



CONSEIL NATIONAL
DE PRODUCTIVITÉ

ASSESSMENT OF CRISES PRODUCTIVITY, COMPETITIVENESS AND CLIMATE TRANSITION

Fourth Report

Summary

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The National Productivity Board (NPB) received the mandate to advise the French government on the policies related to productivity and competitiveness, to conduct related research and to promote the dialogue on these themes in order to improve the economic performance and competitiveness of the country.

In this year's report, the NPB has chosen three axes to meet its mission: we propose first a holistic view of the impact from both the pandemic and the consequent economic policies on the French productivity. We then focus the analysis on the role of delocalisation of multinationals' benefits through fiscal optimisation on the observed productivity. Finally, the report considers the impact of climate actions on both productivity and competitiveness and options to generate positive effects.

COVID crisis, labour market and energy turmoil: negative configuration for productivity in the short run

As underlined by last year's report, the labour productivity has strongly slowed down – from an average annual growth of between 3% and 5% in the 1970s to about 1% today – over the last four decades in most advanced economies.¹ That report highlighted that, although a decrease of productivity – whichever the metrics used – was common to all countries, the roots of this decrease were heterogeneous across countries. This for instance related to a decrease of capital stock in France, Germany and Italy on top of working hours in the latter two countries eroding the positive impact of human capital.²

The complex interplay between the economic shocks and policies during the health crisis from 2020 onwards took a specific feature in the French context, mixing both

¹ See the [third \(2022\) NPB report](#).

² See the [second \(2021\) NPB report](#). In addition to these heterogeneous causes behind the deceleration of productivity, there is the impact of the Covid crisis, which strengthened the heterogeneity in labour productivity trend across countries. The latter heterogeneity is largely explained by the economic policies adopted by the governments during the crisis to counterbalance the negative impact of the pandemic (as regards teleworking in particular but also part-time work and furlough schemes, recovery plans and government-sponsored loans). The same report also highlights the deceleration of productivity growth rooted into a decrease of capital stock for about 1/5 in the United Kingdom and of about half for France, Germany and Italy.

conjectural and structural factors. For example, teleworking – gaining into importance in recent years – has the potential to improve productivity through increased flexibility. However, at the same time, teleworking may contain operational and behavioural risks, so that its global effect on productivity remains variable.¹ In parallel, it seems that the reallocation of resources across sectors following the macroeconomic Covid-related shocks may have questioned traditional equilibria behind productivity. The labour supply faces structural breaks: (a) changing workers’ preferences (still subject to uncertainty in measurement); and (b) the growing government support in order to generate massive apprenticeship.

Among the other factors affecting potentially productivity, there is the exuberant dynamics of energy prices. Assuming that energy cannot be disentangle from the other factors into the production process – admittedly a strong hypothesis – then energy might not be neutral for the productivity of other production factors, since optimal decisions by firms will depend on energy price fluctuations. In the same vein, the crisis-related actions by governments to overcome the pandemic are still operating and their impact on productivity must be considered. All these ‘time-dependent’ elements are adding to the structural trends in productivity (such demographics and return trends in the long term).

Chapter 1 of this year’s report articulates all the previous forces in a coherent manner. It shows that the French economy has evolved between shocks affecting ambiguously, possibly adversely, labour supply and productivity in the short run (e.g. workers’ preferences, growing apprenticeships and emerging teleworking) and an energy price shock also potentially impacting productivity. All that happened amid persistent distortions induced by the post-Covid policies and a weak allocation of resources across sectors. More specifically, this first chapter shows the following:

- Variable impact of teleworking on productivity. This impact depends on several factors, among which the conditions of implementation in particular (tools, knowledge of both workers and managers, quality of social dialogue), the organisation of work within firms as managerial type (employee’s autonomy, outcome- rather presence-based appraisal, adjustment skills of managers) and the specific characteristics of each profession (e.g. interdependence of production tasks, creativity in tasks, autonomy).
- As far as inter-sector reallocations are concerned, the Covid-crisis does not seem to have implied reallocation of labour in the short run in France (albeit, some substantial transitory sectoral reallocation materialised at the peak of the health

¹ In the [third \(2022\) NPB report](#) published last May, conclusion was that a well-prepared teleworking supported by employees could lead to productivity improvement in the medium and long term.

crisis). Their long-term effects remain uncertain and require more hindsight for firm conclusions.

- The occurrence of apprenticeship – a key milestone of France government’s programme over the last three years – could affect negatively productivity in the short run, what underestimates the potential positive and permanent impact expected in the medium- to the long run through the likely improvement of skills and human capital. The reason is that the new trainees will take time to display their productive potential.
- The last section of the chapter eventually analyses the extent to which energy prices impact productivity from a business-cycle viewpoint. Even if the energy crisis affected the vast majority of countries, it affected particularly Europe through gas prices in particular, although some public policies eroded the final impact (tariff shield, VAT cut and so on). As an essential input to production, the recent strong increase of energy prices tend to affect substantially and negatively productivity in both the short and the medium term. However, their long-term impact is more ambiguous, which would reveal a form of complementarity (at least non-separability) between energy and other production factors in productive processes. The most recent review of academic literature suggests that strong increase in energy prices tend to reduce the capacity of firms to invest, hence having a direct negative impact on productivity. Incentives to reorganise ourselves to reduce permanently the energy consumption, or to improve the energy efficiency could outweigh the latter negative impact. Uncertainties remain high about the real impact of innovation in efficiency energy on productivity in other production factors. Either this innovation is possible at the expense of medium- to long-term productivity, or, it incentivizes firms to invest into new technologies, which could turn into productivity gains. All this will depend on the extent to which the energy price increase could trigger the degree of soberness versus innovation.

Fiscal optimisation is detrimental to the observed productivity

Chapter 2 focuses on a structural driving force behind the deceleration of productivity. As illustrated in last year NPB’s report, France experienced a strong de-industrialisation cycle in early 2000s before some unwinding recently, which weighed on productivity.¹ The consequent negative impact on productivity reflected an on-going

¹ See the [third \(2022\) NPB report](#).

decrease in human capital. Then this questions the impact on economic growth and productivity from a repatriation of some industrial activities.

This chapter analyses to which extent fiscal optimisation by multinationals in France impacts French productivity at both the firm- and aggregate levels. This sheds light on the importance of the tax regimes to create incentives among multinationals to locate their subsidiaries. Our analysis shows that differences in tax regimes lead to disentangle the revenues from the underlying activities. This is especially true in the case of intangible assets given their greater mobility. Therefore, a more restrictive tax regime in the home (non-tax haven) country – in which the headquarter is located – implies a delocalisation of revenues from intangible assets towards countries with less restrictive tax regime (tax haven country) in the absence of regulation mechanisms for fiscal optimisation. This does not reduce however effective activity but its *measurement*, and thereby productivity in the home country.

The academic literature about potential bias in the measurement of productivity is not new. In general, such bias can be explained by differentiated intensity in capital utilisation through either varying quality of products, emergence of new products or technological shocks. In the latter respect, the academic literature attaches particular attention to the growing digitalisation. Even though productivity measurement biases are a problem, neither the digitalization of the economy, nor changes in product quality or the appearance of new products can explain alone the slowdown in the observed productivity.

More recently, some papers suggested that measurement bias in the observed productivity might reflect the difficulty to incorporate accurately intangible assets into national accounts. This echoes the ‘Solow Paradox’ according to which “*we see computers everywhere except in the productivity statistics*”. Furthermore, revenues from intangible assets – more transferrable by nature even if the underlying activity remains in the home country – are more subject to fiscal optimization. The related question covered in this chapter is whether multinational enterprises’ (MNEs’) tax planning strategies by multinationals can affect the measurement of productivity for countries with more restrictive tax regime like France.

We thus investigate to which extent fiscal optimization of MNEs can influence the location decision of part of their activities. Beyond the governance challenges¹, differences in fiscal rules – in Europe in particular - are key to consider to address the re-industrialisation of France while limiting the risk of carbon leakage through a

¹ Vicard V. (2020), “[Réindustrialisation et gouvernance des entreprises multinationales](#)”, *CEPII Policy Brief*, N° 35, October.

restrictive green taxation and exclusively focused on local firms (covered in the next chapter). This topic covered in this chapter 2 is also important for a country like France where French industrial multinationals have the largest number of workers abroad (NPB, 2022): for each 100 employees in France in 2019, French industrial MNEs employed 67.8 workers abroad against 34.5 for German MNEs.

By nature and given their structure, MNEs are more able than others to perform tax optimization of their revenues, i.e. to conduct profit shifting toward tax haven countries. As said earlier, this requires a certain mobility of profits as intangible assets (such as e.g. R&D, intellectual property, patents, AI-related activities). When transferring some revenues from the headquarters and local subsidiaries towards tax haven, the measurement of the economic activity reduces in the home country (and vice-versa for the tax haven).

There is thus a need for international statistics to be adjusted since 40% of profits in 2015 moved to tax havens. Moreover, the digital transformation increased the investment into intangible assets over the last two decades.¹ Although MNEs' fiscal optimisation is not recent, disconnecting the location of capital from production and assets – such as intellectual property – while adjusting the transfer price² in the absence of benchmark for intangible assets becomes easier with the increase of intangible capital.

Based on French firm-level data, the contribution of the micro-level profit shifting – through tax haven direct investments – to the aggregate productivity slowdown is measured for France. The underlying analysis confirms that the firm measured productivity in France declines over the years following the firm's establishment in a tax haven. In particular, the analysis in this chapter shows that MNEs contributes significantly to French productivity at the aggregated level: labour productivity growth amounted to 21.5% between 1997 and 2015 for the whole sample of firms, but dropped to 17.6% when excluding MNEs. Any measurement bias for these firms may have important consequences at the aggregated level. On that basis, our results imply that if tax haven MNEs had not established a new presence in tax havens between 1997 and 2015, aggregate labour productivity annual growth would have been 0.04 percentage point higher, which is tantamount to 5.7% of the observed aggregate labour productivity annually.

¹ See for instance the [2019 OECD report](#) highlighting the substantial increase of intangible assets between 1995 and 2014, even higher than tangible assets for few developed countries.

² According to the OECD definition, transfer price is « the price at which a firm transfers tangible or intangible assets or even provides services to partner firms ».

This reduction of the observed productivity seems to be explained by profit shifting and not by an effective reduction of productivity due to the establishment of entity in tax havens. Profits decline on average by 5% the year the firm first enters a tax haven and the effect fluctuates around -10% after 3 years. This effect is exacerbated for firms whose average share of intangibles is above the median share of their sector.

Our results also suggest that more intangible firms use tax havens in a different way in comparison to low intangible intensive firms – in particular because the former seem to expand, both in terms of sales and value added when entering in tax havens. For instance, the results point to an average productivity level decline by more than 4% in France when these firms become tax haven MNEs (and intensive in intangible assets) against 2.4% for less intensive ones. This effect is further strengthened when the delocalisation in a tax haven occurs at the headquarter level rather than through the establishment of a subsidiary.¹

Actions for climate transition: which instrument to cope with the impact on productivity and competitiveness?

Global warming is unquestionable and inaction by governments will cause huge damages, affecting many dimensions of society and economic systems. More than ever, it is crucial to implement rapidly efficient and fair environmental measures to ensure a smooth transition. The ambitious goals adopted by Europe reflect this climate emergency.

Whatever the scenario considered, the green transition will have an impact on economic growth in both the short- to longer term, including on productivity and competitiveness. This is the topic of chapter 3.

From the economic viewpoint, solutions exist in order to promote a smooth transition towards a zero-carbon economy by 2050. That said, smooth does not mean painless transition. As stressed by the Pisani-Ferry and Mahfouz report, the impact of climate transition on productivity and competitiveness are likely negative in both the short- and the medium-term. Still, the costs of transition will be smaller than those of inaction.

¹ A distinction is made between the presence of a firm's group in tax haven through the establishment of a subsidiary and the debt arrangement with headquarter, which is transferred from home country to tax haven through the inclusion the headquarter into a larger offshore group. Indeed, the debt localisation of a firm is an important tool for tax optimisation. The subsidiary entity pays interest on the loan guaranteed by the headquarter and thus can deduced them from the declared taxes through lower realised profits.

According to Kahn et al. (2019), GDP per capita loss related to a transition compatible with Paris Agreements is about 1.1% against 7% in case of inaction.

The impact of green transition on productivity – the purpose of this chapter – will depend on the ability of European and French firms to take advantage of this transition to invest in cleaner and de-carbonised energy through changes into industrial and organisational processes as technological innovation. The various studies cited in the chapter suggest the long-term impact of climate transition on productivity would be still negative (positive) without (with) technological innovation and appropriate investments.

The environmental measures envisaged so far in Europe are likely to affect negatively both profitability and competitiveness of French and European companies in a first phase in case they would be the only ones to adopt these measures to reach the 2050 target. However, a rebound could be possible thanks to new investments combining productivity gains and lower production costs, provided that the production basis is not too damaged during the first phase of competitiveness loss.

The latter observation questions whether additional measures could be considered in Europe and France to accompany the green transition, while incentivising firms to invest appropriately to reach the European climate objectives. If we narrowly focus on the legislative measures recently adopted by Europe (including the “Fit for 55” package), the related tools do not aim to tackle with productivity or competitiveness. Nevertheless, they could affect positively both dimensions, in particular if they are combined with appropriate measures. The European Union has other specific tools aiming to preserve industrial competitiveness or to ensure that foreign producers comply with the environmental regulation applying to European producers (e.g. battery and deforestation regulations), but also the firms’ support through subsidises. That said, recent analyses – including the forthcoming OECD study – point out risks in terms of competitiveness for Europe via an increase of production costs. And the question of the European support framework – as their effectiveness at the national level – constitutes a crucial challenge.

The impact of actions for climate on both economic growth and productivity can be summarised as follows. In the short run, the impact is negative given the distortions induced by the environmental regulation influencing the production function. In the medium term, the impact could be positive if technological change occurs, if enterprises innovate and the industrial basis does not shrink. In the longer term, studies are divided. On the hand, some suggest a negative impact through a growth path of productivity persistently lower after the green transition. On the other hand, other studies point to a positive effect thanks to a limitation of economic damages (from

global warming), hence a net positive effect on GDP per capita, but also on productivity subject however to the measurement metrics.

The key challenge for Europe is to reach an ambitious goal for decarbonisation relative to the other regions in the world without that this proactivity translates into competitiveness loss. Should that happen, this would imply a loss of Europe's industrial basis and a deterioration of its sovereignty. In this respect, the carbon-border adjustment mechanism (CBAM) aims precisely to limit carbon leakages and constitutes an important positive step in that direction. Above all, the goal must be to promote an holistic approach in the adoption of tools for decarbonisation.

Beyond the crucial role of producers into the decarbonisation process by 2050, the role of consumers is questioned. Are there (and if so, which ones) levers allowing to increase their power through their spending, and thereby to influence firms' production? Several avenues are discussed in this report in order to ensure an efficient, fair and rapid decarbonisation without affecting competitiveness.

Among those, a first step would be to put in place a mechanism of a carbon label for final consumer goods. This would allow households to decide freely to redirect their consumption toward less carbonised products. And this would encourage the development of carbon accounting, making possible to develop a much more robust measure of the carbon content of finished products throughout their entire production chain and their life cycle¹.

Eventually, the introduction of a carbon tax or a carbon subsidy on mass-market final consumption goods could make sense. This tax or subsidy would be adjusted to the carbon content over the whole production process. This would ultimately benefit from the price signal over the household consumption behaviour. Additional measures could complete this consumption price conditional to carbon footprint in order : (a) not to strengthen inequalities; and (b) to ensure a neutral effect on public finances to avoid aggravating budgetary disequilibria This would meet the re-industrialisation objective while improving sovereignty through a positive impact on competitiveness and on attractiveness as a strengthening of private investment and innovation. However, the impacts of this approach based on consumers' role need to check empirically through deeper analyses. A recent micro-simulation is presented in the chapter.²

¹ Fleckinger P. et Prévét A. (2023), « [Décarbonation, réindustrialisation et entreprises de taille intermédiaire](#) », Etilab, Mines Paris PSL, novembre.

² Chanut N. (2022), *Essays in Public and Environmental Economics*, London School of Economics and Political Science, juin.