricing* of the financing instrument, so that take-up is adequate, and, (iii) *time-bound duration*, involving a clear exit strategy for the government (see also Bauer et. al., 2020 for governance related aspects). In determining selectivity, consideration could be given to supporting firms that are crisis-affected (having an equity need), viable before the crisis, and dynamic (i.e., conditionally viable after the crisis).

12. Enhancing debt restructuring mechanisms can complement the efficacy of solvency support initiatives. A delay of filing for bankruptcy may reflect distortions from debt overhang. If the private costs of bankruptcy outweigh its social costs, debt-ridden firms may continue to underinvest and erode firm-value longer than is efficient, hoping for a recovery. In such a framework, Brunnermeier and Krishnamurthy (2020) show that government resources toward reducing the legal and financial costs of bankruptcy are unambiguously beneficial. In this context, Greenwood, Iverson and Thesmar (2020) identify court congestion and excess liquidation of small firms as two key issues to resolve to ensure a robust recovery of the corporate sector. France registers the highest rate of annual insolvencies worldwide (see Euler Hermes, 2020) accounting for almost one third of total insolvencies in western Europe. An increase in insolvencies from the pandemic of about 50 percent could overwhelm court capacity (see for e.g., Guerini et. al, 2020), risking indiscriminate firm liquidation. Temporarily increasing the administrative capacity of France's out-of-court restructuring mechanisms (*mandat ad hoc* and *conciliation*) in the near term could prevent this and enable viable firms to restore their financial health. It may also be useful to adopt an approach of corporate triaging, distinguishing between businesses, that can and cannot be restructured, allowing to wind down non-viable firms expeditiously. This would facilitate capital reallocation towards viable firms and contribute to avoiding long-run scarring from debt overhang. Liu, Garrido and DeLong (2020) discuss key operational features of a corporate triaging process and standardized approaches that can help accelerate the insolvency resolution for SMEs.

13. In the medium-term, reducing the tax-bias towards debt could also strengthen corporate equity. As recommended by the FSAP 2019, a fiscal measure that incentivizes corporates to finance through equity rather than debt could bring about positive effects for market-based financing (see IMF Country Report No. 19/241). This could be undertaken by complementing the already legislated reduction in the Corporate Income Tax rate to 25 percent by 2022 with: (i) an interest deductibility based on fixed debt-to-equity rule (i.e., denying interest deductibility if debt-to-equity exceeds some fixed value); and (ii) an allowance for corporate equity, which supplements deductibility of interest with a similar deduction for the normal return on equity. In this regard, de Mooij, 2012 and Fatica et.al., 2013 provide a comprehensive survey on tax options to encourage equity.

References

- Barlevy, G., 2003. Credit market frictions and the allocation of resources over the business cycle. *Journal of monetary Economics*, 50(8), pp.1795-1818.
- Barrot, J.N., Martin, T., Sauvagnat, J. and Vallee, B., 2019. Employment Effects of Alleviating Financing Frictions: Worker-level Evidence from a Loan Guarantee Program. Available at SSRN 3409349.
- Bauer, A., Garrido, J., Kang, K. Kashiwase, K, Kim, S, Liu, Y and Rafiq, S., 2020 (forthcoming). Flattening the Insolvency Curve: Promoting Corporate Restructuring in Asia and the Pacific in the Post-C19 Recovery, IMF Working Paper.
- Ben-Hassine, H., 2019. Productivity Growth and Resource Reallocation in France: The Process of Creative Destruction. *Economie et Statistique*, 507(1), pp.115-133.
- Blanchard, O., Philippon, T. and Pisani-Ferry, J., 2020. A new policy toolkit is needed as countries exit COVID-19 lockdowns. Peterson Institute for International Economics Policy Brief, pp.20-8.
- Brunnermeier, M. and Krishnamurthy, A., 2020, June. Corporate debt overhang and credit policy. In *BPEA conference*.
- Caballero, R.J. and Hammour, M.L., 2005. The cost of recessions revisited: A reverse-liquidationist view. *The Review of Economic Studies*, 72(2), pp.313-341.
- Caballero, R.J., Hoshi, T. and Kashyap, A.K., 2008. Zombie lending and depressed restructuring in Japan. *American Economic Review*, 98(5), pp.1943-77.
- Carreira, C. and Teixeira, P., 2016. Entry and exit in severe recessions: lessons from the 2008–2013 Portuguese economic crisis. *Small Business Economics*, 46(4), pp.591-617.
- David, C., Faquet, R. and Chakir, R., 2020. Quell Contribution de la Destruction Creatrice aux Gain de Productivite en France Depuis 20 Ans, Direction générale du Trésor, N° 2020/5.
- De Blasio, G., De Mitri, S., D'Ignazio, A., Russo, P.F. and Stoppani, L., 2018. Public guarantees to SME borrowing. A RDD evaluation. *Journal of Banking & Finance*, 96, pp.73-86.
- De Mooij, R.A., 2012. Tax biases to debt finance: Assessing the problem, finding solutions. *Fiscal studies*, 33(4), pp.489-512.
- Demmou, L., Franco, G. and Stefanescu, I., 2020. Productivity and finance: the intangible assets channel-a firm level analysis, OECD.

- Duval, R., Hong, G.H. and Timmer, Y., 2020. Financial frictions and the great productivity slowdown. *The Review of Financial Studies*, 33(2), pp.475-503.
- Euler Hermes, 2020. Global Insolvency Report 2020. *Euler Hermes*.
- Fatica, S., Hemmelgarn, T. and Nicodème, G., 2013. The debt-equity tax bias: consequences and solutions. *Reflète et perspectives de la vie économique*, 52(1), pp.5-18.
- Gopinath, G., S. Kalemli-Ozcan, L. Karabarbounis, and C. Villegas-Sanchez 2017. Capital Allocation and Productivity in South Europe." *Quarterly Journal of Economics* 132 (4): 1915-1967.
- Greenwood, R.M., Iverson, B.C. and Thesmar, D., 2020. Sizing up corporate restructuring in the COVID crisis. *NBER Working Paper*, (w28104).
- Guerini, M., Nesta, L., Ragot, X. and Schiavo, S., 2020. Firm liquidity and solvency under the Covid-19 lockdown in France. *OFCE Policy Brief*, 76.
- Kalemli-Ozcan, S., Laeven, L. and Moreno, D., 2018. *Debt overhang, rollover risk, and corporate investment: Evidence from the european crisis* (No. w24555). National Bureau of Economic Research.
- Kalemli-Ozcan, S., B. Sorensen, C. Villegas-Sanchez, V. Volosovych, and S. Yesiltas, 2015. How to Construct Nationally Representative Firm Level Data from the ORBIS Global Database. NBER Working Paper No. 21558.
- Lamont, O., 1995. Corporate-debt overhang and macroeconomic expectations. *The American Economic Review*, pp.1106-1117.
- Levinsohn, J. and Petrin, A., 2003. Estimating production functions using inputs to control for unobservables. *The review of economic studies*, 70(2), pp.317-341.
- Lelarge, C., Sraer, D. and Thesmar, D., 2010. Entrepreneurship and credit constraints: Evidence from a French loan guarantee program. In *International differences in entrepreneurship* (pp. 243-273). University of Chicago Press.
- Liu, Yan, Garrido, Jose, and DeLong, Chanda, 2020. Private Debt Resolution in the Wake of the Pandemic. *Special Series on COVID-19*, International Monetary Fund.
- Martín-García, R. and Santor, J.M., 2019. Public guarantees: a countercyclical instrument for SME growth. Evidence from the Spanish Region of Madrid. *Small Business Economics*, pp.1-23.
- Melitz, M.J. and Polanec, S., 2015. Dynamic Olley-Pakes productivity decomposition with entry and exit. *The Rand journal of economics*, 46(2), pp.362-375.
- Oh, I., Lee, J.D., Heshmati, A. and Choi, G.G., 2009. Evaluation of credit guarantee policy using propensity score matching. *Small Business Economics*, 33(3), pp.335-351.