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MAJOR FUTURE ECONOMIC CHALLENGES

International Commission chaired by
Olivier Blanchard and Jean Tirole

APPENDICES

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APPENDICES

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In early 2020, the French President Emmanuel Macron asked Olivier Blanchard and Jean Tirole to set up a commission of French and foreign experts to analyse three major challenges – climate, inequalities and ageing. Their report, Major Future Economic Challenges*, was published in June 2021 and is available online. The Appendices gathered here complete this report, namely the two sections dedicated to economic inequality and insecurity and to the demographic change.*

APPENDICES

TO CHAPTER TWO

ECONOMIC INEQUALITY AND INSECURITY: POLICIES FOR AN INCLUSIVE ECONOMY

APPENDIX 1

GOOD JOBS AND ECONOMIC SECURITY: SUMMARY OF FRENCH ATTITUDES

Surveys are an informative tool for governments. They can be employed frequently to understand not only preferences and opinions, but also to understand what people know and how they think about different policies. A number of surveys are already conducted yearly or every two years in France, the European Union or the OECD. Together, the most recent versions of these surveys paint a picture of current French attitudes towards institutions, work and "good jobs", economic security, and broad policy concepts.

Existing surveys, however, do not fully capture the views, knowledge and thought process or French citizens. For instance, existing surveys don't ask their respondents what they think the different tax rates are, but do ask them if they think the tax system is fair. Whether people have the right information about tax rates and who pays different taxes may explain differences in attitudes towards taxation. With these evidence gaps in mind, we designed a new survey that leverages existing survey evidence for France, as well as findings from work conducted in the United States[1].

Each of the sections in this appendix summarizes existing evidence from the following surveys:

1. Standard Eurobarometer no. 91, conducted in June 2019
2. The OECD *Risks that Matter* survey (2018)
3. The European Social Survey (ESS) (2018)
4. The European Values Study (EVS) (2017)
5. Institut Montaigne's *Baromètre des territoires* (2019)
6. The European Working Conditions Survey (EWCS) (2015)

[1] Alesina, A., Stantcheva, S. and Teso, E. (2018). "Intergenerational mobility and preferences for redistribution," *American Economic Review*, Vol. 108, No. 2, February, pp. 521-554; Stantcheva, S. (2020). "Understanding tax policy: How do people reason?" *NBER Working Paper Series*, No. 27699, August.

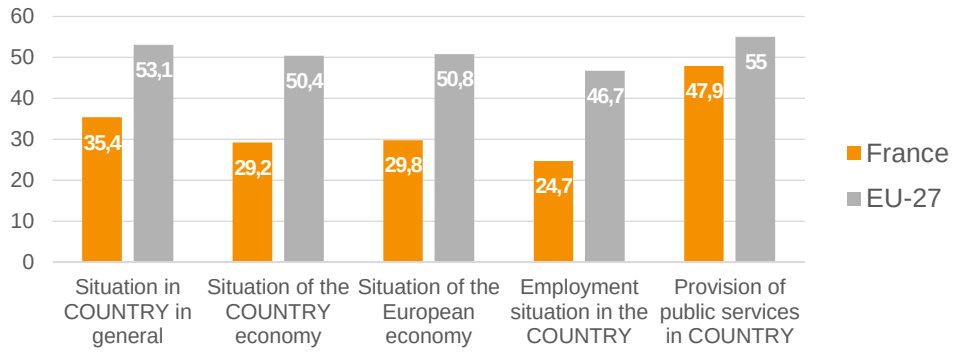
7. Survey *Les Français et les impôts* (2019), by OpinionWay, Square, for *Les Échos* and Radio Classique
8. International Social Survey Programme (ISSP) (1999, 2009 and 2014)

A data appendix summarizes the technical aspects of the data, including which variables and weights were used in the analysis.

1. Views on the Current Situation

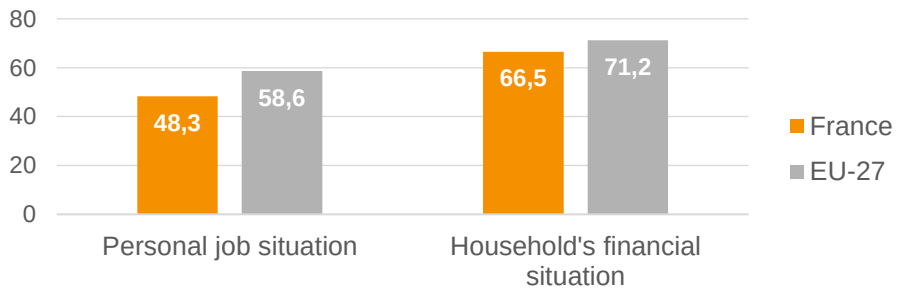
French people think the situation in France is relatively worse than that across the 27 European Union countries (EU27) (Figures 1 and 2). In particular, the French economy and the employment situation in France are rated as "good" at half the rate of the EU27. Respondents in France also report that their personal job situation is "good" at a lower rate than the average EU27 respondent.

Figure 1 – "How would you judge the current situation of…?"
(% responded "Rather good/very good")



Source: Author's calculations using data from Eurobarometer 91, June 2019

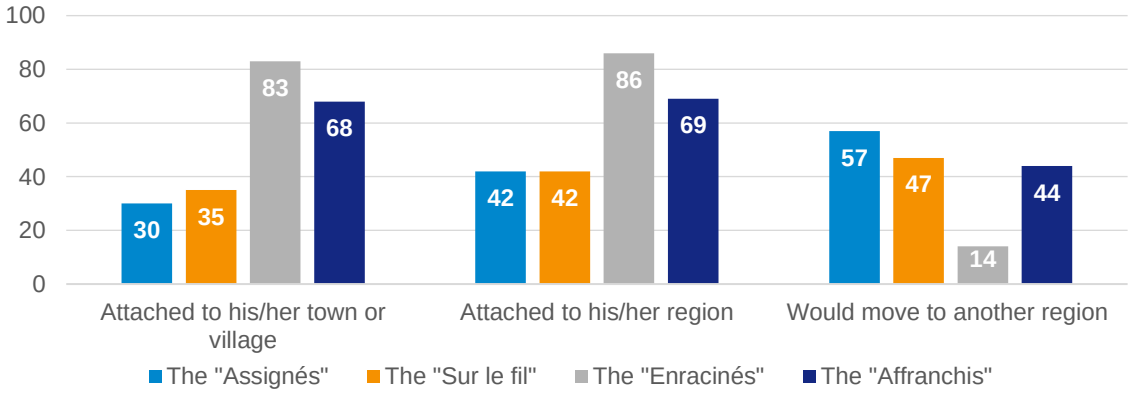
Figure 2 – "How would you judge the current situation of…?"
(% responded "Rather good/Very good")



Source: Author's calculations using data from Eurobarometer 91, June 2019

The previously described views of personal job situation and household's financial situation do not account for heterogeneity across French *régions*. Institut Montaigne's *Baromètre des territoires 2019* categorized French citizens into four groups, according to their level of geographic mobility and its causes. The *Affranchis* are free from geographic and social constraints, so they are geographically mobile and feel like they have choice over their lives. The *Enracinés* could move, but they are attached to their geographic location. The *Assignés* are socially and geographically constrained. Finally, the *Sur le Fil* have aspirations to move and pursue different opportunities, but cannot free themselves from their socioeconomic and geographic background. Figure 3 summarizes the four mobility types by how attached they are to where they live, and whether they would move to another region.

Figure 3 – Attachment to geographic location and desire to move, by mobility type (% in agreement)

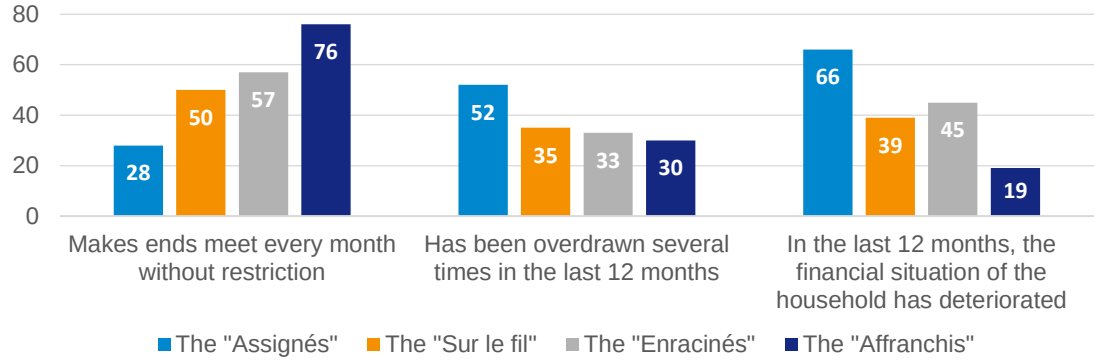


Source: Figure 15 of "Baromètre des territoires 2019" (Institut Montaigne)

There is great heterogeneity in perceptions of the current economic and employment situation across the four mobility types. For instance, groups with lower rates of geographic mobility report being unable to make ends meet more often than not, while the geographically mobile tend to be able to afford their expenses (Figure 4). The *Assignés* also report a decline in their financial situation at much higher rates than the other groups (Figure 4). Figure 5 shows that these different mobility types also have different perceptions of the availability of economic opportunities. The *Assignés* tend to disagree with the statement that there are firms being created, and with the statement that closing businesses are quickly replaced. Figure 6 further reinforces the *Assignés* experience of low economic dynamism, especially when compares to the *Affranchis*. On average, all groups but the *Affranchis* agree that it is increasingly hard to find employment. However, 71% of *Assignés*, relative to 50% of *Sur le Fil* and *Enracinés*, do so. Together, these facts indicate that those with low geographic mobility face limited employment opportunities, insofar as businesses close and are not replaced, and new firms are not being created in their area. Figure 3 shows that the *Assignés* would like to move, but don't. Policies to encourage mobility may not work to improve the disparities between these groups, because the mobility constraints are economic as well as

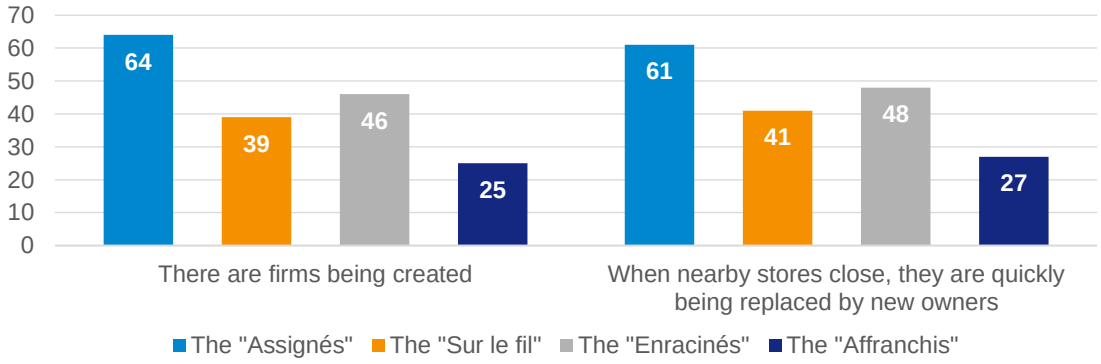
sociocultural. Similarly, place-based policies, or location-specific investments, may not close the gap between *Affranchis* and *Assignés*, at least insofar as the latter group is not emotionally attached to where they live.

Figure 4 – Economic indicators by mobility type (% in agreement)



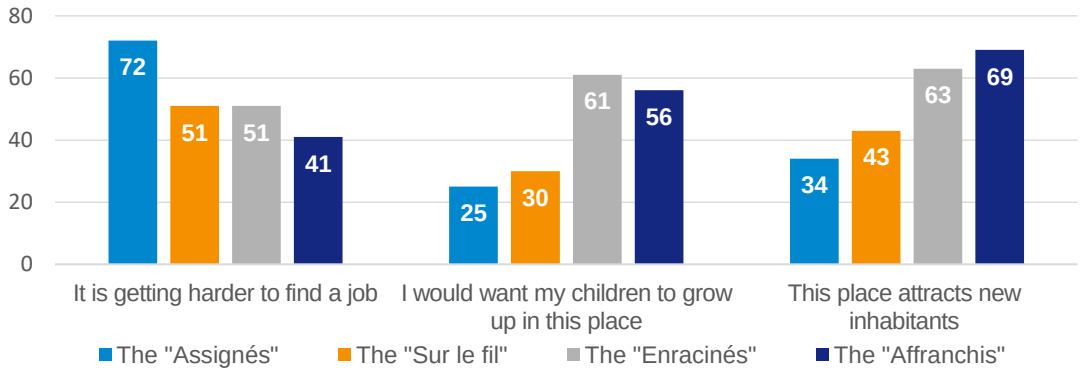
Source: Figure 2 of "Baromètre des territoires 2019" (Institut Montaigne)

Figure 5 – Views of the economic situation by mobility type (% in disagreement)



Source: Figure 10 of "Baromètre des territoires 2019" (Institut Montaigne)

Figure 6 – Views of regional economic dynamism by mobility type (% in agreement)

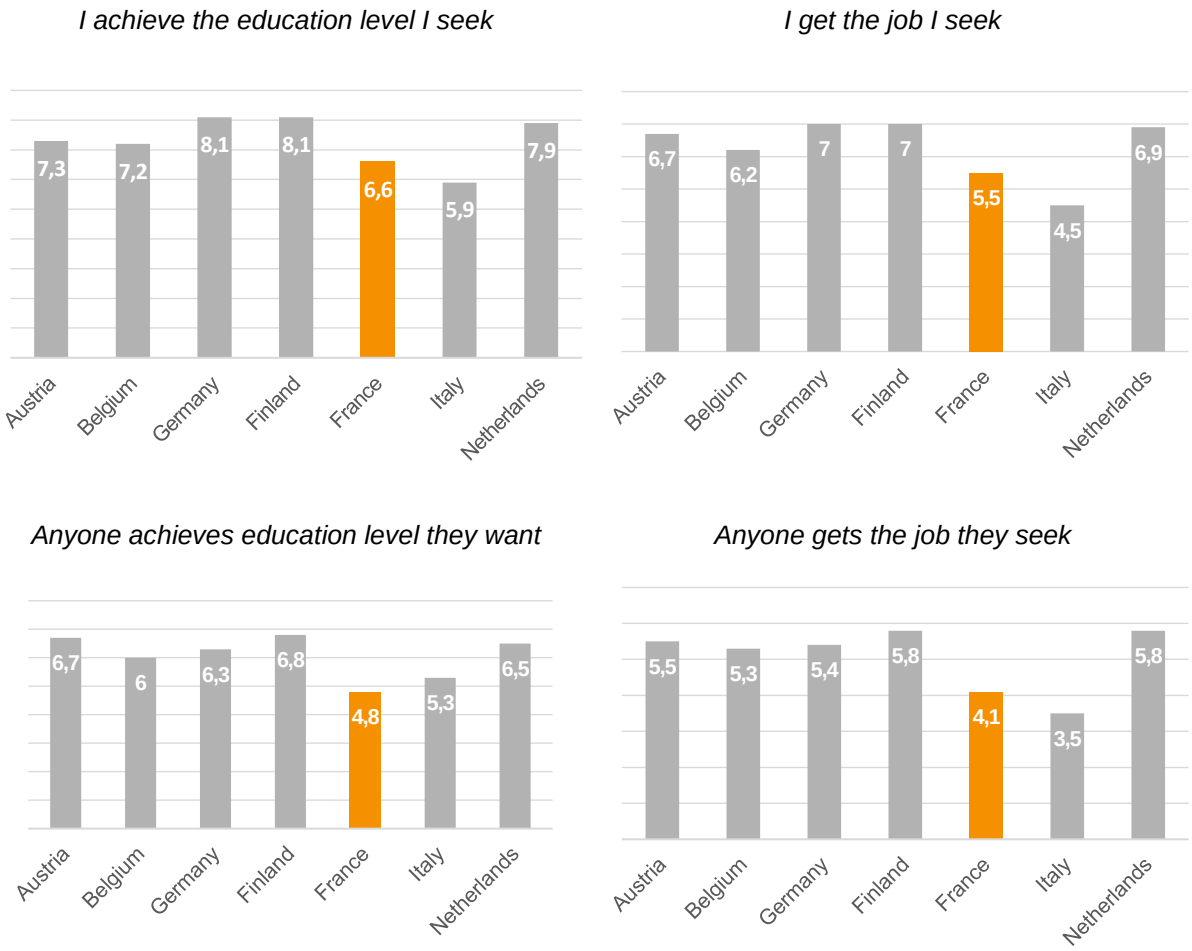


Source: Figure 16 of "Baromètre des territoires 2019" (Institut Montaigne)

2. Views on Equality of Opportunity

In the last section, we summarized evidence that perceptions of economic security are worse in France compared to the EU27, and that there is heterogeneity in those views. Figure 7 shows that France ranks lower than other countries in perceptions of economic opportunity.

Figure 7 – "On scale 0-10, there is a fair chance…"

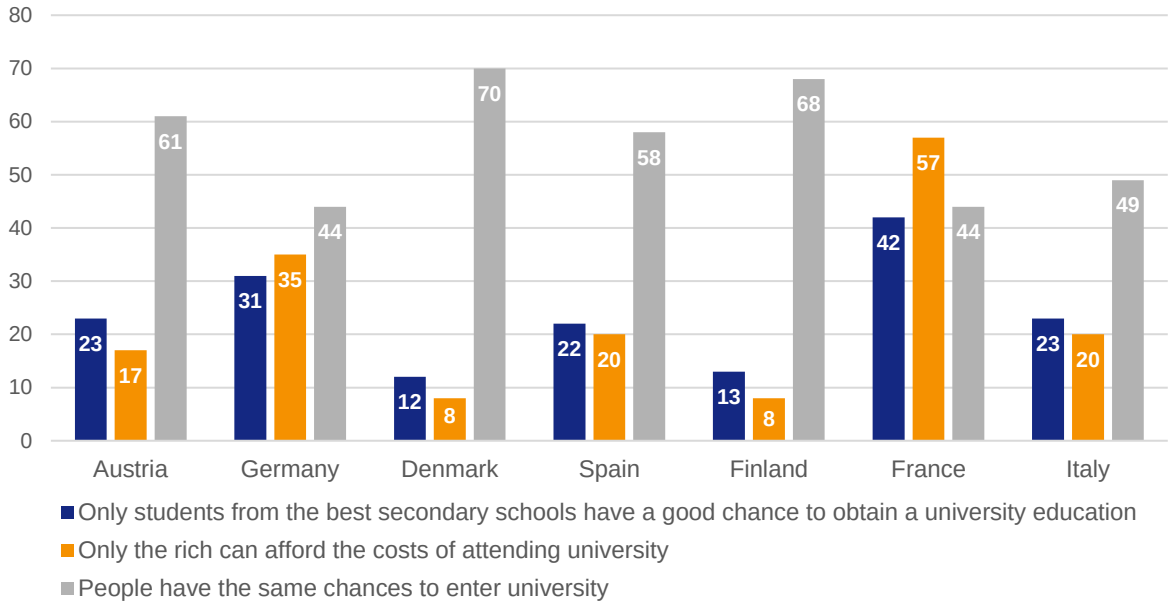


Source: Author's calculations using data from the 2018 ESS survey

For instance, France is ranked second from the bottom in terms of whether people think there is a fair chance they achieve the education level or job they seek. This pattern also holds when people are asked about the chance *anyone* has of achieving the education or job they want, and not just themselves. Note that France ranks lowest in whether people think there is a fair chance that anyone achieves the education level they want. Figure 8 further illuminates the findings from Figure 7. France performs worse than the other countries in the sample on perceptions of who can access a university education: 42% of

French respondents of the 2009 ISSP survey think only students from the best secondary schools have a chance to obtain a university education, compared to 20% on average elsewhere. Similarly, nearly 60% of French respondents think that only the rich can afford the costs of attending university, relative to 20% elsewhere. France ranks second lowest in terms of perceptions of whether people have the same chances to enter university.

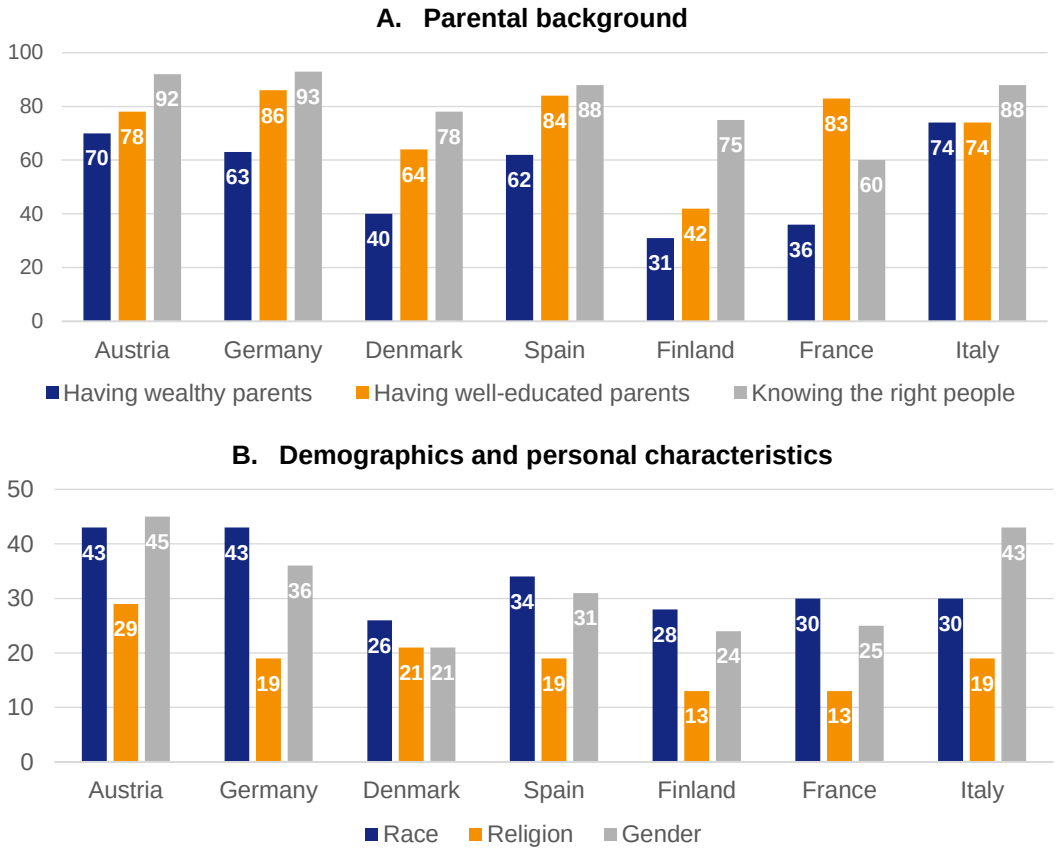
Figure 8 – On average, people in France think that entrance into university is not concentrated, but that only the rich can afford the costs of attendance
(% in agreement with each of the statements)



Source: Author's calculations using data from the 2009 ISSP Survey

Figure 9 shows what people consider to be important factors in "getting ahead." Panel A shows that only 36% of ISSP respondents in France thought having wealthy parents was important for getting ahead, compared to 63% of respondents in Germany. Respondents in France are more similar to other countries' average in how important they think it is to have well-educated parents. Finally, France considers knowing the right people to be important at a much lower rate than other countries. Panel B shows that, while all countries tend to rank personal characteristics such as race, religion and gender as unimportant for getting ahead, France is quite similar to the average.

Figure 9 – "How important is … for getting ahead?" (% important)

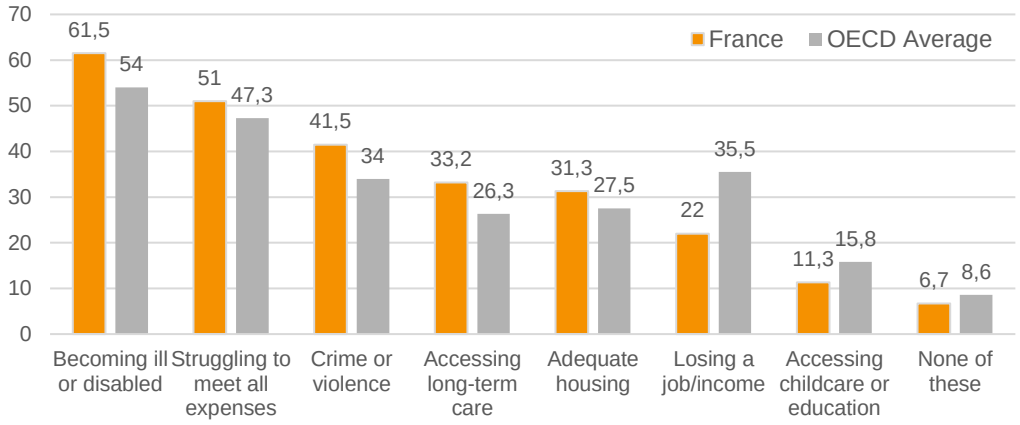


Source: Author's calculations using data from the 2009 ISSP survey

3. Expectations of Economic Situation in the Short, Medium and Long Run

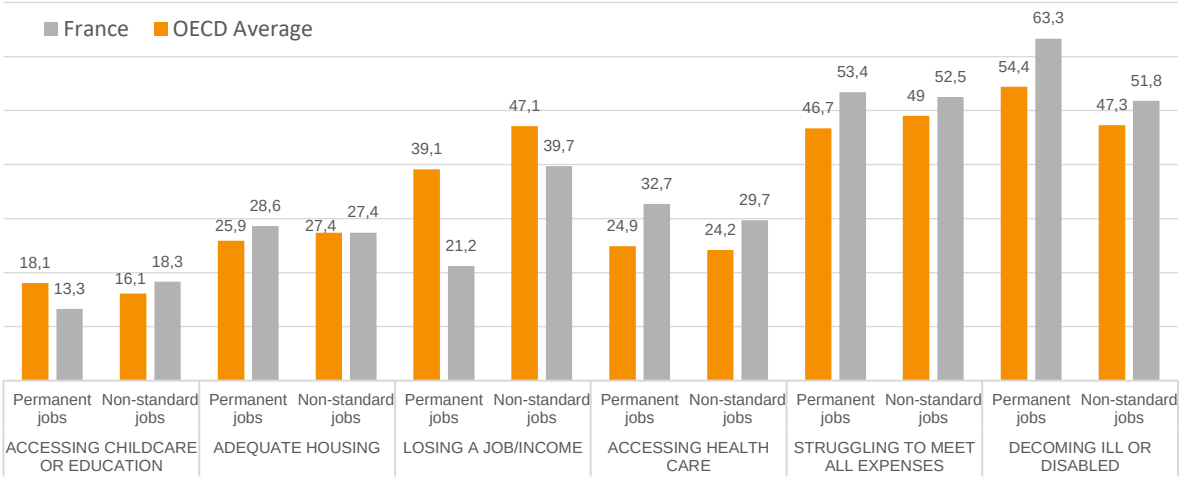
The short and medium run concerns of people in France and across the OECD reflect worry about economic security. Becoming ill or disabled, struggling to meet all expenses, and crime or violence are the top three most cited concerns among French respondents (Figures 10 and 12). French respondents tend to name those three concerns more often than the OECD average. On average, respondents across the OECD are more concerned about losing a job/income, making it the third most cited short-term concern across the OECD. Job or income loss is not a top concern in France across the full sample. However, this fact masks heterogeneity by job type in France – namely, workers in permanent and non-standard jobs report their concern with economic security in different ways. Figure 11 shows that workers in permanent jobs are more likely to be concerned with becoming ill or disabled, but less likely to worry about job or income loss. These patterns are in line with the existing permanent worker protections in France, and the more limited disability protections.

Figure 10 – Issues listed as top short run concerns



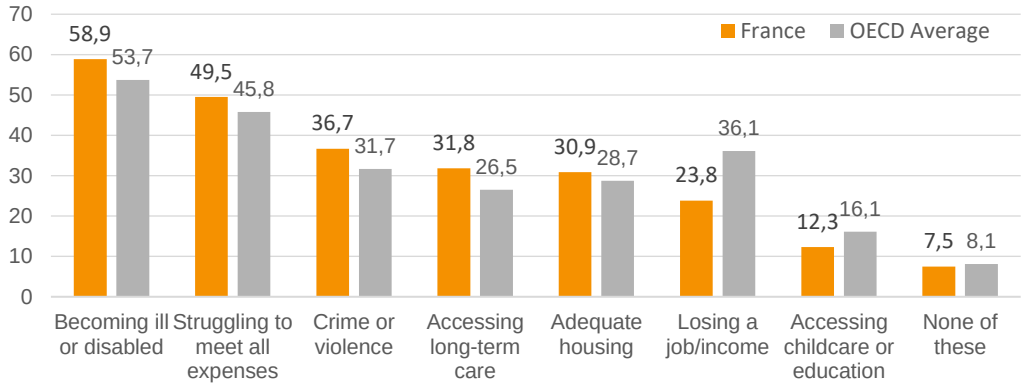
Source: Author's calculations using data from the OECD "Risks that Matter" survey

Figure 11 – Issues listed as top short run concerns by job type (permanent vs. non-standard)



Source: Author's calculations using data from the OECD "Risks that Matter" survey

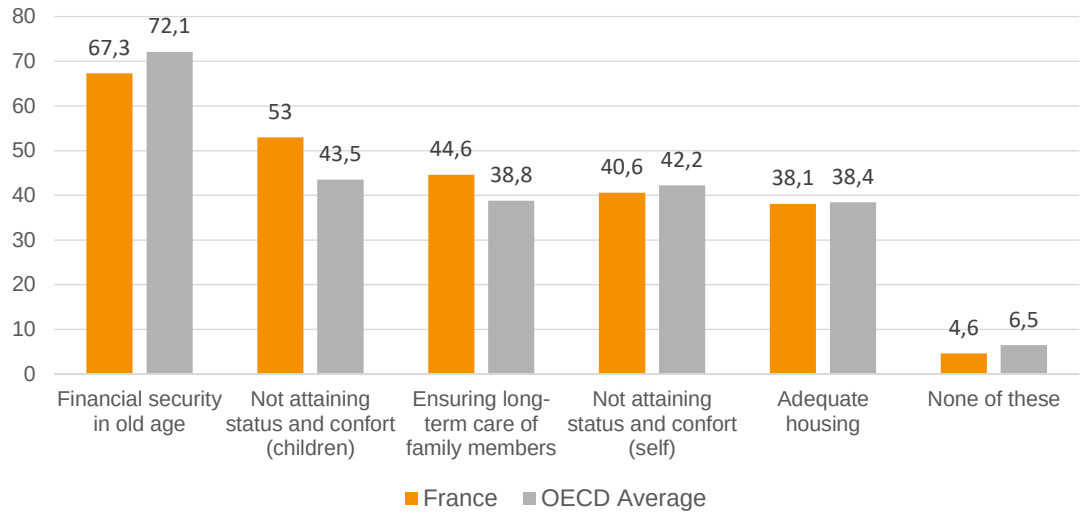
Figure 12 – Issues listed as top medium run concerns



Source: Author's calculations using data from the OECD "Risks that Matter" survey

Individuals also report economic security among their top long-run concerns. In France and across the OECD, individuals report their main concerns to be financial security in old age and not attaining a high enough status or level of comfort for their children. On average, long-run concerns are similar between France and the OECD average (Figure 13).

Figure 13 – Issues listed as top long-run concerns

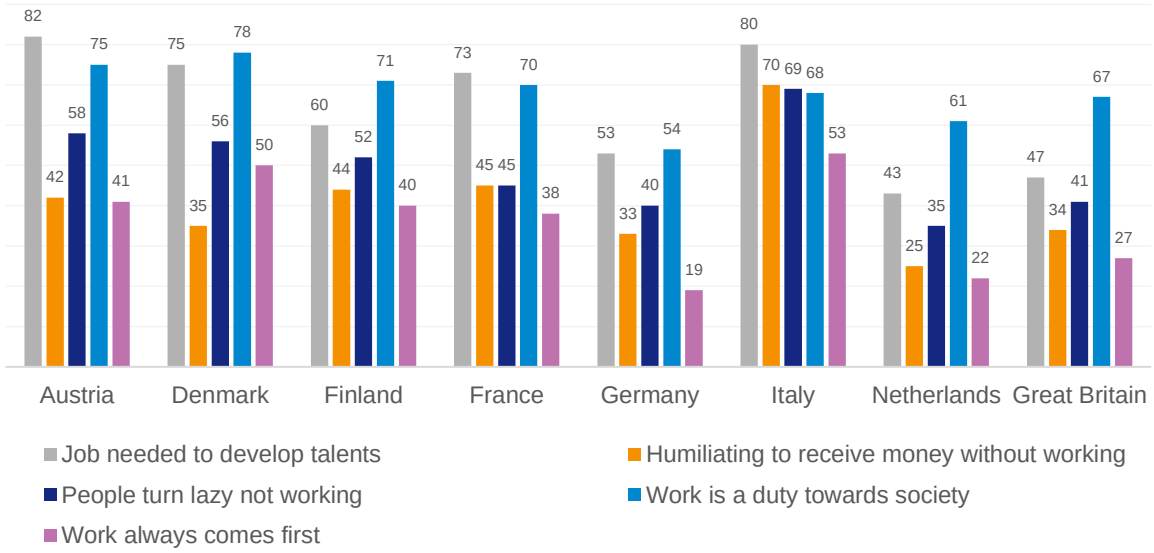


Source: Author's calculations using data from the OECD "Risks that Matter" survey

4. Views of "Good Jobs" and Attitudes Towards Work

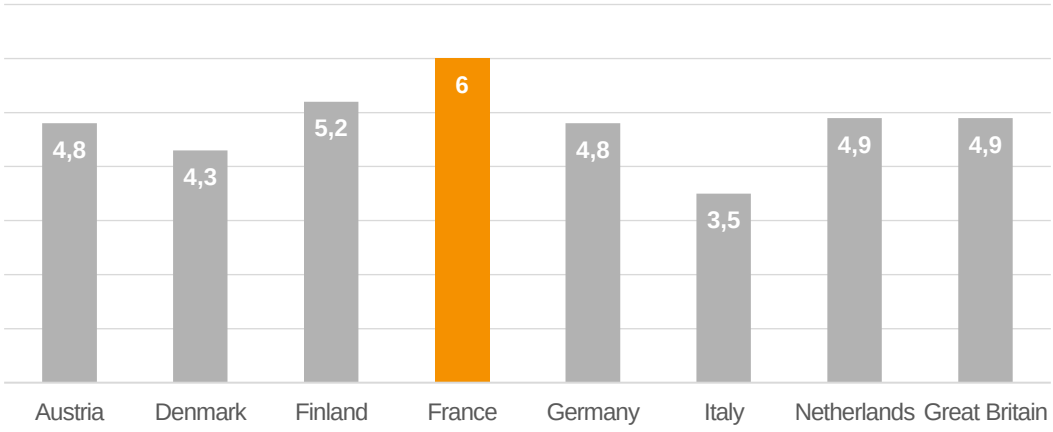
One of the goals of our survey is to better understand how French citizens define "good jobs" and to elicit their support, or lack thereof, for labor market policies. The 2017 European Values Study (EVS) gathered data on attitudes towards work, which informed the design of questions in our original survey. Figure 14 shows that respondents in France are similar to those in Austria, Denmark and Italy in their opinion of the role of jobs in helping workers develop their talents. The majority of respondents in France don't agree with the statement that it is humiliating to receive money without working, similarly to respondents in all comparison countries but Italy. Respondents in France are split on the view that people turn lazy if they are not working. Together with views of economic insecurity and labor market regulations, these last two facts may explain why French respondents are most likely among this sample to say that one can refuse a job when they are unemployed, rather than accept any job that is offered (Figure 15). Italian respondents, on the other hand, are most likely to agree that it is humiliating to receive money without working and that being idle turns people lazy. They are also the most likely to support taking any job if unemployed.

Figure 14 – Attitudes towards work (% in agreement)



Source: Author's calculations using data from the 2017 EVS survey

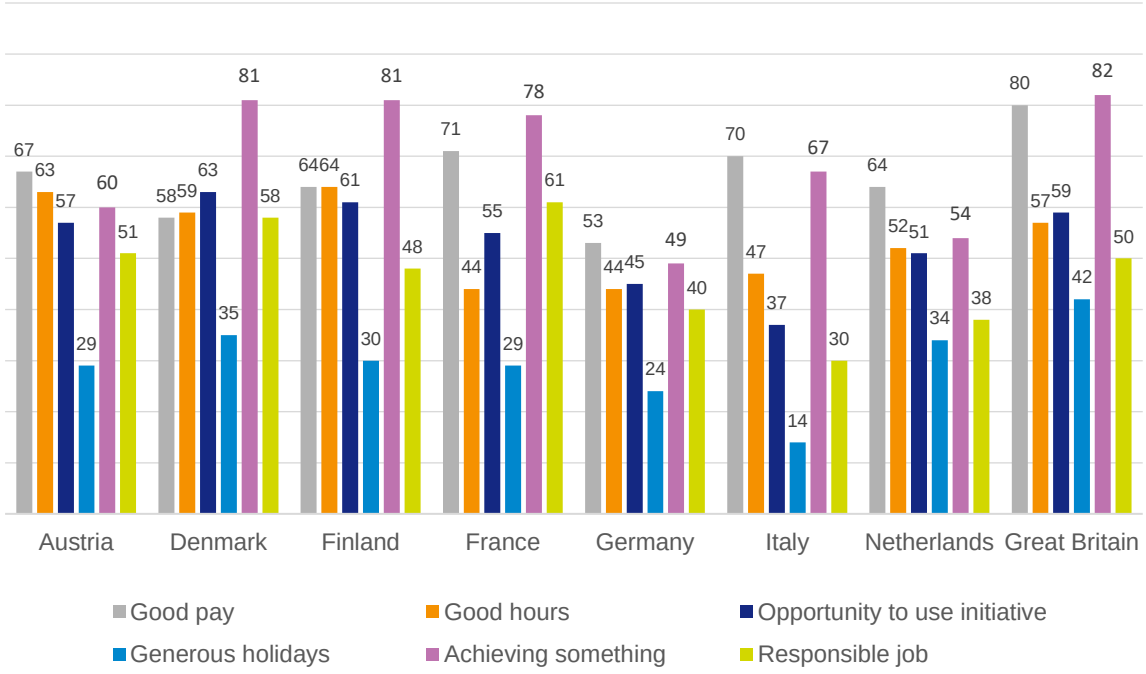
Figure 15 – French respondents are relatively more willing to refuse a job when unemployed than to accept any job (average score between 0-10)



Source: Author's calculations using data from the 2017 EVS survey

We now turn to the factors that respondents find important in a job. In France, the factors most often mentioned as important in a job are "achieving something" (78% of the sample), "good pay" (71% of the sample), and "responsible job" (61%). "Generous holidays" are mentioned least often, likely because of holiday regulations in France. Figure 16 shows that France follows a similar pattern to some of the other countries in the sample.

Figure 16 – Important aspects of a job (% mentioned as important in a job)

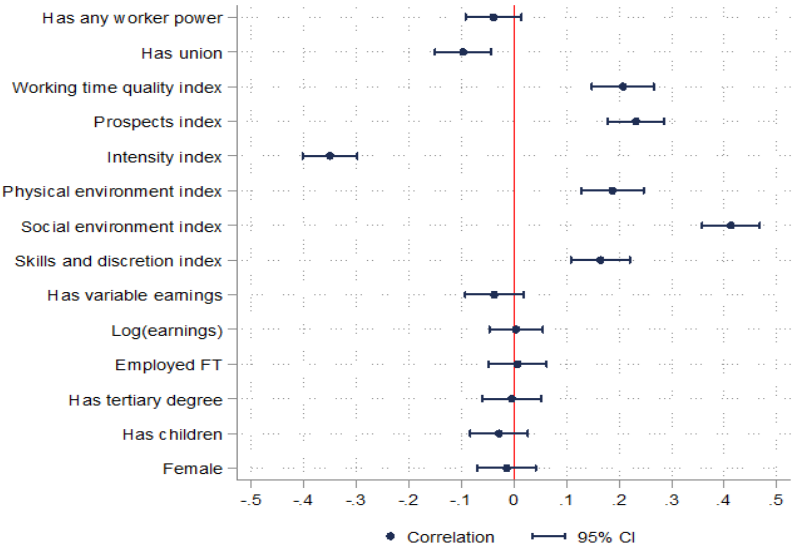


Source: Author's calculations using data from the 2017 EVS survey

How do these aspects of a job correlate with job satisfaction? Figure 17 plots correlation coefficients between an indicator for job satisfaction and different job characteristics, using French data from the 2015 European Working Conditions Survey. Job traits that are positively correlated with work satisfaction include higher working time quality (measured by the working time quality index), greater job prospects and opportunities for advancement (measured by the prospects index), better physical and social environments (measured respectively by the physical and social environment indices), and more opportunities to use one's skills and decide how and when to work (measured by the skills and discretion index). Being part of a union and having a more intense workplace are negatively correlated with worker satisfaction.

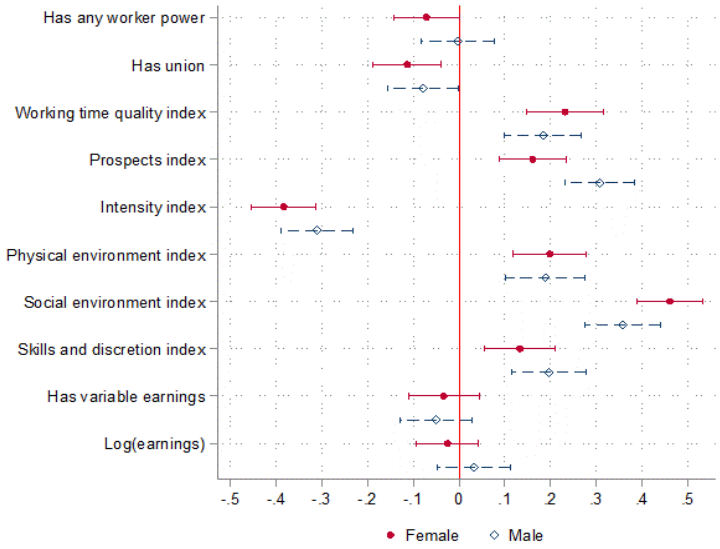
Figures 18 and 19 replicate Figure 17, breaking the results down by gender and educational attainment. The correlation patterns are similar for men and women, but prospects are more positively correlated with work satisfaction for men, while women show higher correlation between satisfaction, and higher work intensity and better social environment. The patterns are also similar across educational attainment groups, except for having a union: the negative correlation is only observed for those with less than a tertiary degree.

Figure 17 – Correlates of job satisfaction in France



Source: Author's calculations using data from the 2015 European Working Conditions Survey[1]

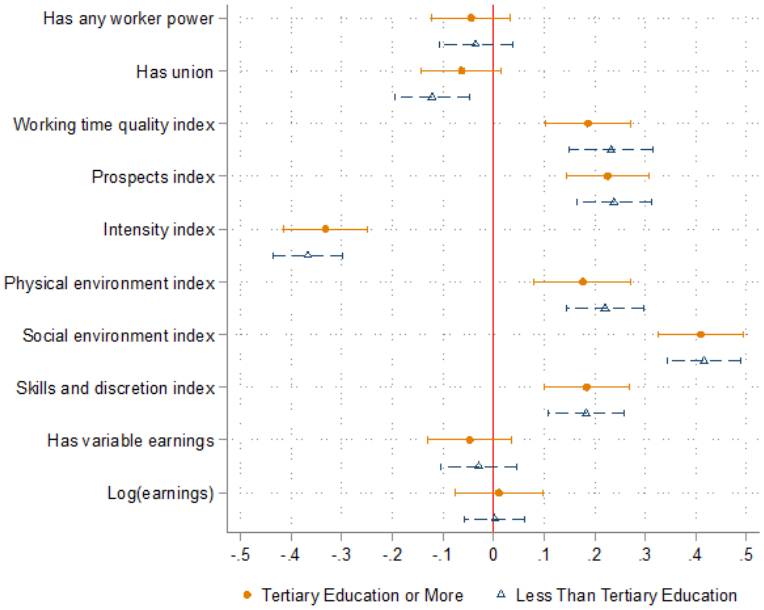
Figure 18 – Correlates of job satisfaction in France, by gender



Source: Author's calculations using data from the 2015 European Working Conditions Survey

[1] This figure plots correlations between standardized measures of work conditions and satisfaction for workers in France, and a number of demographic characteristics and job conditions. *Has tertiary degree* equals 1 if the worker has any tertiary degree, including short term or technical degrees. *Has variable earnings* is an indicator for having a variable component to earnings. *Skills and discretion index, Social environment index, Physical environment index, Intensity index, Prospects index and Working time quality index* are job quality indices constructed by EWCS. *Has union* is an indicator for having a union, workers' council or a similar committee. *Has any worker power* is an indicators for having a union, or any other forum to express worker grievances. The sample is restricted to those who report being employed part-time or full-time. Variables are weighted by the EWCS total analytical weight when being standardized.

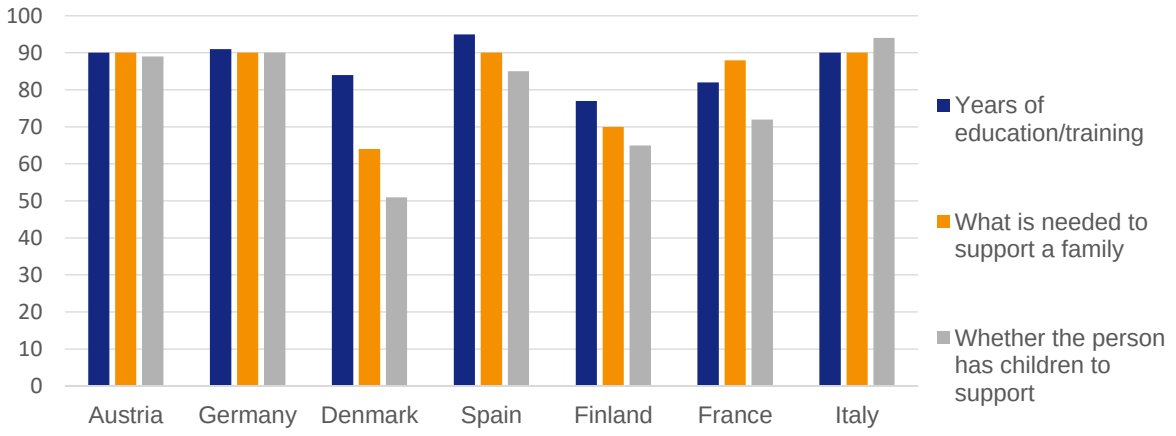
Figure 19 – Correlates of job satisfaction in France, by educational attainment



Source: Author's calculations using data from the 2015 European Working Conditions Survey

Figure 17 suggests that log earnings are uncorrelated with job satisfaction, but it seems implausible that pay does not matter at all. Figure 20 sheds some light on what people think pay should reflect. France is similar to other countries in how important ISSP respondents think education and training should be in deciding how much people ought to earn. More notably, "what is needed to support a family" and "whether the person has children to support" are considered important by 88% and 72% of respondents, respectively, suggesting appetite for "living," not entirely performance-based pay.

Figure 20 – "In deciding how much people ought to earn, how important should each of these things be?" (% important)

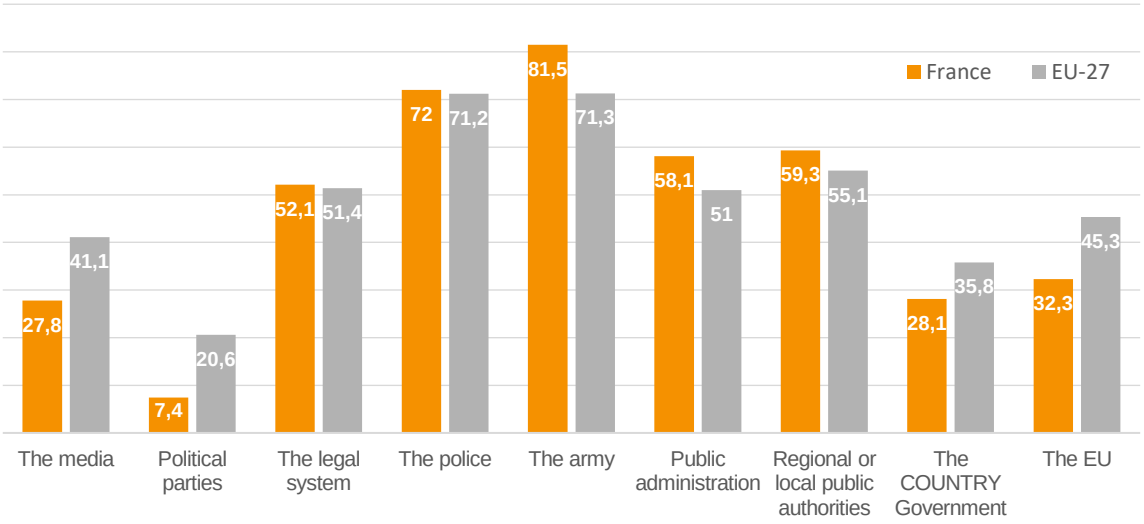


Source: Author's calculations using data from the 2009 ISSP Survey

5. Trust in Government and Institutions

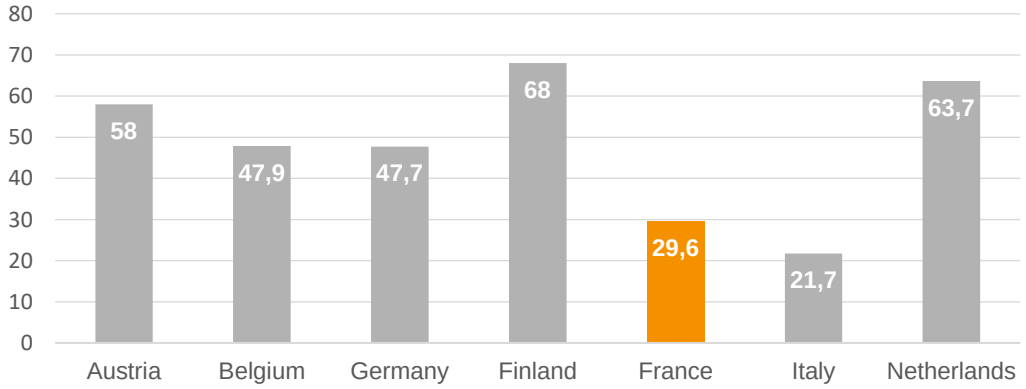
Trust in government and institutions can factor into support for existing and new policies. Figure 21 compares levels of trust for different institutions in France and across the EU27. It is notable that French respondents trust their public administration, and their regional and local public authorities relatively more than their EU27 counterparts. However, respondents in France are relatively less trusting of their national government. Figure 22 offers a potential explanation: approximately 30% of French EVS respondents agree that decisions in France's politics are transparent, while at least 47% of Austrian, Belgian, German, Finnish and Dutch respondents agree with this statement.

Figure 21 – Trust in institutions (% tend to trust)



Source: Author's calculations using data from Eurobarometer 91, June 2019

Figure 22 – "Decisions in country politics are transparent" (% in agreement)



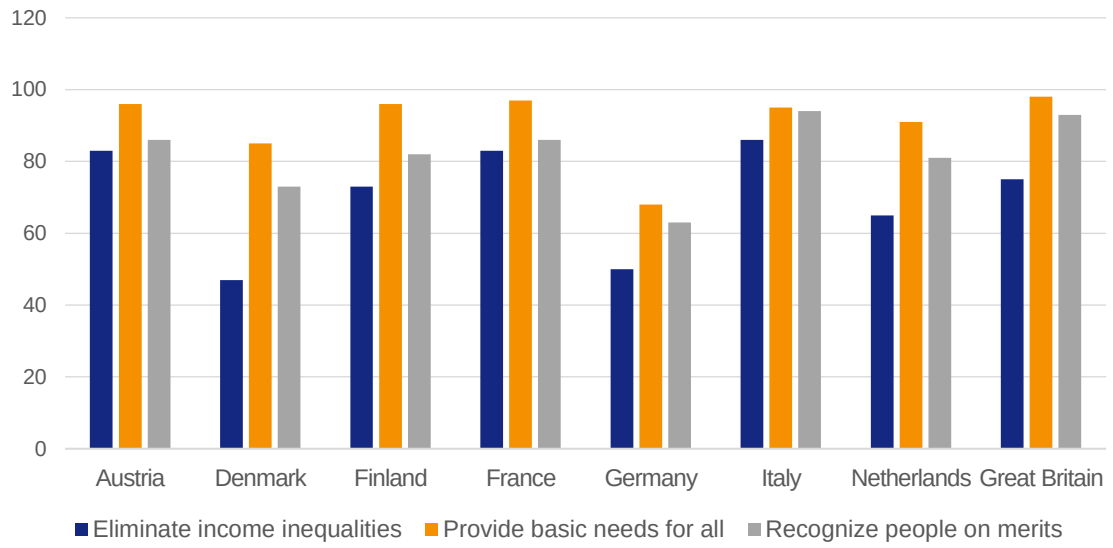
Source: Author's calculations using data from the 2017 EVS survey

6. Views on Fairness and Redistribution

In this section, we review the existing evidence on views of fairness and attitudes towards redistribution. Figure 23 shows that providing for people's basic needs is considered important, as are eliminating income inequalities and recognizing people on merits. This contrasts with the opinion in Germany, where these three items are considered important at a much lower rate.

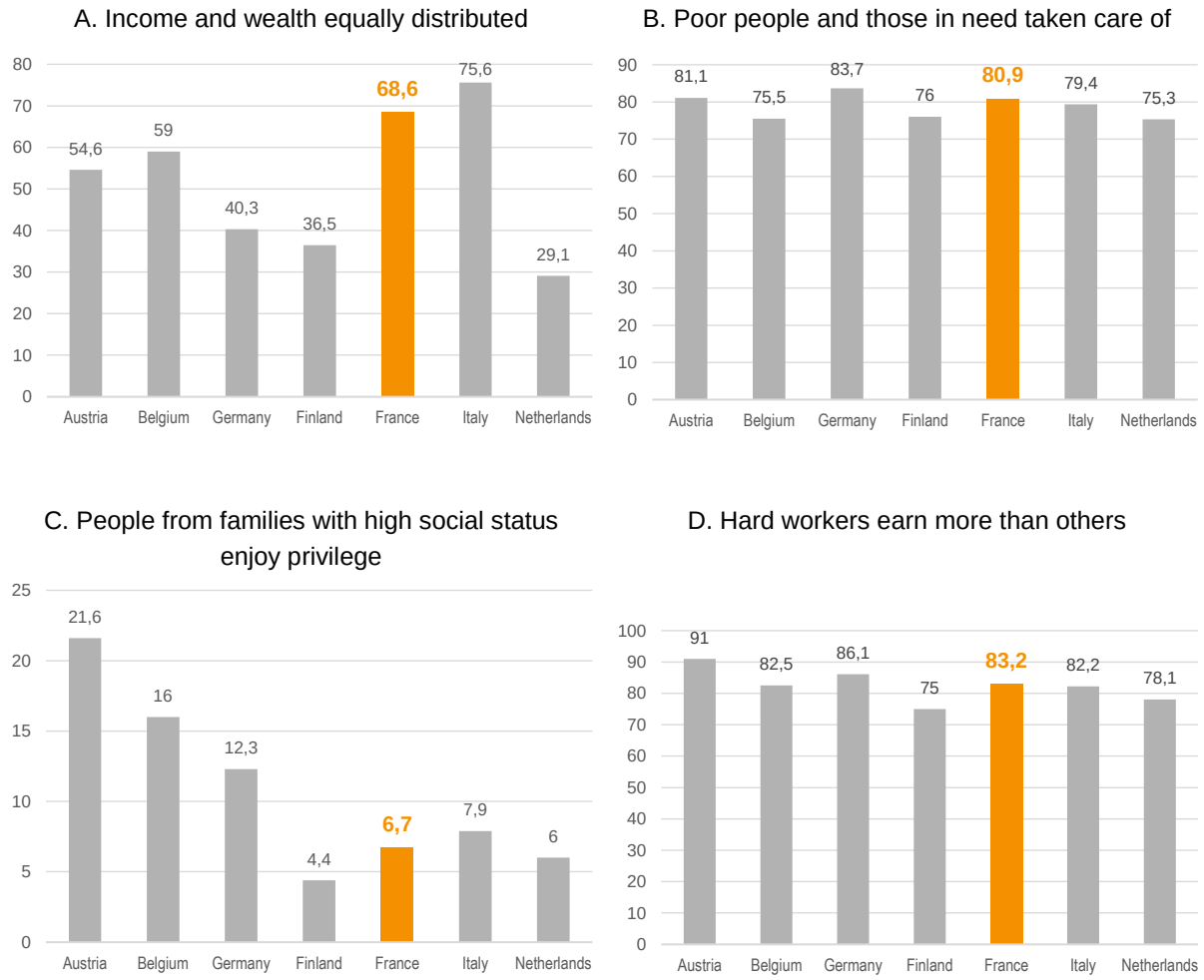
Views on what is important somewhat translate into notions of what makes a society fair. Countries that consider eliminating income inequalities important also tend to think that society is fair when income and wealth are equally distributed (Figure 24A). Similarly, countries that think it's important to provide basic needs for all also tend to agree that society is fair when poor people and those in need are taken care of. These patterns break with respect to the relationship between recognizing people on merits, and accepting differential privileges and pay based on social status or hard work. All countries in our sample tend to disagree that society is fair when people from families with high social status enjoy privilege, but respondents in France are the third least likely to agree with that statement. Respondents in France and across the other countries in the sample tend to agree that society is fair when hard workers are compensated for their efforts. The pattern in Figure 24D does not replicate the heterogeneity in what share of respondents think recognizing people based on merit is important.

Figure 23 – France tends to think that it is important to eliminate income inequalities and provide basic needs for all (% think is important)



Source: Author's calculations using data from the 2017 EVS survey

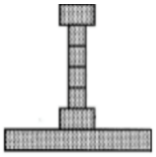
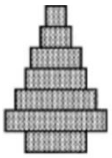
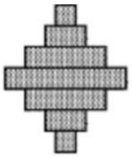
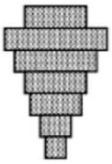
Figure 24 – "Society is fair when…" (% in agreement)



Source: Author's calculations using data from the 2017 EVS survey

Table 1 summarizes in what kind of society respondents in different countries think they live, and in what kind of society they think they should live. Column (1) of Table 1 shows the share of 2009 ISSP respondents who selected that diagram as the response to "what type of society is <country> today?" Similarly, column (2) shows each diagram's share of responses to "what do you think <country> ought to be like?" We include data for 1999 and 2009 for comparison for all countries where possible. We have highlighted in red in which society people in France think they live, and which society they think France should be like. Note that the share who think France is society B changed by 2 percentage points from 1999 to 2009, while the share that thinks France ought to be society D increased by 8 percentage points.

Table 1 – What type of society each country is (1) and ought to be like (2)?
(% selected that option)

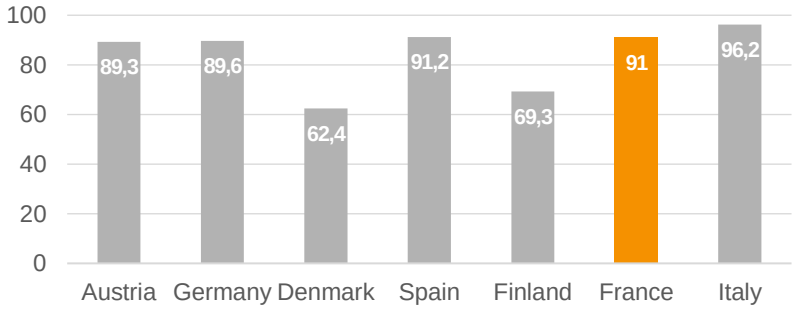
		A A small elite at the top, very few people in the middle and the great mass of people at the bottom		B A pyramid with a small elite at the top, more people in the middle, and most at the bottom		C A pyramid except that just a few people are at the bottom		D A society with most people in the middle		E Many people near the top, and only a few near the bottom	
											
		(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Austria	1999	0.09	0.00	0.24	0.08	0.27	0.16	0.39	0.55	0.02	0.21
	2009	0.17	0.01	0.25	0.05	0.32	0.14	0.23	0.57	0.03	0.23
France	1999	0.14	0.00	**0.49**	0.08	0.21	0.22	0.14	**0.44**	0.01	0.25
	2009	0.18	0.01	**0.51**	0.05	0.17	0.20	0.12	**0.52**	0.02	0.23
Great Britain	2009	0.14	0.01	0.42	0.06	0.19	0.15	0.22	0.61	0.04	0.16
Italy	2009	0.34	0.01	0.41	0.06	0.12	0.15	0.11	0.48	0.02	0.30
Norway	1999	0.03	0.01	0.11	0.04	0.20	0.07	0.58	0.57	0.08	0.32
	2009	0.02	0.00	0.11	0.03	0.22	0.10	0.59	0.63	0.06	0.25
Sweden	1999	0.11	0.01	0.25	0.05	0.29	0.12	0.34	0.49	0.01	0.34
	2009	0.07	0.00	0.23	0.03	0.30	0.12	0.38	0.52	0.02	0.32

Note: Great Britain did not include this question in 1999, and Italy only joined in 2009.

Source: Author's calculations using data from the 2009 ISSP survey

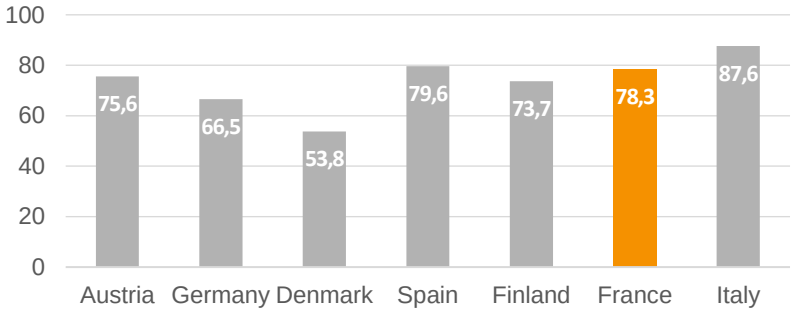
Figure 25 further reinforces the views expressed in Table 1 of how much income inequality exists in France. France is similar to all countries represented below, with the exception of Denmark and Finland, in whether respondents think differences in income are too large. France is also similar to those countries in whether respondents think it is the responsibility of the government to reduce the differences in income between people with high and low incomes (Figure 26).

Figure 25 – "Differences in income in COUNTRY are too large" (% in agreement)



Source: Author's calculations using data from the 2009 ISSP survey

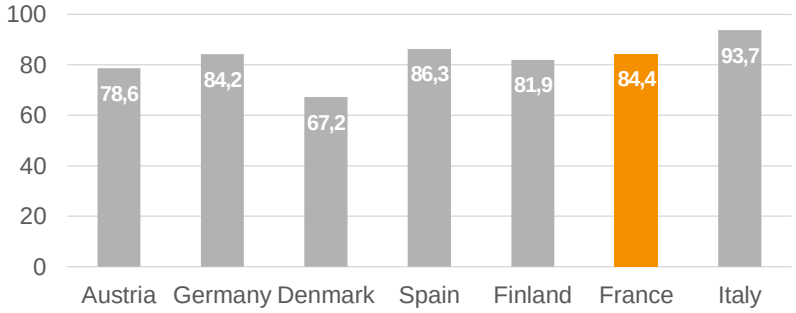
Figure 26 – "It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes" (% in agreement)



Source: Author's calculations using data from the 2009 ISSP survey

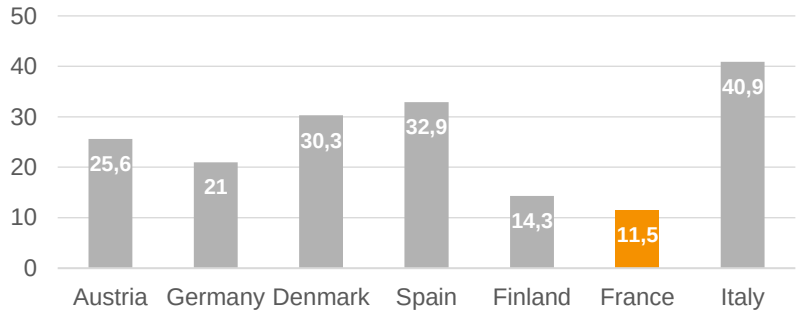
Figure 27 shows that the majority of French respondents of the 2009 ISSP survey think that people with high incomes should pay a larger share of their income in taxes, relative to those with lower incomes. Similarly, the minority of respondents think that taxes in France for those with high incomes are too high (Figure 28).

Figure 27 – "Do you think people with high incomes should pay a larger share of their income in taxes than those with low incomes, the same share, or a smaller share?" (% larger share)



Source: Author's calculations using data from the 2009 ISSP survey

Figure 28 – "Generally, how would you describe taxes in COUNTRY today for those with high incomes?" (% who think taxes are too high/much too high)

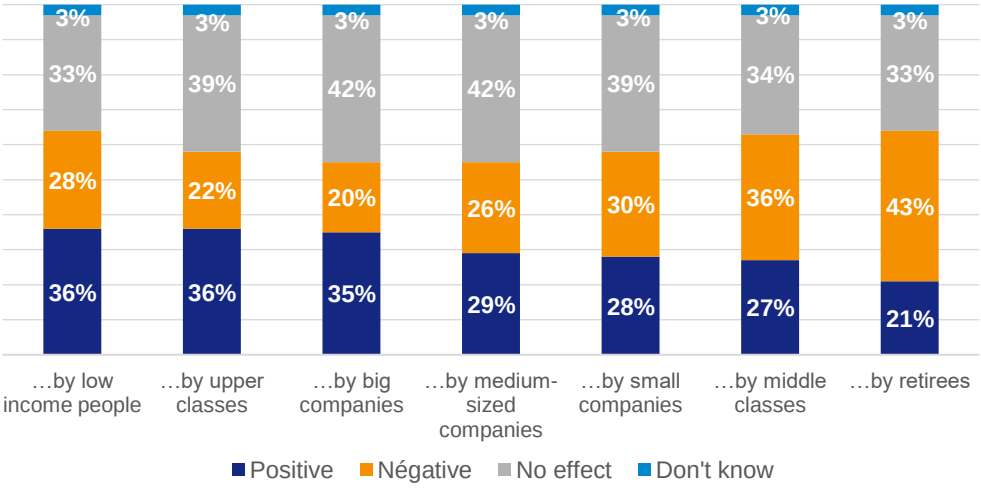


Source: Author's calculations using data from the 2009 ISSP survey

7. Understanding of Policies

In our survey, we want to understand how people think about different policies and whether their level of understanding affects their support for different policies. A September 2019 survey asked survey takers about the possible impacts of tax cuts announced by the government of President Macron around that time. Figure 29 summarizes the results. The tax cuts were expected to have a positive impact on spending by low-income people; no impact on spending by the upper classes, companies of all sizes; and a negative impact on spending by the middle-class and retirees.

Figure 29 – "In our opinion, the tax cuts announced by the government will have a negative/positive/no impact on consumption"



Source: "Les Français et les impôts" (2019), by OpinionWay, Square, Les Échos and Radio Classique

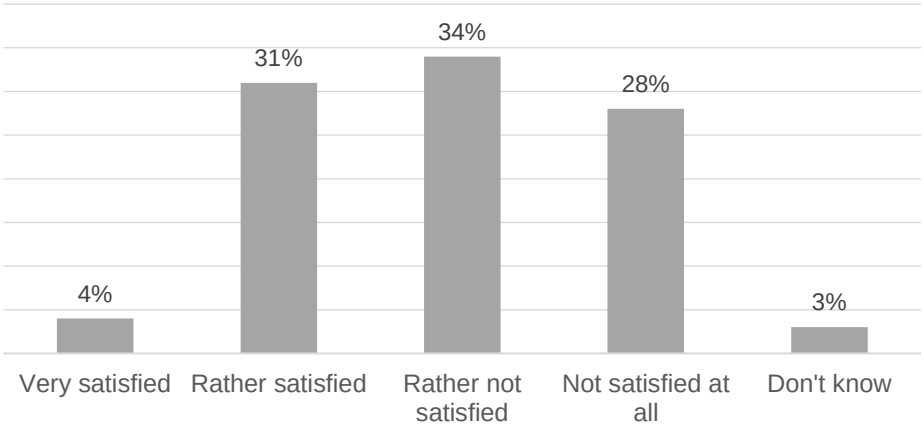
8. Views on Current Policies

According to a recent survey by OpinionWay, Square, *Les Échos* and Radio Classique, 62% of respondents are dissatisfied with the way fiscal policy is conducted in France (Figure 30). Figure 31 shows that respondents were somewhat split on their view of what the main fiscal issue in France is: 29% of respondents think it is that public money is poorly spent, 24% think that the tax system is too complex, 22% think it is that taxes are too high, and 20% think it is that the tax system is unfair. Figure 32 shows that 41% of people think corporate income taxes, and 49% think personal income taxes would increase between 2019 and 2020. Taken together, these figures provide evidence that people in France expect to pay more in taxes and are dissatisfied with how those tax euros are used.

Negative attitudes towards the tax system translate into negative attitudes towards spending. Figure 33 shows that nearly 70% of French respondents of the OECD *Risks that Matter* survey agree with the statement that many people receive public benefits without deserving them, and only 18.5% think that they get enough public benefits, given the taxes and social contributions that they pay. The dissatisfaction with spending on public goods in France is similar to the attitude across the OECD.

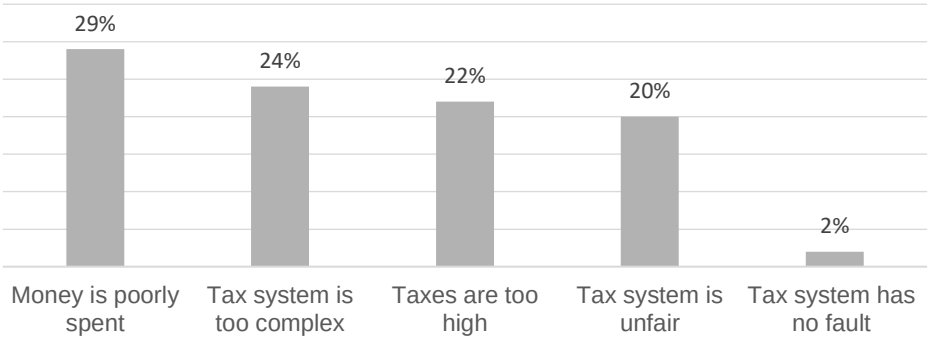
Finally, while we focus in our own survey on fiscal policy outcomes, we also want to understand what people think about support for education policies in France. Figure 34 shows that France ranks second lowest in terms of how the education system is rated.

Figure 30 – Satisfaction with regards to fiscal policy in France



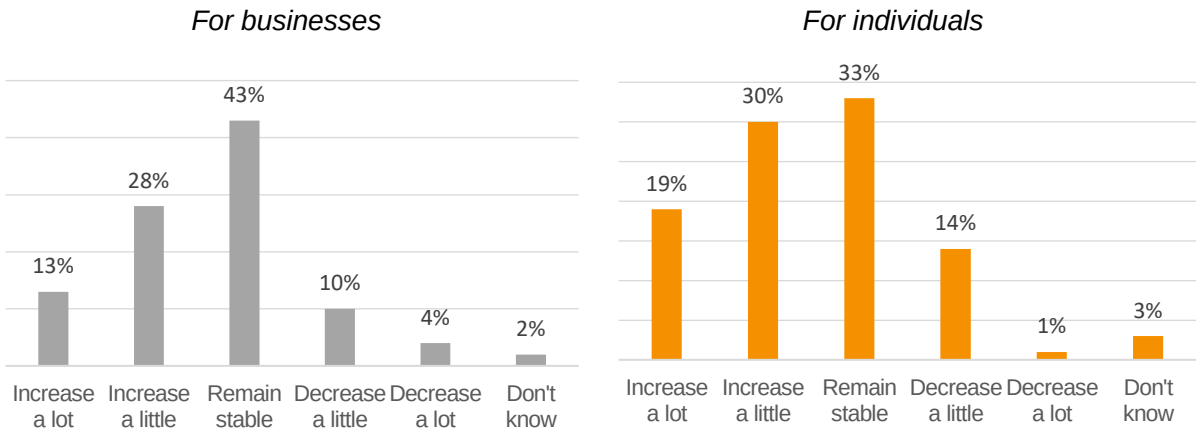
Source: "Les Français et les impôts" (2019), by OpinionWay, Square, Les Échos and Radio Classique

Figure 31 – "In your opinion, the biggest fiscal issue in France is…?"



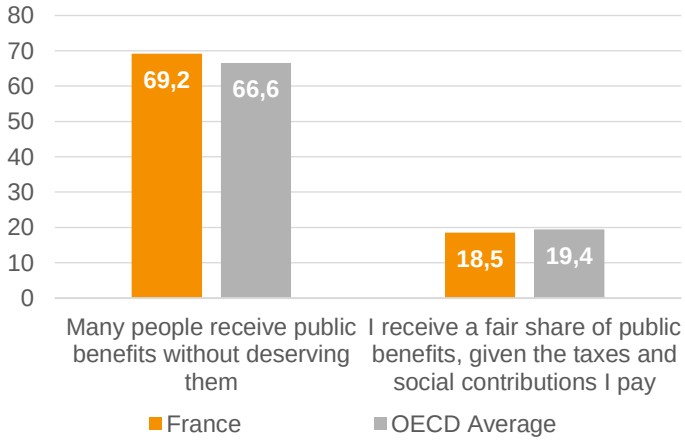
Source: "Les Français et les impôts" (2019), by OpinionWay, Square, Les Échos and Radio Classique

Figure 32 – Estimates of how taxes would evolve between 2019 and 2020



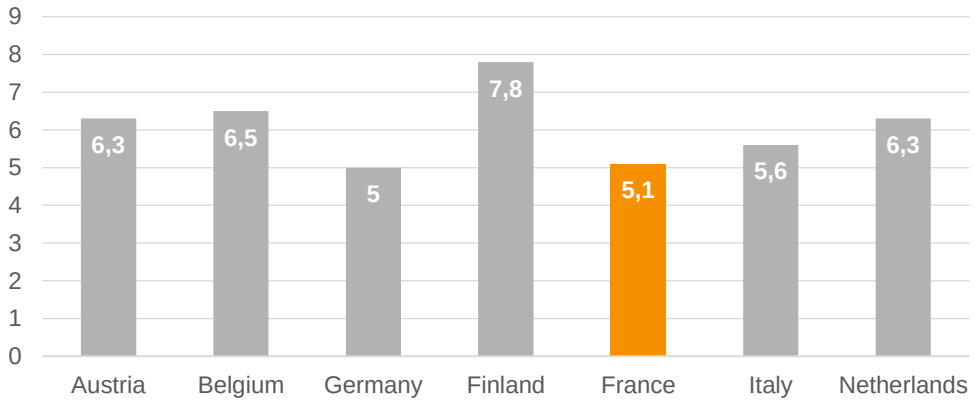
Source: "Les Français et les impôts" (2019), by OpinionWay, Square, for Les Échos and Radio Classique

Figure 33 – Fairness of public benefits (% in agreement)



Source: Author's calculations using data from the OECD "Risks that Matter" survey

Figure 34 – "On a scale from 0-10, how do you rank the state of education?" (0-10)

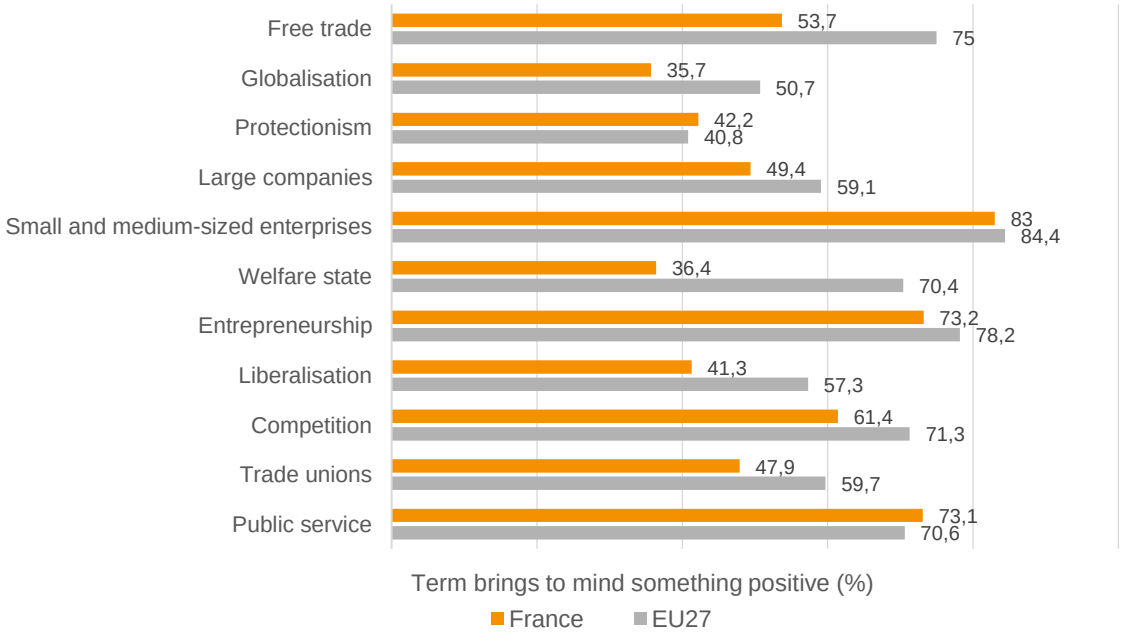


Source: Author's calculations using data from the 2018 ESS survey

9. Views on Ideal Policies

Figure 35 summarizes evidence on attitudes towards different issues. The terms "globalization" and "welfare state" are the least likely to bring to mind something positive among French respondents. Conversely, "Small and Medium-sized Enterprises," "Entrepreneurship" and "Public service" are most likely to do so. Keeping these preferences in mind when proposing new policies might encourage greater support from the public.

Figure 35 – People in France respond less positively to free trade, globalization, and the welfare state



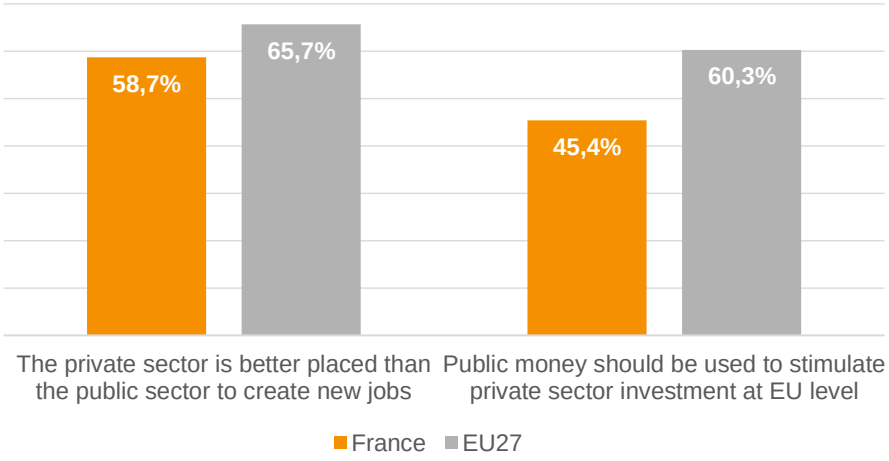
Source: Author's calculations using data from Eurobarometer 91, June 2019

Note that some of the terms to which French respondents react negatively yield positive reactions across the EU27. For instance, France tends to respond less positively to the terms “free trade,” “globalization,” “welfare state,” “liberalization,” “competition” and “trade unions.” The only term that brings to mind something positive at a higher rate in France is the term “public service.”

10. Views on the Role of Government in Ensuring Economic Security

Our survey asks if and how the government should play a role in ensuring a basic level of economic security for all. Figure 23 provides some evidence of widespread support for fulfilling basic needs, but there is limited evidence on the role of the government in promoting “good jobs” as defined in Figure 16. Figure 36 suggests that support for public sector initiatives to create jobs is limited. Nearly 60% of respondents agree that the *private sector* is better suited to create new jobs. At the EU level, around 45% think public money should be used to stimulate investment. It is unclear whether this below average support has to do with the question being about EU-level investments, or with lack of majority support for stimulating investment with public money more generally.

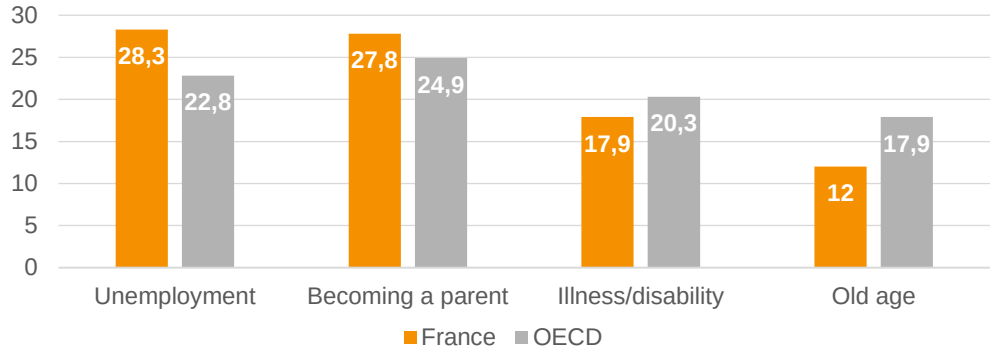
Figure 36 – People in France are split on whether the private or public sectors are better position to create new jobs (% in agreement)



Source: Author’s calculations using data from Eurobarometer 91, June 2019

France performs better than the OECD average in ensuring economic security during episodes of income or job loss. Figure 37 shows that nearly 30% of survey takers agree that the government would or does provide adequate support in case of unemployment or parental leave. However, fewer people agree that France provides adequate support in case off illness, disability or old age, relative to the OECD average.

Figure 37 – "I think that the government would (or does) provide my family and me with adequate income support in the case of income loss due to ..." (% in agreement)

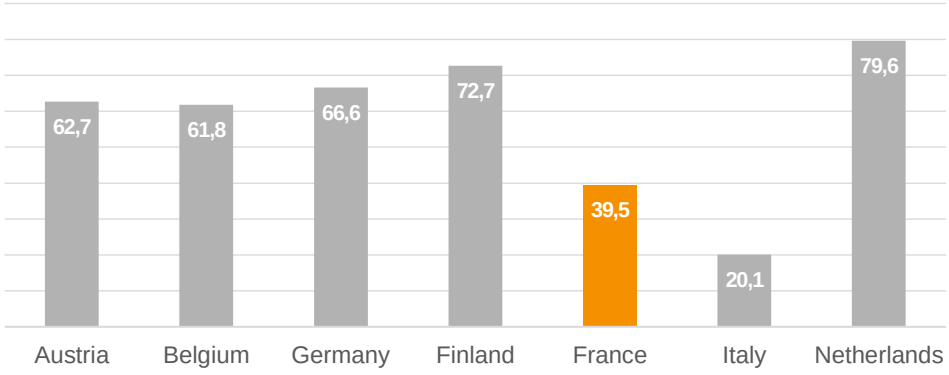


Source: Author's calculations using data from the OECD "Risks that Matter" survey

11. Views on Social Dialogue

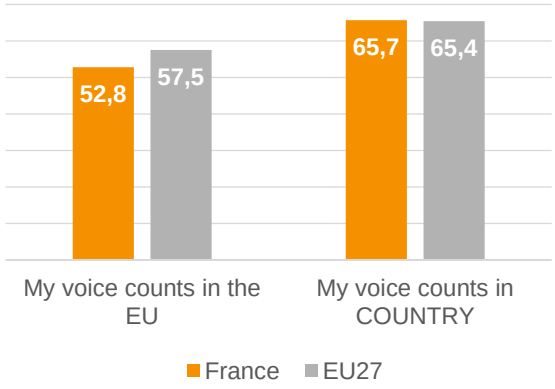
Finally, we summarize evidence on social dialogue and perceptions of who has a voice in society. Figure 38 shows that France ranks second lowest in share that agrees that the government takes into account the interests of all citizens, with Italy ranking lowest. However, most people think their voice counts in France (Figure 39). It is unclear whether there is a perception that everyone has their interests taken into account, just not in the same capacity or on the same issues. Figure 33 suggests that that may be the case, since only 11.5% of French respondents of the OECD *Risks that Matter* 2019 survey agree that the government takes their interests into consideration when designing or reforming public benefits.

Figure 38 – Government takes into account the interests of all citizens (% in agreement)



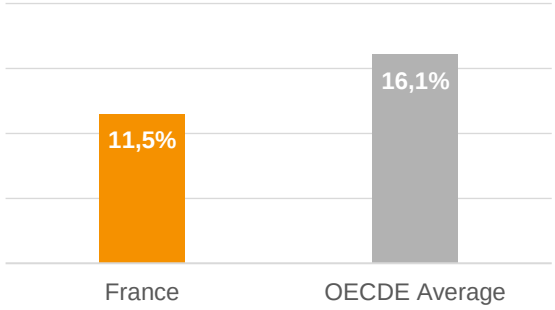
Source: Author's calculations using data from the 2017 EVS survey

Figure 39 – "My voice counts in …" (% in agreement)



Source: Author's calculations using data from Eurobarometer 91, June 2019

Figure 40 – The government incorporates the views of people like me when designing or reforming public benefits (% in agreement)



Source: Author's calculations using data from the OECD "Risks that Matter" survey

Conclusion

This appendix has compiled evidence from a number of sources on how representative samples from France view the current situation of their country, how they think about economic security, good jobs, public good provision and inequality, and whether and how they think government should be involved. Some of the evidence provided in this appendix is over a decade old. Moreover, we cannot say much about whether attitudes towards different issues are correlated without a survey that asks the same set of people about the different areas and issues summarized in this document. We have leveraged the evidence summarized in this appendix to design our own survey, which will allow us to depict a more wholistic picture of attitudes towards economic security, good jobs and different policy outcomes.

Technical note

This note lists the weights used in the analysis of the different surveys mentioned in this appendix.[1] Throughout all of our analysis, we use analytic weights to go from individual to aggregate data.

- Standard Eurobarometer no. 91 (2019)
  - Weight: *w1*, which is Eurobarometer's weight result from target
- European Social Survey (2018)
  - Weight: *dweight*, which is ESS's design weight
- European Values Study (2017)
  - Weight: *pweight*, which is EVS's population size weights
- European Working Conditions Survey (2015)
  - Weight: *w5*, EWCS's total weight
- International Social Survey Programme (1999, 2009 and 2014)
  - Weight: *WEIGHT*, ISSP's weighting factor

[1] We omit discussions of Institut Montaigne's *Baromètre des territoires* (2019) and the survey *Les Français et les impôts* (2019), since we sourced figures directly from those reports, rather than conducting our own calculations. We also omit discussions of the OECD *Risks that Matter* (2018) survey, since we use aggregated data to produce our graphs.

APPENDIX 2

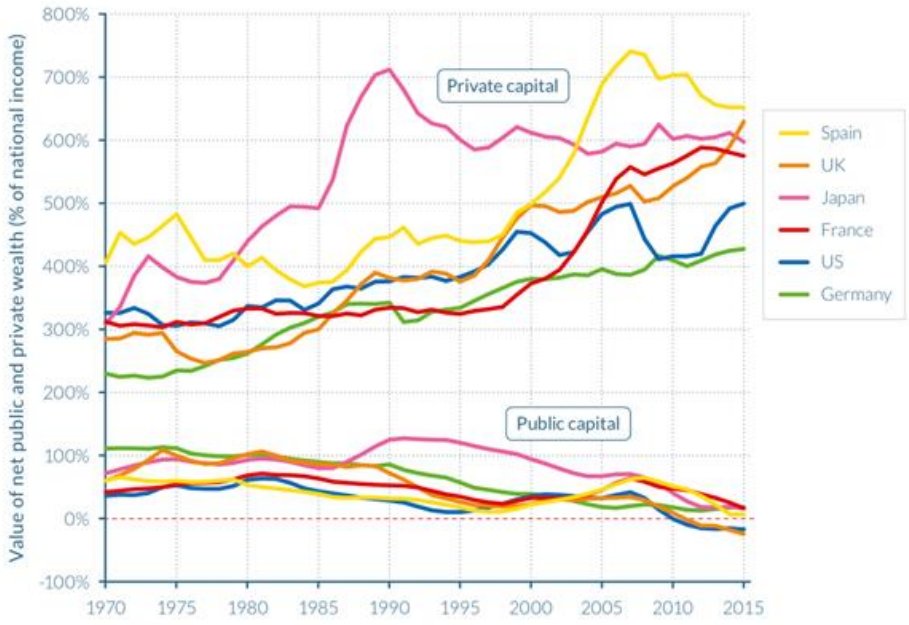
INHERITANCE TAXES

1. Global Wealth Has Increased but Has Become More Unequally Distributed

1.1. Private capital has increased sharply since 1970

The *World Inequality Report* (2018) shows that private wealth has increased in many developed countries around the world (as a share of national incomes) while public wealth has decreased, even becoming negative in indebted nations (Figure 1).

Figure 1 – The rise of private capital and the fall of public capital in rich countries, 1970–2016



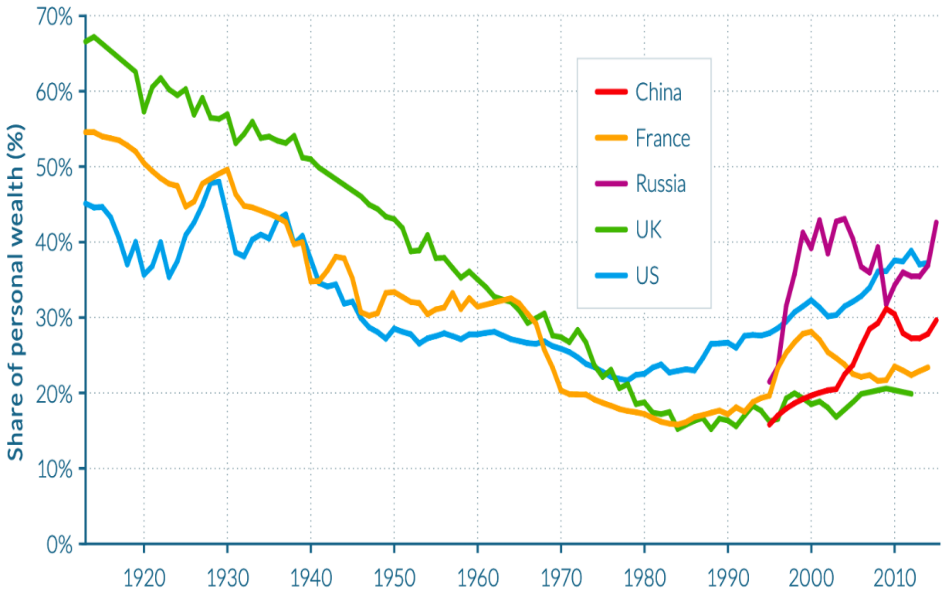
Source: "World Inequality Report" (Chancel et al., 2018)

In absolute value, France has enjoyed an increase of 71% of household's net wealth between 2000 and 2015.[1] However, a major topic of public debate has been how those higher levels of private wealth are (and should be) distributed.

1.2. The share of personal wealth owned by the top 1% has increased since the 1980's

According to the Wealth Inequality Database, there has been a sharp decrease of wealth concentration between 1913 and the 1980's in France, the United Kingdom and the United States (as measured by the share of wealth owned by the top 1%). However, the trend has reversed since, with a higher share of wealth owned by the top 1% in the United States, and to a lower extent, in France and in the United Kingdom (Figure 2).

Figure 2 – Top 1% wealth shares across the world, 1913-2015



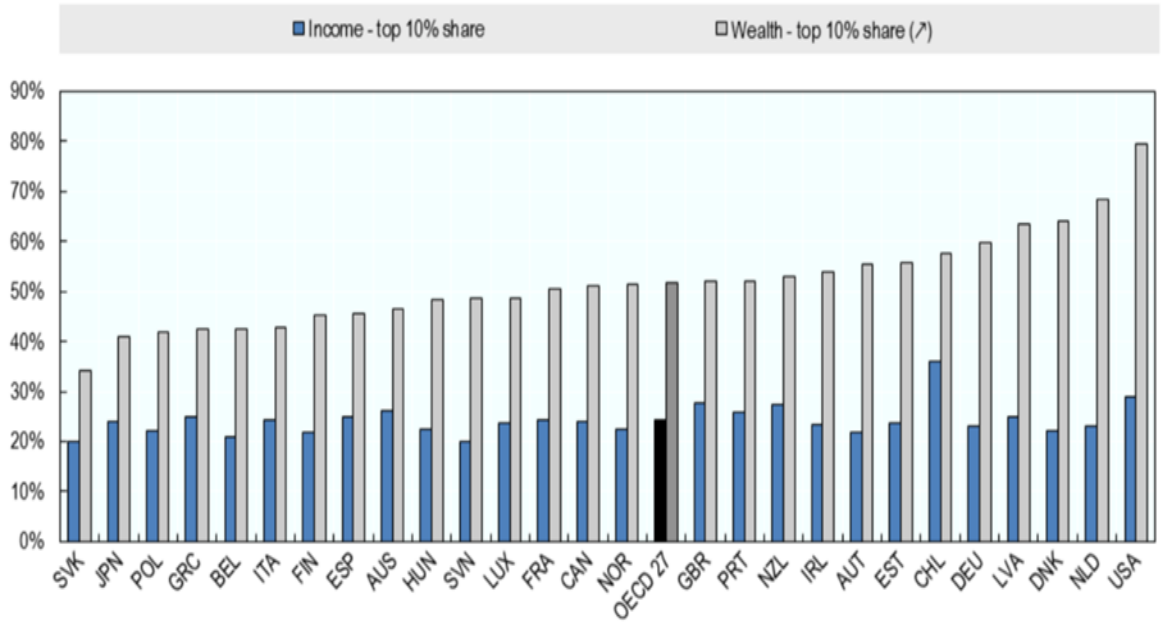
Source: "World Inequality Report" (Chancel et al., 2018)

Using data across more countries, but over a shorter time frame, a 2018 OECD study (Figure 3) shows the 10% richest households own on average 52% of wealth across the 27 OECD countries studied. France is more or less at average, while the United States shows the highest concentration of wealth (80% is owned by the top 10%) of countries

[1] Figure is adjusted for inflation. Nominal increase is 117%. Source: Insee, *Tableaux de l'économie française*, édition 2017, mars 2017, quoted in Conseil des prélèvements obligatoires (2018), *Les prélèvements obligatoires sur le capital des ménages*, Paris: La Documentation française.

studied. Interestingly, the OECD notes that on average wealth concentration by the top 10% is more than twice higher than income concentration.

Figure 3 – Shares of household income and wealth held by units in the top 10% of the distribution

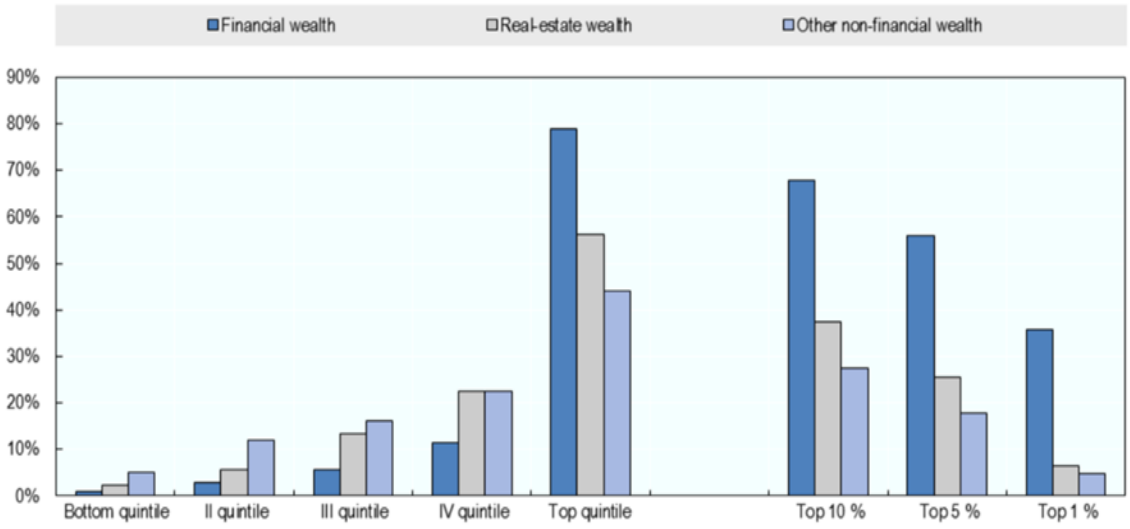


Data: 2015 or latest available year

Source: "Inequalities in household wealth across OECD countries" (Balestra and Tonkin, 2018)

The OECD also notes that wealth concentration is unequal across asset classes. For instance, the top 20% richest households own about 80% of the financial wealth, but "only" about 60% of the real estate wealth in OECD countries (Figure 4). This implies that the composition of wealth changes with the position in the wealth distribution: The poorest households will tend to have most of their wealth in cash or bank deposits, middle-class households will tend to have more of their wealth in real estate, while the richest households will have a higher proportion (and sometimes the majority) of their wealth held in financial assets.

Figure 4 – Shares of financial and non-financial assets for households belonging to different quintiles of the wealth distribution



Data: OECD average, 2015 or latest available year

Source: "Inequalities in household wealth across OECD countries" (Balestra and Tonkin, 2018)

According to the OECD, one of the consequences of this distribution is that "ownership of financial assets is the main factor influencing overall wealth inequality."[1]

2. Inheritance Taxes Exist in Many Developed Countries, Although Their Use as a Redistributive Tool Has Declined

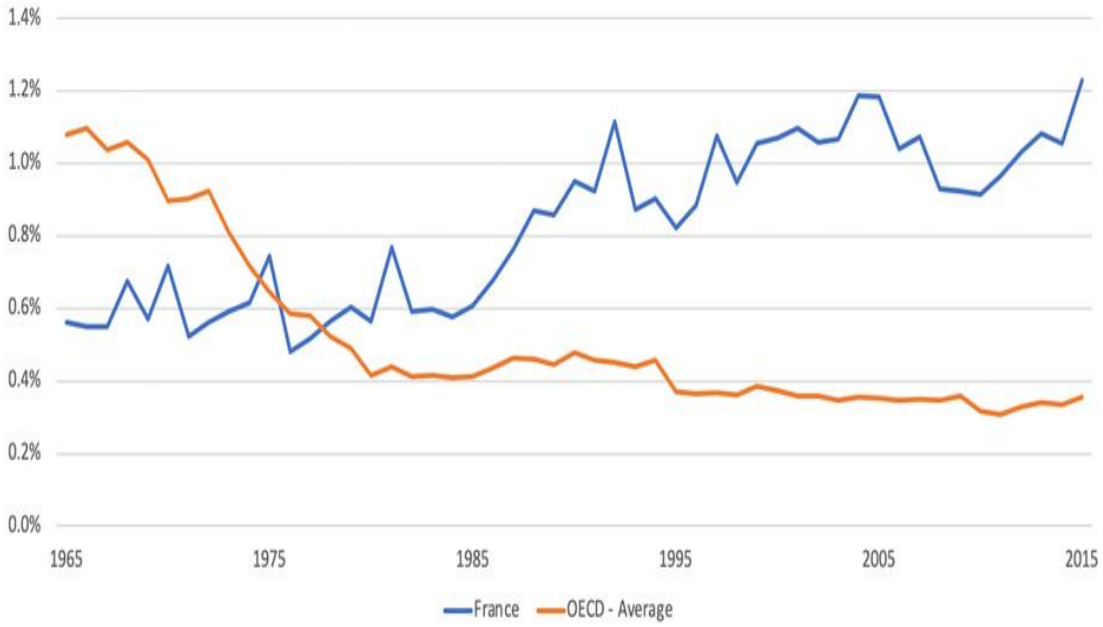
Inheritance taxes are taxes on the wealth passed from a relative to another at death. Although they are often used interchangeably with "estate taxes", there is a difference: estate taxes apply to the *estate itself* (after the death of the person, but before the estate gets transmitted), while the inheritance tax applies to the *beneficiary* (the person who receives the estate). A tax levied while the person who transfers wealth is alive is called a "gift tax".

As of 2017, 26 out of 35 OECD countries have a tax on wealth transfers. However, the share of taxes on wealth transfers in total tax revenue in OECD countries has decreased over time, from 1.1% in 1965 to less than 0.4% in 2015.

[1] Balestra, C. and R. Tonkin (2018). "Inequalities in household wealth across OECD countries: Evidence from the OECD Wealth Distribution Database." *OECD Working Paper*, No. 88, June.

France is an outlier, since it is one of the few countries where the share of taxes on wealth transfers in tax revenue has actually increased over the past half-century (from 0.6% in 1965 to 1.2% in 2015).

Figure 5 – Evolution of tax revenues from wealth transfers (inheritance, estate, gift) as a share of total tax revenue



Source: OECD "Taxation" Database

About one household in three surveyed by the OECD in 18 countries (mostly Europeans) had received an inheritance.[1] France has one of the highest proportion of households who received an inheritance (43%). Across OECD countries, the richest households (top 20%) are four times more likely to have received an inheritance or a gift than the poorest ones (bottom quintile).

In terms of value, the assets transmitted in OECD countries are on average worth about 20% of the net wealth of the household receiving it, no matter the position in the wealth distribution (which implies by definition, that the absolute value in dollars of the wealth received by the richest households is much higher than for the poorest ones).

Unsurprisingly, the older the household head tend to be, the higher the chance that the individual has received an inheritance. In France, a household head of between 65 and

[1] Balestra, C. and R. Tonkin (2018). "Inequalities in household wealth across OECD countries: Evidence from the OECD Wealth Distribution Database." *OECD Working Paper*, No. 88, June.

74 years has the highest chance of having received an inheritance among all age categories, while in Germany it is the 55 to 64 years old interval.[1] Gardiner (2017) finds that the most common age of inheritance for someone currently in the 20-35 age bracket will be 61 in the United Kingdom.

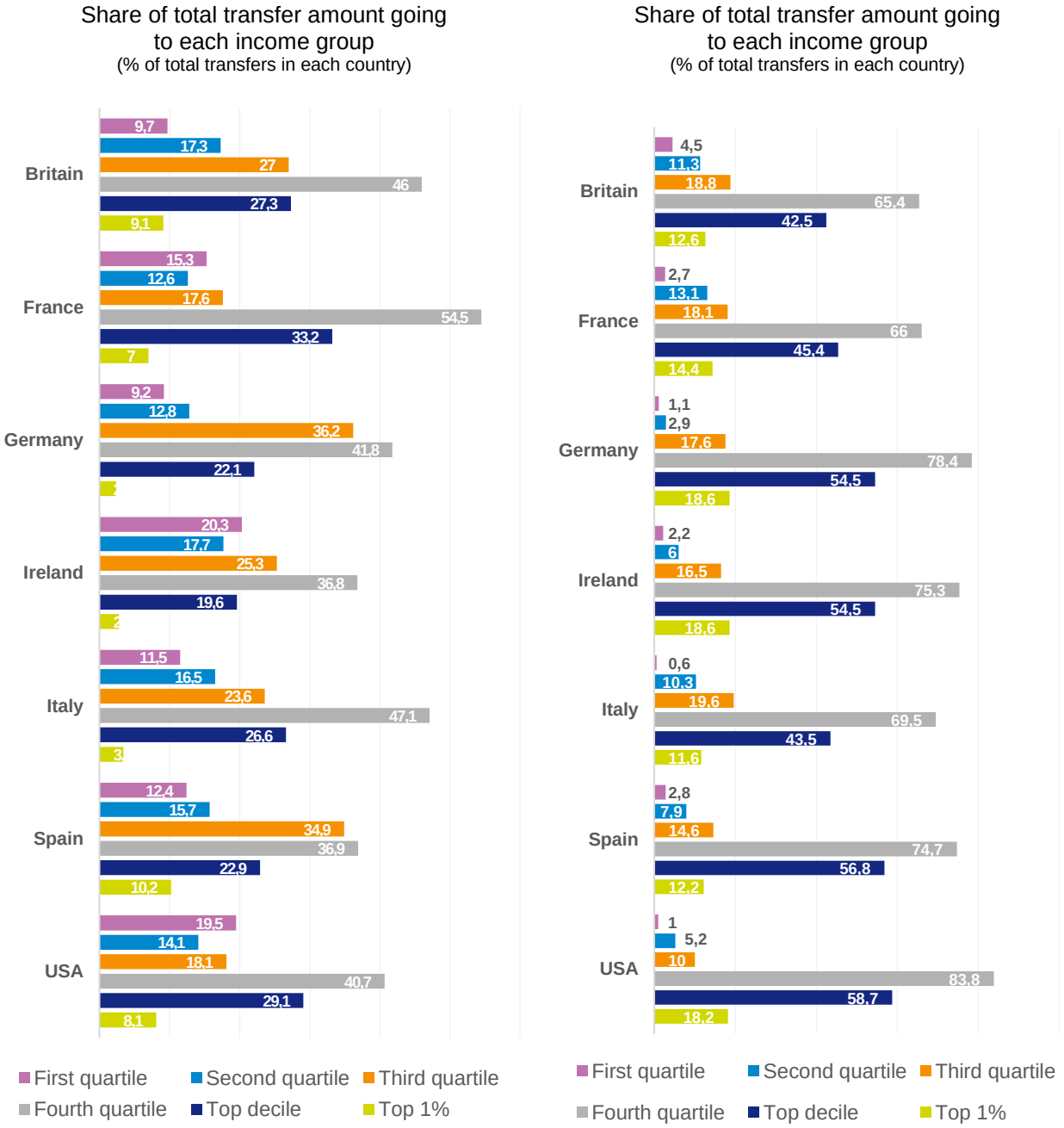
Nolan et al. (2020) have studied the intergenerational wealth transfers across a few countries (mostly Europeans). As evidenced by the graph below, the share of transfers received by the top decile of income is the highest in France (33%) and in the United States (29%), while it is the lowest in Germany (22%) and in Ireland (20%). However, the picture is different when looking at transfer amounts by wealth groups: France (45%) and Britain (42%) tend to have a relatively lower concentration in the top 10% than the United States (59%) or Spain (57%).

Outside of Europe, Japan has reformed its inheritance tax in 2015. Deductions have been reduced by 40%, although they still depend on the number of heirs. As an example, one parent with one child can currently transmit 36 million yens (about €290,000) tax-free instead of 60 million yens (about €484,000) previously. The reform also increased the number of tax brackets (from 6 to 8) and raised the tax rate on the top bracket (for inheritance above 600 million yens, or €4.8 million from 50% to 55%). On the contrary, taxes on gift taxes were “loosened”, for instance by increasing lifetime deductions within a family. One of the aims of the reforms was to incite families to transfer wealth earlier to reduce intergenerational gaps. A second aim was to stimulate the economy by allowing younger generations to access wealth earlier than before.

However, a study of Niimi (2019) concludes that this reform had limited impact on wealth transfers behaviors during livetimes. One of the hypotheses of the author to explain this finding is that the necessity for households to build a “safety net” to face adverse life events is not impacted by the inheritance tax.

[1] *Idem*.

Figure 6 – Share of wealth transfers (gifts and inheritances) by income / wealth group



Source: Nolan B. et al. (2020), The Wealth of Families: The Intergenerational Iransmission of Wealth in Britain in Comparative Perspective, Nuffield Foundation Report

3. In the French Context, Inheritance Taxes Are Both Unpopular and Misunderstood

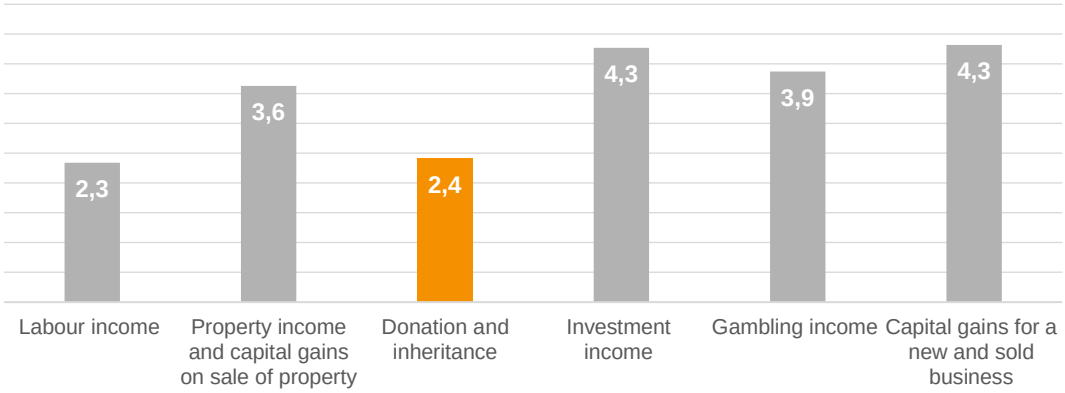
3.1. France Stratégie Survey

In France specifically, a study from France Stratégie (2018), using surveys from the CREDOC (Centre de recherche pour l'étude et l'observation des conditions de vie) reveals that inheritance taxes are not only unpopular, but also misunderstood.

When asked between increasing inheritances taxes to reduce inequalities and decreasing it to allow parents to better transmit wealth, a very large majority of respondents are in favor of reducing the inheritance tax burden (87%). This figure has increased over the decade from 78% in 2011.

When asked about which and how various categories of income and assets should be taxed, the reluctance to taxation is almost the strongest for "inheritance or gifts" (on the contrary, taxes on capital gains are the categories of income which enjoy the strongest support for taxation).

Figure 7 – Taxation on a 1 to 10 scale of various types of revenues



Scope: French population, 18 years old and above.

Question: "There are different types of incomes and capital gains, taxed in different ways depending on their origin. According to you, on a 1 to 10 scale (1 being the lowest tax rate and 10 the highest one), how should labour income, real estate income/capital gains from sale of real estate, donation and inheritance, financial capital income, gambling income and capital gains from sale of a business be taxed ?"

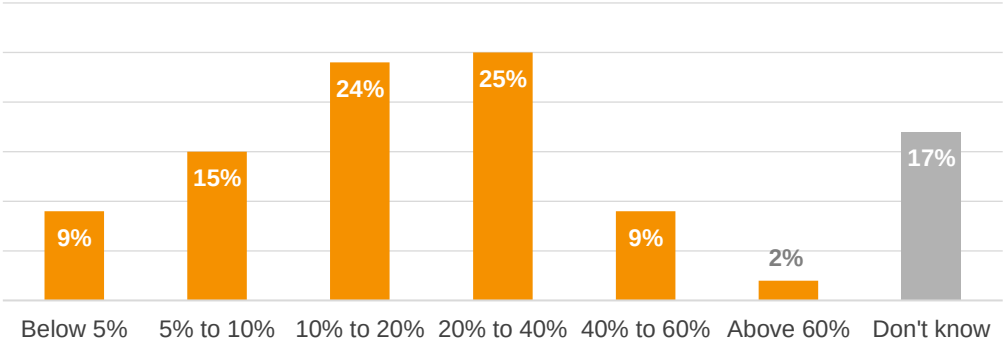
Reading: on average, French think labour income should be at a 2.3 tax rate on a 1 to 10 scale.

Source: "La fiscalité des héritages : connaissances et opinions des Français" (France Stratégie, 2018)

Regarding the knowledge about inheritance taxes, only less than 1 in 6 (correctly) indicates that the tax rate on wealth transfers between married or in civil unions couples is below 5% (the rate is de facto 0%, since wealth transmission between spouses was made tax-free in 2007).

The burden of inheritances taxes is overestimated by a large majority of the population. At the national level, the average tax rate on wealth transfer has fluctuated between 4% and 7% since the 1980's (it was 5% in 2016). However, only about 1 respondent in 4 correctly indicates a rate below 10%, the rest either not knowing or indicating a (much) higher figure.

Figure 8 – Estimate of the average effective tax rate on transferred wealth



Source: "La fiscalité des héritages : connaissances et opinions des Français" (France Stratégie, 2018)

Support for inheritance taxation varies slightly with the level of education: respondents with a higher education degree tend to be more supportive of taxes in general, and of inheritance taxes in particular, than the rest of the population.

A more important driver of opposition for taxing wealth transfers is the personal relationship to family: respondents who declare a closer relationship to their own family tend to be more opposed to a tax on wealth transfers. Furthermore, respondents also believe that wealth transfers between members of the "nuclear" family should be taxed less than transfers to more "remote" family members. Those last preferences actually mirror the current design of inheritance taxes in France: the "farther" one is from the deceased, the higher the tax burden.

In terms of what asset class the inheritance tax should apply to, respondents believe that valuables should be more taxed than financial wealth, which itself should be more taxed than real estate. However, the study notes those preferences do not exactly mirror the actual implementation of the inheritance tax (for instance, some financial wealth can be exonerated in the current system).

About 2/3 of respondents believe that the younger the person is, the lower the tax rate should be. This share is roughly stable across age or income levels. Preferential tax rates have sometimes been mentioned in public debates as an incitation to transmit wealth earlier, to allow the youngests in society to access property and reduce intergenerational inequalities.

Overall, the France Stratégie study shows in fine that hostility to taxes on wealth transfers remains high in France, despite the powerful redistributive effects that such taxes could have. France Stratégie shows that an important factor of opposition to wealth transfer taxes is the relationship to one's family, a very personal opinion.

3.2. The 2020 Tax and Policy Survey results

We ran a survey about knowledge and preference of taxation among French citizens, which included questions about the inheritance tax in France (for the full results and questionnaires see our *2020 Tax and Policy Survey*). In line with France Stratégie's survey, we also find that the mechanisms of the inheritance tax (and its weight in public finance) is not fully understood by a large share of respondents.

To begin with, we asked respondents to estimate the share of total net tax revenue that comes from inheritance tax (respondents had the choice between several ranges of estimates). We find that a vast majority of respondents overestimate this share. Only 15% of the sample answered, correctly, that the share of total net tax revenue which comes from inheritance tax is below 5%. All other respondents overestimated the actual share: 30% thought this share is between 5% and 10%, and 55% thought that more than 10% of total net tax revenue come from the inheritance tax.

Similarly, we asked respondents what share of successions actually pay a non-zero inheritance tax (i.e. are above the tax-free threshold of €100,000), to estimate how "widespread" people believe this tax is. Only 26% selected the correct interval (the exact answer is 15%).[1] There is quite an important dispersion of results, with a roughly equivalent number of respondents who overestimate this share than who underestimate it.

In terms of the actual design of the inheritance tax in France, we found that 42% of respondents wrongly believe there is a unique tax rate on inheritances, i.e. that the system features a flat rather than a progressive rate. Those aged 50-69 are more aware of the actual rates than younger respondents.

[1] Dherbécourt C. (2017), "Comment réformer la fiscalité des successions", In: *Actions critiques 2017-2027*, France Stratégie.

Respondents who correctly answered that there are several rates were also asked to give their best guess on the lowest marginal tax rate on estates transmitted by direct transmission. We found an average estimate of 20%, while the actual lowest rate is 5%. Respondents thus overestimate the actual rate by about 15 percentage points. Among those who believe there is a unique rate, the average estimation is 28%. The weighted average of those 2 groups gives a perceived rate of 23%.

4. Challenges Related to a Modern Inheritance Tax

4.1. Inheritance taxes in the context of evolving societies

As the Conseil des prélèvements obligatoires (CPO) reminded in 2018, inheritance taxes have to adapt, in France as in many countries, to the increase in lifespan, the increasing concentration of wealth, and to the shift in familial structures.

Increase in lifespan increases the age at which next generations receive inheritance. In France, the average age at which someone inherits was 42 in 1980. It is 50 today, and is expected to increase gradually to 60 years old in 2070.[1] This raises the question of the age at which a society considers that a generation should transmit wealth to the next. Governments can (and sometimes do) influence this by allowing rebates or lower tax rates on gifts than on inheritance. One should note that the increase in lifespan also creates challenges (e.g.: increase in retirement age, dependency) for which individuals might want to keep their capital, as a safety net.

Inheritance taxes are often used as a tool to reduce concentration of wealth and generational inequalities. However, some countries (such as France) face a tradeoff, since, despite its redistributive effects, increasing taxation on inheritance could lead to strong opposition from the population. A relevant question for policymakers is: should inheritance or gift taxes be levied on wealth itself or on individuals? Currently, most taxes are levied on wealth, at a progressive rate. Taxing individuals at a progressive rate instead (depending on the amount of wealth received in one's lifetime) can have redistributive properties. However, such a measure is not a one-size-fits all, as it depends on the level of redistribution which people expect, as well as the overall design of the tax system (especially if a regular wealth tax exists).

Family structures in many developed countries have been undergoing significant changes over the past decades. As fertility rates have declined, the average number of children per

[1] France Stratégie (2017), "Peut-on éviter une société d'héritiers ?," by C. Dherbécourt, *La Note d'analyse*, No. 51, January.

family has declined as well, which can potentially lead to a higher concentration of wealth (since wealth will be distributed among fewer individuals). Furthermore, the rise of blended families (one child in ten lives in a blended family in France)[1] raises the question of how stepchildren should be considered with regards to inheritance taxes.

Even after a government has decided on the design of an inheritance tax, compliance and enforcement can present their own sets of challenges. Some recent initiatives, such as the Automatic Exchange of Information make hiding financial wealth more challenging. However, avoidance of wealth (and related wealth transfers) taxes can still remain a challenge. The OECD (2018) identifies three common ways to avoid paying the inheritance taxes in many countries:

– Tax reliefs, which can allow some households to dodge inheritance taxes altogether;
– Regular gifts (in the case of a country without a gift tax);
– The use of trusts, which can allow an individual to "enjoy" the benefits of wealth, without legally owning it.

An additional challenge with the inheritance tax (or any tax on wealth transfer) is the valuation of some assets transmitted, especially those who trade infrequently, or for which no detailed market data is available. An example of that could be a family house bought decades ago in an area with few transactions. The value of such an asset depends on a wide range of factors, and evaluations could differ by a lot from one situation to another, which would lead to heterogenous tax burdens on individuals.

4.2. Current loopholes in France

*Life insurances (*assurance-vie*)*

Originally designed as typical insurances, life insurances in France have been increasingly used as savings accounts over the past decades. Those were the most used type of savings account in 2018: 39% of households held one in 2018, although the more senior households (above 60) tended to own them in higher proportion (44%) than the younger (below 30) households (24%).[2] The total amount of savings on life insurance contracts was €1.8 trillion at the end of 2019.

Life insurances in France enjoys favorable taxation in case of inheritance:

[1] INSEE (2013), "Un enfant sur dix vit dans une famille recomposée," *INSEE Première*, No. 1470, October.

[2] INSEE (2018), *Le patrimoine des ménages en 2018*.

- Amounts added to the contract when the deceased individuals were below 70 are tax-exempt up to €152,500 by heir. A rate of 20% is then applied up to €700,000. Amounts above this threshold are then taxed at 31.25%.
- Amounts transferred when the deceased individuals were above 70 are tax-exempt up to €30,500, above which they have to pay the normal inheritance tax.

Those exemptions are independent of the "general" exemption of €100,000: an heir can receive both €100,000 in cash and an assurance-vie up to €152,500 – a total of €252,500 – without paying inheritance taxes.

Family businesses

More than 80% of firms in France are family businesses[1] (more than 60% in the EU[2]). In France, the Dutreil exemption ("*pacte Dutreil*") allows family businesses to be transferred at favorable conditions. This measure allows 75% of the business transfer to be tax-free (i.e. the inheritance tax will to be paid on only 25% of the company value). To enjoy this exemption, heirs need to have some involvement in the business in the years following the transfer. The Dutreil measure is legally classified as a tax expenditure, whose "cost" is estimated to be €500 million.[3]

Furthermore, the French tax law allows businesses to be transferred as a gift without taxing the unrealized capital gains on the company value (under certain conditions). Should the heir decide to sell its interest in the business after a few years, they will have to pay capital gains only on the business value they received from the donor.

As an example, parents selling their valuable business and giving the proceeds to their children first have to pay a tax on the capital gains of the business, before children pay a gift tax. However, reversing the order of the operations leads to a lower overall tax burden: If the parents give the business to their children before the children sell it under their own name, there will still be a gift tax, but the capital gains tax (paid by the children) will be much smaller.

[1] Institut Montaigne (2013), *Les entreprises familiales au service de la croissance et de l'emploi*.

[2] "Family business", Entrepreneurship and SMEs, European Commission website.

[3] République française (2019). *Évaluation des voies et moyens*, Vol. 2: *Les dépenses fiscales*, Liste des dépenses fiscales (available online only).

5. An Example of a Beneficiary-Based Lifetime Tax: the Irish Case

The modern idea of taxing recipients of wealth based on the amounts already received during their lifetime (above a threshold) is usually dated back to John Stuart Mill: "a heavy graduated succession duty on all inheritances exceeding [a] moderate amount, which is sufficient to aid but not supersede personal exertion."[1]

Ireland is one of the few countries in the world with a beneficiary-based inheritance tax. Implemented in 1976, the "Capital Acquisitions Tax" allows individuals to receive wealth tax-free up to a certain limit (€320,000 for a parent-child transmission in 2019).[2] Recipients then pay a 33% tax on wealth received above the threshold. Interestingly, the system is "agnostic" relative to the mode of transfer, whether it is a gift or an inheritance. Some favorable conditions and exemptions remain for certain categories of wealth transmitted, such as agricultural and business properties.

Example: Parents make a gift to their daughter Sarah of €150,000 worth of stocks during their lifetime. The transfer is tax-free and Sarah is considered by the tax authority to have "used" €150,000 of her tax-free "allowance" (of €320,000). The parents then leave her with a house worth €200,000, as inheritance. This amount is added up to her "allowance". She has now received a total of €350,000 (€150,000+ €200,000). This is above the tax-free "allowance" €320,000, and Sarah has to pay the Capital Acquisition Tax on €30,000 (= the wealth *above* the threshold). The tax amount is 33% x €30,000 = €9,900. From then on, any extra wealth which Sarah receives will be taxed at 33%.

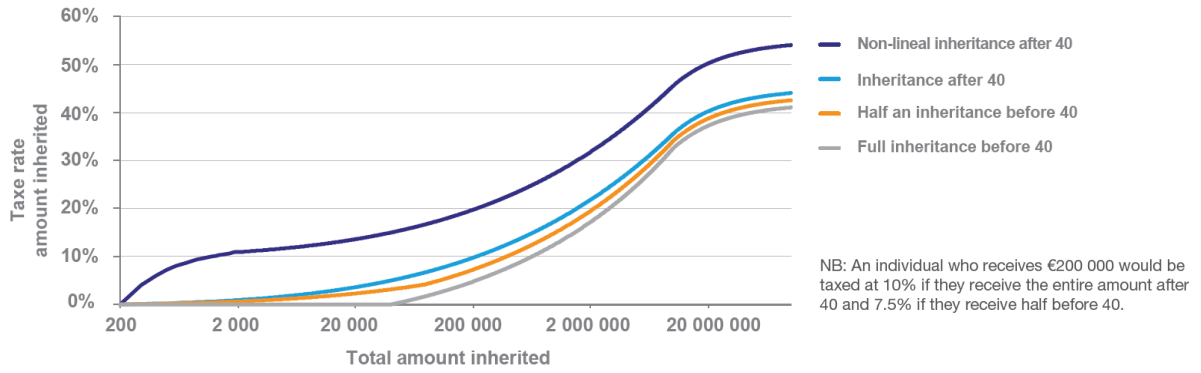
In a 2017 note,[3] France Stratégie simulated the introduction of a beneficiary-based inheritance tax, with progressive rates (Ireland's version of the tax currently has a flat rate). In France Stratégie's note, rebates could be considered for wealth transfers when recipients are below a certain age, with a goal to reduce intergenerational inequalities. Differentiated tax rates would remain depending on the relationship between the donor(s) and recipient(s). The graph below illustrates this proposal.

[1] Mill to John Stapleton, 25 October 1871, as quoted in Ekelund R. B. Jr and Walker D. M (1996), "J. S. Mill on the income tax exemption and inheritance taxes: The evidence reconsidered," *History of Political Economy* 28, No. 4: 559-581.

[2] Irish Department of Finance (2019), *Capital Gains Tax, Capital Acquisitions Tax, Stamp Duty*, July.

[3] France Stratégie (2017), "Peut-on éviter une société d'héritiers ?," *op. cit.*.

Figure 9 – Tax rate depending on amount received in France Stratégie's proposal



Source: France Stratégie (2017), "Peut-on éviter une société d'héritiers ?," op. cit.

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APPENDIX 3

CAPITAL TAXES

1. Taxation of Capital vs. Labor in an International Context[1]

Different studies, conducted by several institutions, have been studying the effective tax burdens on capital and labor in France and comparing it to other countries. These are complex calculations that pose many challenges, especially when it comes to international comparisons. Below, we describe the methodology, data, and main results from five such studies.

1.1. Taxation of household savings - 2018 OECD (study)

The OECD published a report in 2018 entitled *Taxation of Household Savings*[2] which provides a detailed comparison of the taxation of household savings in 2016 in OECD countries and five partner countries (Argentina, Bulgaria, Colombia, Lithuania and South Africa). This international comparison aimed both to compare tax levels across countries and different types of assets held within each country. It is based on the development and use of a single synthetic indicator, called the Effective Marginal Tax Rate (EMTR).

This indicator is defined as a tax rate on the real return of a marginal investment in a given asset and can take values that are sometimes very different from the statutory tax rates. It depends on a number of assumptions, some of which are questionable, and should be treated with caution. Yet, it presents the advantages of giving a complete picture of taxation in different countries and can be directly used for international comparisons, unlike statutory tax rates.

[1] Credits for this first part go to Boris Le Hir and Pierre-Louis Girard from France Stratégie.

[2] OECD (2018). *Taxation of Household Savings*. OECD Tax Policy Studies, No. 25, Paris: OECD Publishing, April.

In particular, the indicator developed by the OECD allows to observe specific biases that may influence the choices of savings, investments and residence of some wealthy taxpayers.

This first OECD report, released in 2018, was based on the state of tax systems in 2016. The OECD has updated the data for France Stratégie[1] (including the 2018 reforms in particular) and a full update of the report is expected to be published in 2021 by the OECD.

Limits of the approach

The approach developed by the OECD based on the simulation of an effective marginal tax rate aims to highlight some of the disparities in international taxation. This is allowed by the ability of the EMTR indicator to synthesize complex and widely differing tax systems in a consistent manner.

However, this synthetic form in the presentation of tax systems is based on strong assumptions. The approach is therefore not without limits.

Firstly, it is highly dependent on the assumptions made about rates of return and inflation rate. Secondly, the analysis of the tax burden on the different assets according to the taxpayer's level of income cannot be made without taking into account the actual composition of their portfolio. The comparison of the EMTR is very theoretical for the least well-off taxpayers, who cannot invest in many types of assets in practice. Thirdly, while this approach is relevant for analyzing investment trade-offs between assets and for illustrating international tax competition, it is not relevant for analyzing the redistributive effects of taxation. This would require a comparison of average tax rates[2] instead of marginal rates.

Main results

However, once these limits have been set, we can draw some conclusions from this international comparison exercise.

- Prior to the 2018 reforms, the taxation on capital was, overall, heavier in France than in other OECD countries, particularly on movable assets. These reforms brought France's capital taxation closer to the one of other industrialized countries (as it was in 2016), notably Germany, the United Kingdom and the United States;

[1] France Stratégie (2020), *Comité d'évaluation des réformes de la fiscalité du capital*, Second report.

[2] The calculation of average rates is also subject to other methodological difficulties, perhaps even more significant in practice than that of marginal rates.

- This convergence primarily concerns the wealthiest taxpayers. Tax progressivity on most of the assets in France remains visible, but the reforms has significantly reduced it;
- Both before and after the implementation of capital tax reforms in France, the principal place of residence appears to be the asset with the lowest level of taxes (apart from tax-exempt investments of course). This is not necessarily the case in other countries due to lower taxation, particularly on financial assets. Conversely, rental assets almost systematically have the highest level of taxes.

1.2. OECD "Taxing wages" – report

In 2019 the OECD average tax wedge for the single worker earning the average wage was 36.0%, a decrease of 0.11 percentage points from 2018 and the sixth consecutive annual decrease. The tax wedge measures the difference between the labor costs to the employer and the corresponding net take-home pay of the employee. It is calculated as the sum of the total personal income tax (PIT) and social security contributions (SSCs) paid by employees and employers, minus cash benefits received, as a proportion of the total labor costs for employers.

The OECD average tax wedge decreased for the single worker in 2019, although the tax burden decreased in only 17 out of the 36 OECD countries. Across the board, with the exception of Lithuania, the decreases in the tax wedge were small (less than one percentage point). The largest decrease was in Lithuania (3.43 percentage points), where the implementation of a major policy reform involved a significant reduction in employer SSCs, with most of this reduction being replaced with an increase in the tax burden of employees and a corresponding increase in their gross wages.

Despite the decrease in the OECD average, 19 OECD countries experienced an increase in the tax wedge on the single worker earning the average wage in 2019. The increases in the tax wedge were even smaller than the decreases observed and did not exceed half a percentage point in any country, except for Estonia (1.08 percentage points). In Estonia, an income related tax allowance decreased due to an increase in average wage earnings between the two years.

The OECD average tax wedge for the one-earner couple also continued its decrease, for the fifth consecutive year. It declined by 0.07 percentage points to 26.4% in 2019. That year, the tax wedge for the one-earner couple decreased in 17 OECD countries, with the largest decreases seen in Lithuania (4.24 percentage points), Austria (3.67 percentage points) and France (2.34 percentage points). The tax wedge for this household type was steady in Chile and increased in the other 18 OECD countries. There were increases of greater than one percentage point in Slovenia (3.32 percentage points), Poland (2.62 percentage points),

New Zealand (1.55 percentage points), Estonia (1.37 percentage points) and the Czech Republic (1.03 percentage points).

The report also contains a Special Feature, which draws on the Taxing Wages framework to examine – for a selected group of countries – whether differences in tax treatment across worker types create tax arbitrage opportunities. Tax systems may give rise to arbitrage opportunities either for firms in their selection of the type of labor contract offered to workers (e.g., a full-time employment contract versus a contract for services) or for individuals in their choice of organizational form (e.g., standard employment versus self-employment). To the extent that such arbitrage opportunities are large, tax systems may be encouraging the adoption of certain tax-advantageous employment forms. This can undermine the equity of the tax system, while also threatening levels of public revenue.

1.3. "Effective Corporate taxation, tax incidence and tax reforms: Evidence from OECD countries" - EU Commission report

Presentation of the study / Methodology

This European Commission working paper[1] provides an estimate of the effective marginal tax rate on total costs of production for 17 OECD countries over the period 2001-2010. First, the authors derive measures of the effective marginal tax rate for three different inputs, capital, labor and energy, from which an estimate of the effective marginal rate on total costs of production is calculated.

The effective marginal tax rate on capital is calculated as the difference between the pre-tax rate of return on investment required to generate a zero post-tax profit and the real post-tax rate of return to the shareholder, relative to the pre-tax rate of return on investment. In a second step, an "aggregate" or "average" effective marginal rate is measured as a weighted average from the investment structure on three types of assets (construction, intangibles and machinery) across several industries.

The marginal tax rate on labor is calculated from social security contributions and payroll taxes paid by employers, and social security contributions and personal income tax paid by employees.

The marginal tax rate on energy is directly measured from the International Energy Agency's quarterly database on energy prices and taxes, for 14 types of energy inputs and different sectors of activity. The "aggregate" marginal rate is calculated as a weighted

[1] Barrios S., Nicodème G. and Sanchez Fuentes A. J. (2014), "Effective Corporate Taxation, Tax Incidence and Tax Reforms: Evidence from OECD Countries," *European Commission Taxation Paper*, No. 45.

average based on the actual consumption for each type of energy inputs and the associated CO_2 emissions.

The marginal tax rate on production costs is then computed using the three previously calculated effective marginal tax rates. To establish the weight of each production factors in determining the effective marginal rate on total production costs, the authors model it as a function of the elasticity of substitution (the degree of substitutability between the different inputs) between the three factors of production, the price elasticities of demand and supply for each factor, and the markup. In the main scenario, it is assumed that the factors are perfectly substitutable.

Main results

The results of the estimation of the marginal tax rate for each input and for total production costs are presented in the table below for the 17 countries selected, and correspond to the average EMTR over the period 2001-2010. In this baseline scenario, the authors assume perfect substitutability between factors of production, a zero-mark-up rate and assume that firms bear the entire increase in a tax on the employer contribution, capital and energy and one third of the employee contribution.

According to these results, the effective marginal tax rate on total production costs is between 0.2 and 0.35 for most countries, except for France, where the rate exceeds 0.4. In all the cases considered, according to the assumptions on the firm's capacity to bear a variation in tax on one of the inputs, France EMTR on total production cost remains the highest rate among the countries considered over the period.

Questions on the interpretation of the results

The overall methodology is similar to the one used in the two OECD studies described above on the taxation on capital and labor. The value added of this paper is that it allows for comparisons of taxation across countries and across inputs.

However, the methodology remains quite complex and one needs to refer to other publications for a good understanding of the results. Furthermore, some of the results may be questioned. In particular, the effective marginal capital tax rate of 26.2% for France seems to be low compared to the statutory rates over the period. This could have three sources of explanation:

a. we understand that the taxation of capital taken into account in this paper is only the taxation on the company (the corporate tax in particular) but this remains to be verified;

b. there are three types of assets taken into account (construction, machinery, intangibles) and two types that are not taken into account (financial assets and inventories).

However, the calculation differs according to the asset (we have not closely analysed the differences but a priori it is the depreciation and amortization rates that vary);

c. part of the capital is assumed to be financed by debt which reduces the taxable base.

Table 1 – Marginal effective tax rates on capital, labor and energy for the period 2001-2010

	Marginal tax rate for capital	Marginal tax rate for the employer on wages	Marginal tax rate on wages for employees	Marginal tax rate for energy	Marginal tax rate for production costs under the main scenario
Denmark	16,0%	0,0%	56,8%	28,4%	18,7%
Finland	14,7%	23,9%	49,5%	12,2%	31,9%
France	26,2%	41,7%	33,3%	9,1%	41,3%
Germany	22,5%	19,2%	49,5%	12,4%	31,5%
Ireland	8,5%	10,7%	34,8%	6,8%	16,8%
Italy	17,1%	32,7%	42,8%	20,9%	34,8%
Japan	40,0%	12,9%	29,4%	10,0%	24,1%
Netherlands	18,4%	10,0%	35,4%	10,5%	18,7%
Spain	27,8%	30,1%	27,8%	7,5%	32,1%
Sweden	11,8%	32,4%	37,7%	13,2%	34,9%
United Kingdom	24,7%	10,5%	39,7%	17,5%	21,9%
United States	36,1%	8,9%	32,4%	2,9%	20,0%

Source: "Effective Corporate Taxation, Tax Incidence and Tax Reforms: Evidence from OECD Countries," Barrios et al. (2014)

1.4. The French model of compulsory levies: incentives and disincentives of fiscal policy on employment dynamics and production[1]

In the framework of the next report on industrial policy, France Stratégie is drawing up an analysis of the French fiscal policy in order to highlight the biases it generates on

[1] France Stratégie (2020), *Les politiques industrielles en France. Évolutions et comparaisons internationales*, report, November, chapter 3.

employment and production. Beyond the weight of compulsory levies, the study studies the composition of these levies and the distribution of the tax burden between the different factors of production and between sectors.

France has the highest level of compulsory levies among OECD countries and has been rising sharply since 2008.

The French structure of compulsory levies appears unique compared to other countries, with a greater weight on the factors of production (labor and capital) and less on household consumption and income.

Industry in France is subject to a higher rate of compulsory levies than in other sectors: total compulsory levies on manufacturing industry accounts for 27.9% of gross value added, compared with 24% for companies in other non-financial sectors.

The difference with Germany amounts to 10.7 points of the value added of the manufacturing sector, **more than half of which is due to production taxes.** After tax credits such as the CIR is deducted, this gap narrows to 7.8 points of value added but remains substantial. The total compulsory levies on industry represent twice the operating income in France, compared with 80% in Germany only.

Unlike corporate tax and VAT, most production taxes affect the choice of production inputs and can be a source of distortion throughout the production chain. These production taxes weigh more heavily on industry than on other sectors: while the manufacturing sector barely represents 11% of national gross value added, it contributes more than 23% to the payment of production taxes corresponding to the C3S, CFE and CVAE.

France particularly taxes investment: in 2016, it was the country with the largest difference between the tax rate on equity and debt. Since then, it has moved closer to the level of Germany but remains in the top third of countries for which the tax gap between these two types of financing is the largest.

It has the highest average tax rate on business investment in Europe according to Eurostat with 34% compared to 20% on average in the European Union.

French companies tend to locate their manufacturing sites abroad more than companies in other comparable European countries. In light of the various factors that influence the choice of location and the uniqueness of France in terms of taxation of production inputs, production taxes, which weigh more particularly on the manufacturing sector, appear to be the more likely cause of the country's deindustrialisation. This is confirmed by recent work by France Stratégie based on the analysis of the location choices of foreign companies in the different European countries.

Moreover, the tax burden in France is highly pronounced: it measures the gap between the net salary of employees and the total labor cost for the firm. In order to reduce the cost of labor and support job creation, reductions in social security contributions have been implemented since 1993.

Initially focused on wages around the minimum wage, they were extended by the CICE in 2013 and the Solidarity and Responsibility Pact in 2015 to wages up to 2.5 minimum wage. It was at this moment they began to benefit the manufacturing sector, where wages are higher than the wages in the whole economy.

Yet, this sector proportionally benefits less than the rest of the economy. Thus, in 2016, exemptions of employer contributions represented 2.3% of the wage bill in manufacturing industry, compared with 9.6% in hotel and restaurants and 5.5% in wholesale and retail trade. Through a reduction in the cost of intermediate consumption which those exemptions allowed, the industrial sectors exposed to international competition have benefited from an upturn in competitiveness.

It is noteworthy that France has stopped losing export market share since the implementation of the CICE, without having a definitive conclusion on a causal effect from empirical studies.

1.5. Economic breakdown of the overall tax burden by economic function (consumption, labour, capital)

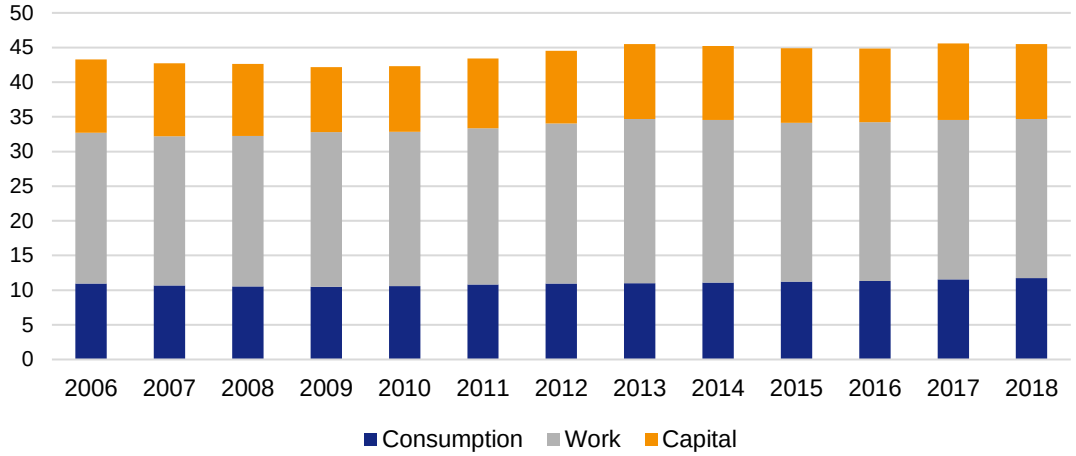
The data allowing the breakdown of the overall tax burden by economic function (consumption, labour, capital) are from the European Commission and are only available for the period 2006-2018[1]. This breakdown does not show a decline in the share of taxes on capital (income and stock) in the overall tax burden; this share amounted to 10.6% of GDP in 2006 compared with 10.8% of GDP in 2018 (Figure 1).

The share of labour in the overall tax burden[2] increased slightly (by 1.2 percentage points), in line with the increase in the overall tax burden over the period 2006-2018 (+2.2 percentage points).

[1] The OECD data goes back to the 1980s. However, it uses a different methodology and is thus not comparable. Furthermore, we do not have the necessary details to replicate the European Commission's methodology. Nevertheless, these data do not show a decline in the share of capital taxes in developed countries (US, UK, Germany) over the last few decades.

[2] We take the tax rate on labour and consider the CICE as a decrease in the tax rate on labour.

Figure 1 – Breakdown of the overall tax burden by economic function in France between 2006 and 2018 (in % of GDP)



Note: The European Commission's data consider the competitiveness and employment tax credit (CICE), like all tax credits, as a public expenditure. We have therefore chosen to restate the CICE to include it as a reduction in taxes on labour. In France, in 2018, the share of taxes on consumption in GDP was 11.7%, the share of labour was 23.0% and the share of capital was 10.8%.

Source: European Commission, European Tax Trends, 2020

On average in the EU, taxes on capital remain relatively constant, at 8.5% of GDP in 2018, compared to 8.7% of GDP in 2006 (Figure 2a), while taxes on labour have increased on average by 1.1 percentage points of GDP over the period (Figure 2b).

Figure 2a – Share of capital taxes in GDP (%)

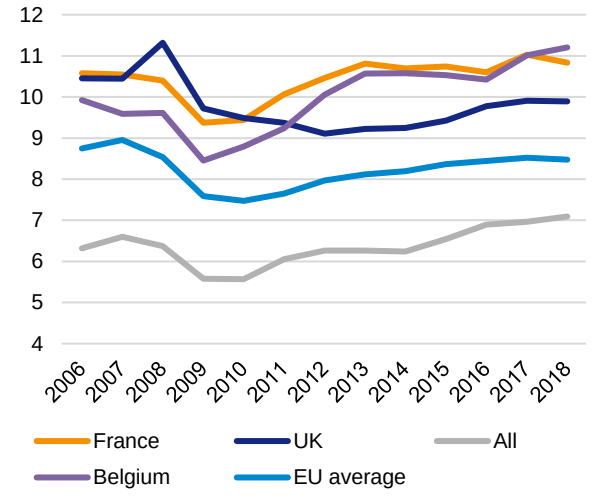
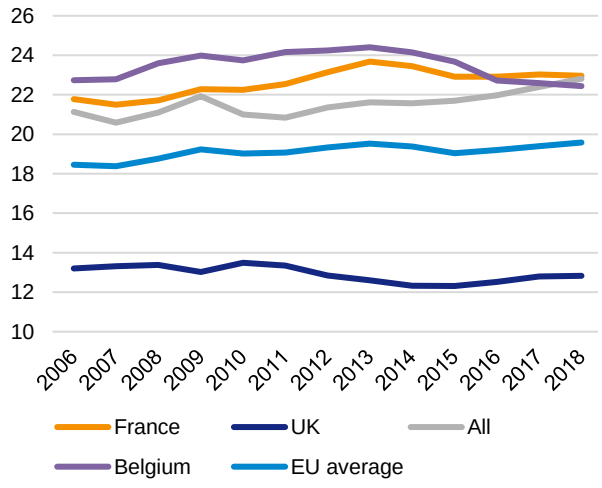


Figure 2b – Share of labour taxes in GDP (%)

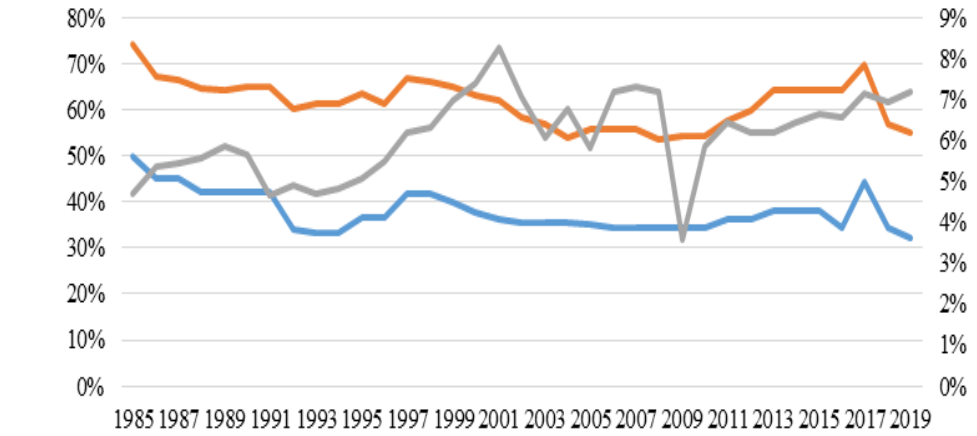


Note: We also restate the CICE here in order to consider it as a decrease in taxes on labour. In 2018, the share of labour taxes in GDP decreased slightly in France and reached 23%, a level higher than its European neighbours. The share of taxes on capital also decreased, from 11% of GDP in 2017 to 10.8% of GDP in 2018.

Source: European Commission, European Tax Trends, 2020

Finally, with regard to capital income, the marginal tax rate on dividends[1] and the corporate tax rate have been falling in France since the 1980s, without any correlation with the share of taxes on corporate and household capital income in the total tax burden (Figure 3).

Figure 3 – Top marginal tax rate on dividends and share of capital taxes in the total tax burden



Note: The OECD data presented above are restated so as not to consider the introduction of the CICE as a decrease in taxation on capital income. The top marginal rate of income tax and corporate tax decreased in 2019 to 55%, while the share of capital in total taxes increased from 6.9% in 2018 to 7.2% in 2019. To calculate the marginal rate, the OECD also considers social security taxes and the exceptional contribution on high incomes (CEHR). The OECD's marginal tax rate on dividends after taxation of profits in 2018 was 34%, of which 12.8% was for income tax, 17.2% for social security contributions and 4% for the CEHR. The spike in 2017 is linked to the exceptional surcharge on the corporation tax.

Source: OECD, Government Revenue Statistics 2020

Comparison of marginal tax rates on labour and capital

Since the introduction of the single flat-rate tax (PFU) on capital income[2] in 2018, the marginal tax rate on capital income has been 30%. While taxpayers can choose to be taxed according to the income tax scale, this option is only attractive for individuals with taxable income below €25,710 (threshold for the 11% marginal rate) and receiving taxable

[1] This rate corresponds to the marginal tax rates for income tax (as per the scale or as a flat-rate tax from 2018) and social security contributions, as well as the top marginal rate of the exceptional contribution on high incomes (CEHR).
[2] Excluding property income and capital gains.

dividends, who can then benefit from a 40% allowance and are taxed at a marginal tax rate of 21.65%.[1]

The marginal tax rate on labour, taking into account income tax, employee social security contributions and general welfare contributions/social debt repayment contributions (CSG/CRDS) – and without taking into account social benefits – is 20.8% for a single employee without children earning less than 1.2 times the minimum wage. However, above 1.2 times the minimum wage, the marginal tax rate on earned income reaches 32.6% in 2020. If we consider the tax wedge[2] excluding cash transfers, i.e. including employers' social security contributions, the marginal tax rate on labour income would be 58.4% at minimum wage level, and 64.6% at 1.2 times the minimum wage, i.e. a marginal tax rate well above the marginal tax rate on capital income.

France has implemented reforms to reduce the tax burden on labour income. The average tax wedge (including cash transfers here) of a single employee without children has decreased since 2012. This decline in the tax wedge in 2019 is more pronounced for employees at the bottom of the wage distribution (Figures 4 and 5). This is essentially due to a significant reduction in the net taxation of employees through the increase in the activity allowance (*prime d'activité*) and, to a lesser extent, the reduction in social security contributions. For the latter, the abolition of employee health and unemployment contributions became fully effective in 2019[3]. Finally, the strengthening of general tax relief and the replacement of the CICE by a permanent reduction in employer contributions[4] has resulted in a reduction in employer contributions for low wage[5] earners (below 1.45 times the minimum wage, as the increase in the supplementary pension rate of 0.16 percentage points between 2018 and 2019 more than compensates for the strengthening of general tax relief for employees earning between 1.45 and 1.6 times the minimum wage).

In international comparisons, the tax wedge in France is among the lowest at minimum wage level (Figures 6a and 6b).

[1] 17.2% (social security contributions) + (1 - 6.8% - 40%)*11% (income tax, also taking into account the deductible general welfare contribution (CSG) of 6.8%)

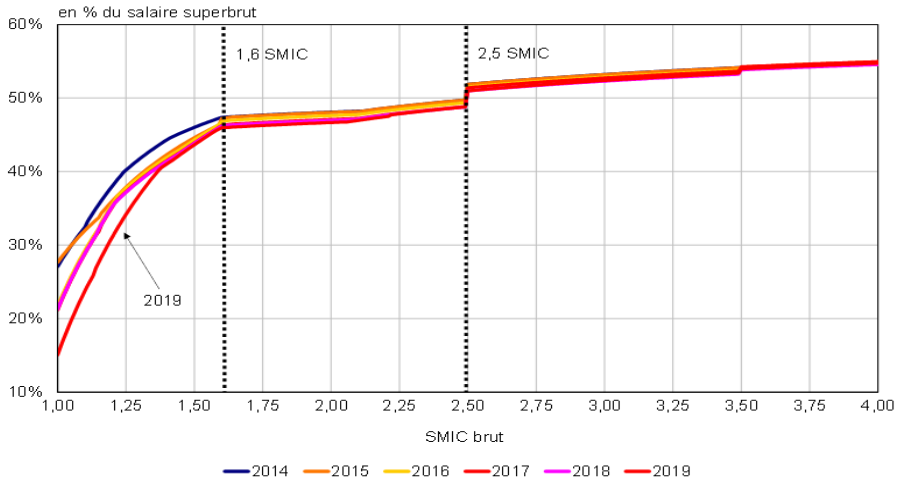
[2] The tax wedge is calculated as the ratio between the amount of deductions applicable to wages (income tax and social security contributions) and the total cost to the employer (super-gross wage, i.e. gross wage + employer's contributions).

[3] Employee unemployment (2.4%) and sickness (0.75%) contributions were abolished in 2018.

[4] Reduction of 6 points in social health insurance contributions up to 2.5 times the minimum wage.

[5] The OECD considers the legislation after the CICE was converted into a reduction in employer contributions, as well as the strengthening of general tax relief (unemployment contributions) in force since 1 October 2019.

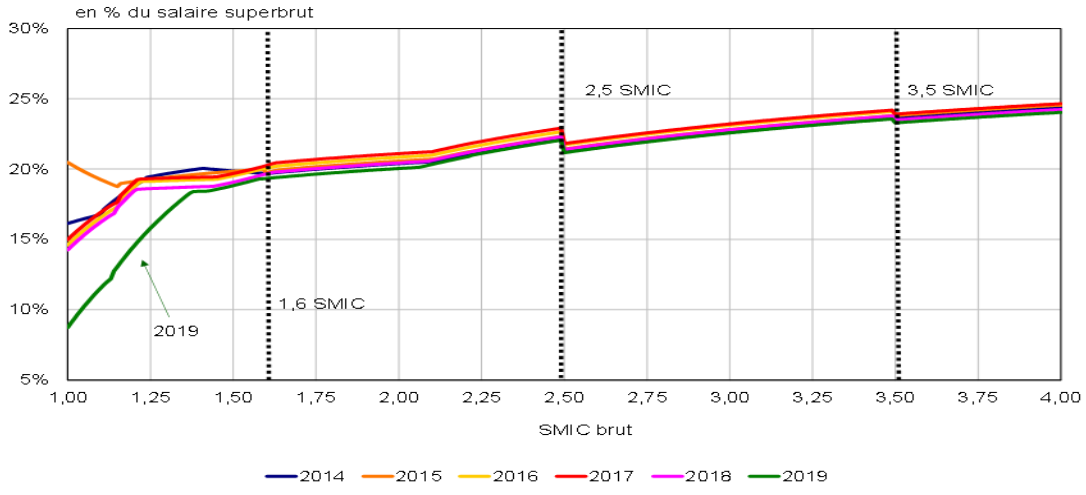
Figure 4 – Total tax wedge for a single person without children by wage level (expressed as a share of the minimum wage)



Note : x-axis : Gross minimum wage and y-axis : as a % of super-gross wages. First vertical line: 1.6 x minimum wage. Second vertical line: 2.5 x minimum wage. The model concerns the taxation of income received in year *n* and therefore corresponds to the income tax paid in year *n+1* and the social contributions and deductions for year *n*. The employee's tax wedge includes income tax, social security charges and employee social security contributions and is net of the activity allowance. The employer's tax wedge corresponds to the employer's social security contributions as a proportion of the gross wage.

Source: OECD, Taxing Wages for the years 2014, 2015, 2016, 2017, 2018 and 2019, DG Treasury calculations

Figure 5 – Tax wedge for a single employee without children (excluding employer's contributions) by wage level (as a share of the minimum wage)



Note : *x-axis* : Gross minimum wage and *y-axis* : as a % of super-gross wages. First vertical line: 1.6 x minimum wage. Second vertical line: 2.5 x minimum wage. The model concerns the taxation of income received in year n and therefore corresponds to the income tax paid in n+1 and the social contributions and deductions for year n. The employee's tax wedge includes income tax, social security charges and employee social security contributions and is net of the activity allowance.

Source: OECD, Taxing Wages for the years 2014, 2015, 2016, 2017, 2018 and 2019, DG Treasury calculations

Figure 6a – Tax wedge for individuals earning the French minimum wage

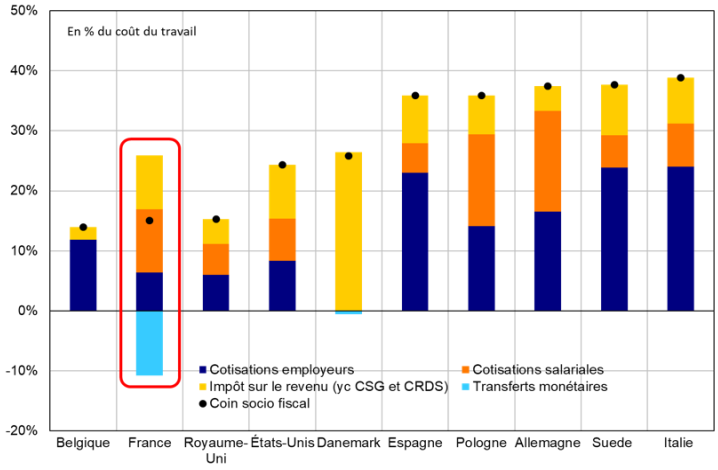
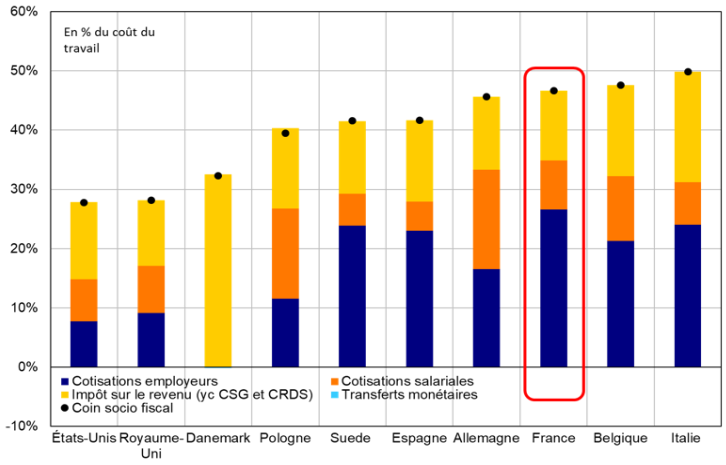


Figure 6b – Tax wedge for individuals earning twice the French minimum wage



Note: *y-axis* : as a % of the cost of labour. In blue: Employer contributions. In yellow: Income tax (including CSG and CRDS contributions). Black dot: Tax wedge. In orange: Employee contributions. In light blue: Cash transfers.

Typical case of a single homeowner without children. For countries not using the euro, the average exchange rate for 2019 has been applied, but wages are not converted to purchasing power parity. The 2019 legislation is shown. For France, the activity allowance is included in the calculation of the tax wedge for reasons of comparability as some other countries use tax credits in the calculation of their income tax amount.

Source: Taxing Wages 2020 (OECD), DG Treasury calculations.

1.6. A special case of labor taxation: preferential schemes for foreigners

Kleven et al. (2020) study the mobility of people in relation to taxation. France, like several other European countries (see Table 2), has a preferential tax scheme for foreigners, to make relocation more financially attractive.

Table 2 – Summary of preferential tax schemes to foreigners

	Year of implementation	Income eligibility criterion	Duration of scheme	Preferential tax treatment
Denmark	1991	Yes	3 years originally, now extended to 7 years	Flat income tax of 30% originally, now 27%
Finland	1999	Yes	2 years	Flat income tax of 35%
France	**2004**	**No**	**5 years originally, now extended to 8 years**	**30% of taxable income is tax exempt**
Italy	2011	No	5 years	70% of taxable income was exempt originally, now 50%
Netherlands	1985	Yes	5 years originally, now extended to 10 years	35% of taxable income was exempt originally, now 30%
Portugal	2009	No	10 years	Flat income tax of 20%
Spain	2005	Yes, since 2010	6 years	Flat income tax of 24%
Sweden	2001	Yes	3 years	25% of taxable income is exempt

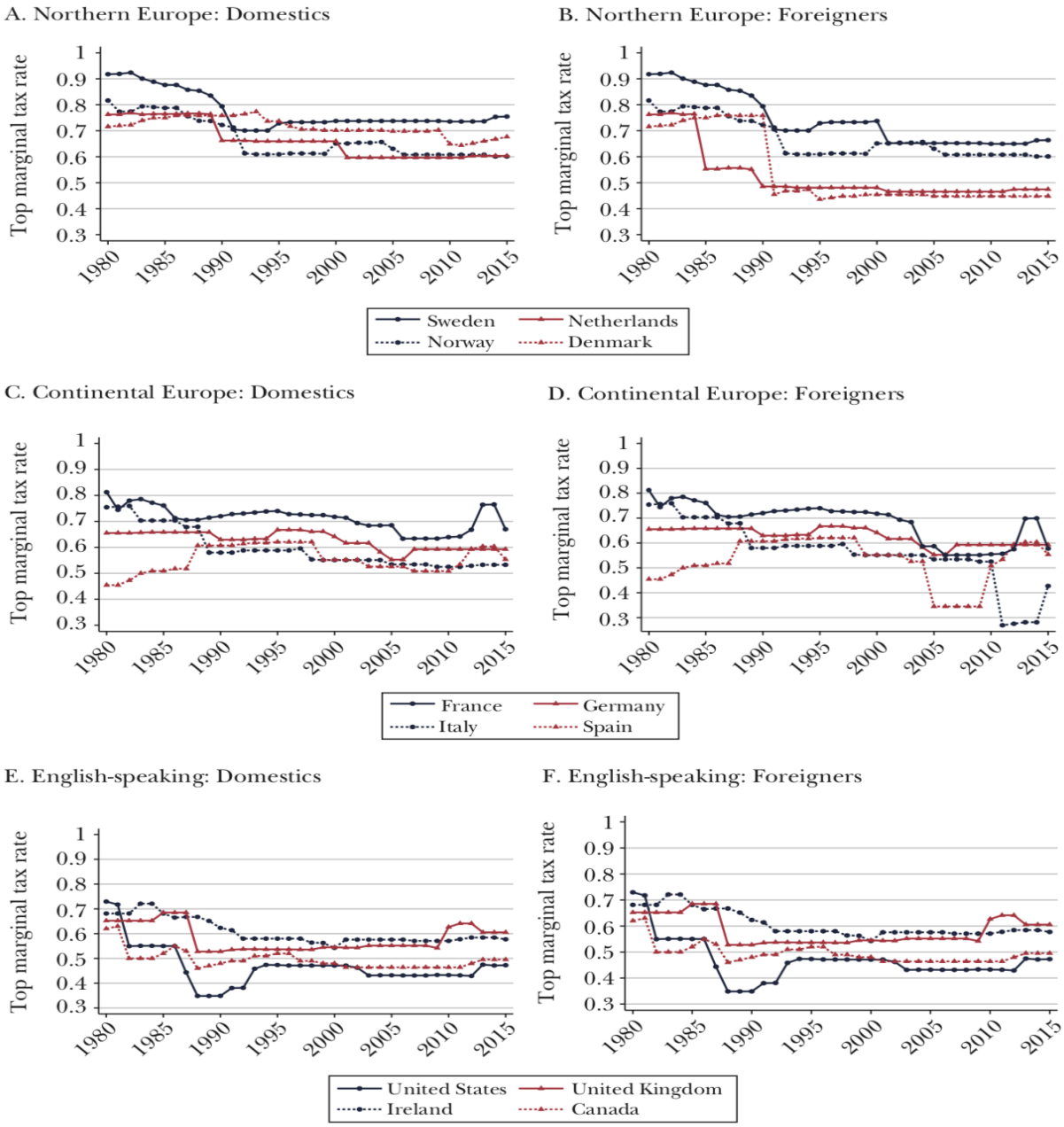
Note: in the Netherlands, the 35% ruling has been officially implemented by law in 1985, but was used in an informal way since the 1960's, and was based on a non-public internal resolution of the Dutch Revenue Service.

Source: "Taxation and Migration: Evidence and Policy Implications", Kleven et al. (2020)

This scheme is legally considered a tax expense (*niche fiscale*) in France, which is expected to benefit almost 13,000 households in 2020, for a "cost" of €178 million.[1] Beyond the French case, such schemes can significantly impact the top marginal tax rates as evidenced in Figure 7. For instance, while marginal tax rates in Scandinavian countries tend to be higher than in the U.S. generally, the preferential schemes make the income tax burden on foreigners roughly similar in both regions. In addition, such schemes can make taxation more favorable to foreigners than domestic citizens.

[1] République française (2019). *Évaluation des voies et moyens*, Vol. 2: *Les dépenses fiscales*, Liste des dépenses fiscales (available online only).

Figure 7 – Top marginal tax rates on earnings 1980–2015

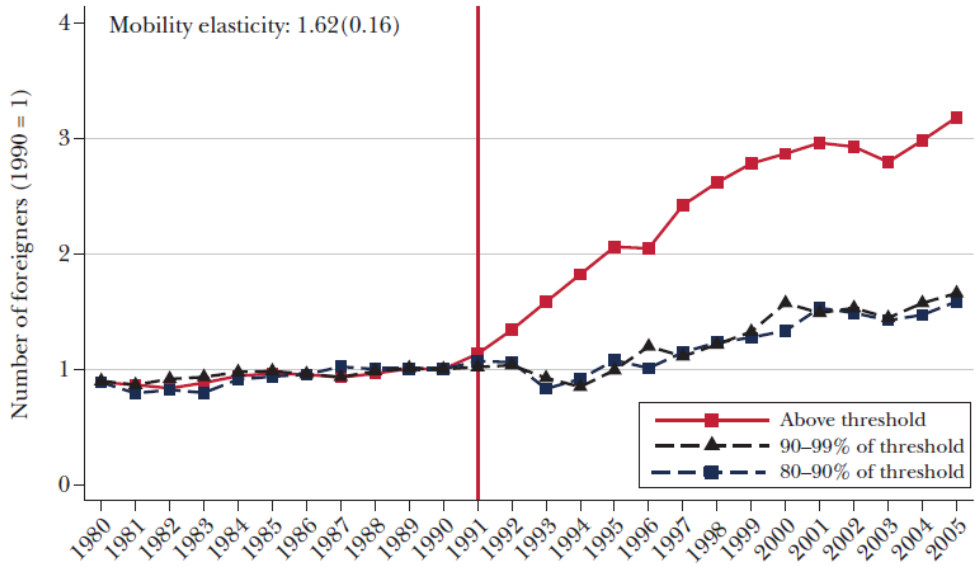


Note: The figure depicts the evolution of top marginal tax rates on earnings in 12 OECD countries from 1980 to 2015. Our measure of top marginal tax rates includes top income tax rates, uncapped employer and employer payroll taxes, and consumption taxes. Top marginal tax rates on foreigners also account for the provisions of foreigners' tax schemes.

Source: "Taxation and Migration: Evidence and Policy Implications", Kleven et al. (2020)

Kleven et al. (2014) find an important increase in the number of foreign high-earners in Denmark following the introduction of a favorable tax scheme for foreigners in 1992 (see Figure 8). However, this increase in foreign high-earners is differentiated by industries: very large (x5) in the sports and entertainment industries, more modest (x2) in other sectors.

Figure 8 – Migration effects of the Danish tax scheme



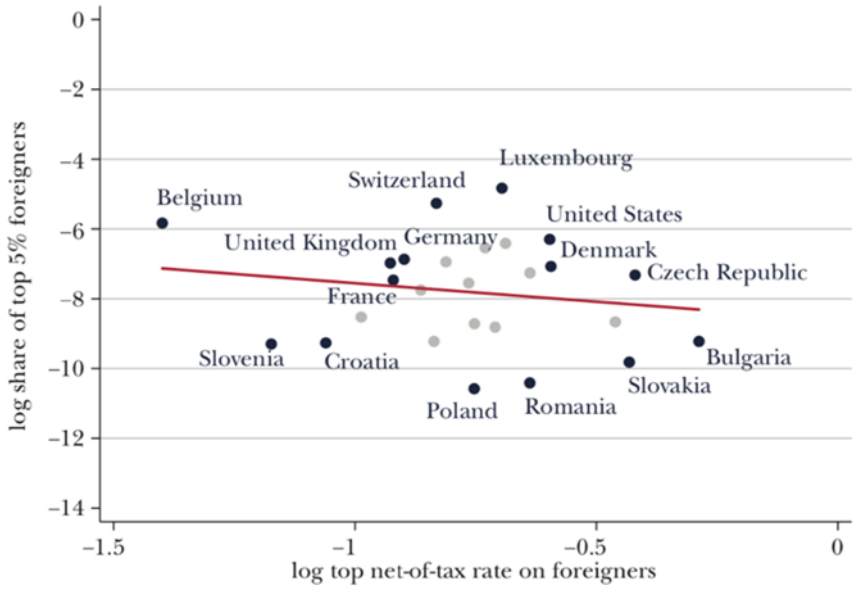
Note: The 1992 Danish tax reform, represented by a red vertical line, introduced a preferential tax scheme for foreign workers with earnings above an eligibility threshold, arriving in Denmark in or after 1991. The figure reports the evolution of the number of foreigners with earnings above the eligibility threshold from 1980 to 2005. It also reports the evolution of the number of foreigners in two control groups: individuals with earnings between 80 and 90% of the threshold and those with earnings between 90% and 99% of the threshold. All series are normalized to one in 1990, and numbers are weighted by duration of stay during the year for part-year foreign residents

Source: "Taxation and Migration: Evidence and Policy Implications", Kleven et al. (2020), originally from "Migration and Wage Effects of Taxing Top Earners: Evidence from the Foreigners' Tax Scheme in Denmark", Kleven et al. (2014)

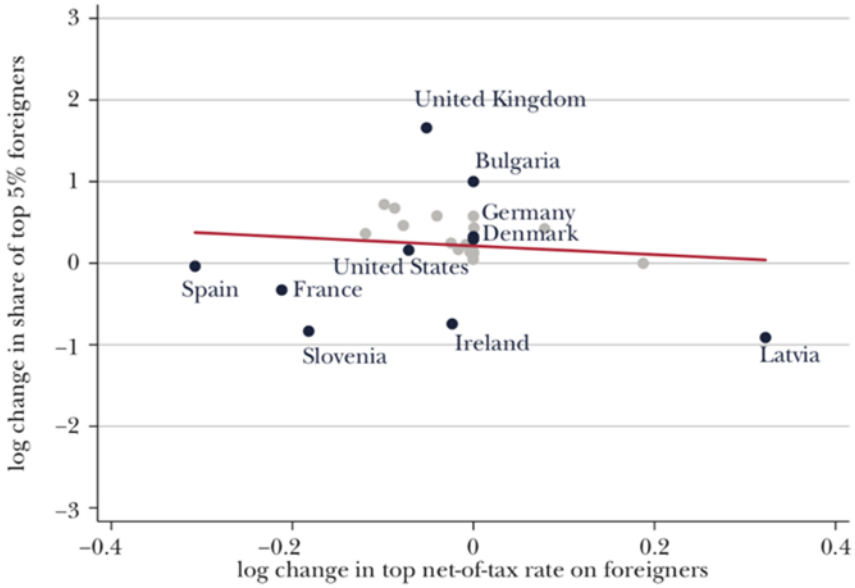
However, Kleven et al. (2020) show that at a macroscopic level, there is not much correlation between the top tax rate and the share of foreign high-earners in a given country (see Figure 9). Some countries can have similar tax rates on top foreign earners but a very different proportion of foreigners among top earners, while other countries have a roughly similar share of foreigners among top earners, despite having different top tax rates on them (e.g.: the United Kingdom and Denmark). This tends to show that taxation is only one parameter among others which determine the mobility of top earners.

Figure 9 – Cross-country evidence on mobility responses at the top

A. Top 5% foreigners versus top net-of-tax rates (levels)



B. Top 5% foreigners versus top net-of-tax rates (first differences)



Source: "Taxation and Migration: Evidence and Policy Implications", Kleven et al. (2020)

2. Automatic Exchanges of Information Has Contributed to Securing a New Base for Taxing Capital

2.1. Context

In the wake of the 2007-2008 crisis, frequent leaks and scandals (LuxLeaks, SwissLeaks, Panama Papers...) have demonstrated the volume of wealth held in tax havens, either legally (tax avoidance) or illegally (tax fraud). This has not only deprived countries from tax revenue, but also angered public opinions around the world and could potentially harm consent to taxation in the long run.

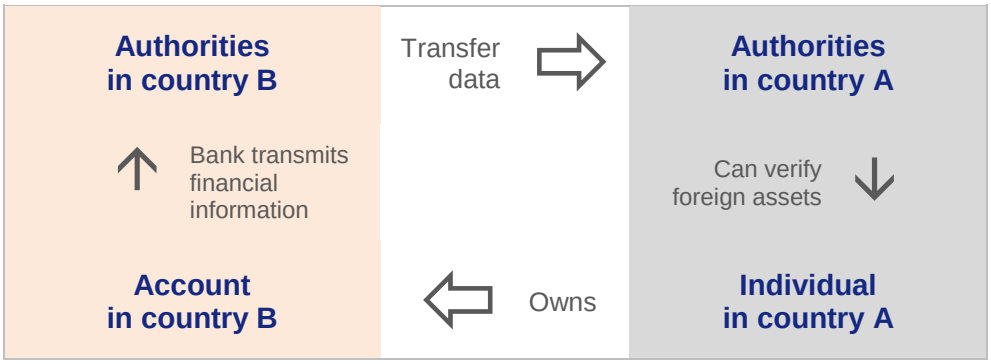
For decades, tax administrations have relied on targeted bilateral requests to know exactly what a *specific* taxpayer (physical person or legal entity) owns in a specific jurisdiction. The main weakness of that system is that it requires to identify preventively who, where and what a tax administration should be looking for, which, by definition, is challenging. Information on requests were also made difficult by the various degrees of willingness to cooperate of tax jurisdictions around the globe, and the secrecy on the matter which has prevailed.

A major change happened in 2010, when the United States implemented the “Foreign Account Tax Compliance Act” (FATCA), which forces banks around the world to share information about U.S. taxpayers with the U.S. tax administration (IRS). Non-cooperative banks could be sanctioned with very severe penalties.

This unilateral U.S. move incited the international community, at the initiative of the G20 and the OECD, to take steps towards Automatic Exchanges of Information (AEOI) at a global level. The OECD introduced “Common Reporting Standards” in 2014 (endorsed by nearly 100 countries) which set guidelines for implementing AEOI from 2017 on (such as what information should be exchanged, which financial institutions should comply, and which taxpayers are covered). The AEOI covers bank accounts and financial assets (and their derived income). Non-financial assets (such as real estates) are excluded. AEOI also covers information regarding “beneficial ownership” (i.e. who ultimately owns a legal entity). This last aspect aims at making easier to identify the ultimate owner(s) of financial assets, which are sometimes held through multiple legal structures in various countries.

Both OECD and non-OECD members are part of this initiative. The primary framework of implementation is the “Global Tax Forum”, a multilateral scheme under supervision of the OECD.

Figure 10 – How automatic exchanges of information work



Source: Drawn from OECD reference documents

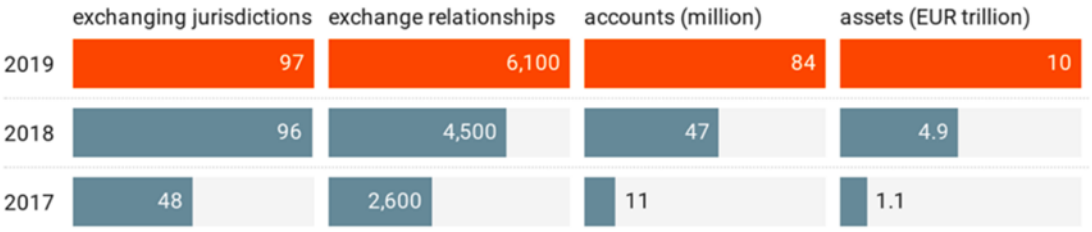
2.2. Implementation and first results

Globally

Most recent implementation data

As of 2019, almost a hundred countries have exchanged data about 84 million accounts, covering assets worth €10 trillion. Those metrics have been increasing since 2017, the initial year of implementation (see Figure 11).

Figure 11 – Recent developments regarding Automatic Exchange of Information



Source: Report to G20 Finance Ministers and Central Bank Governors (OECD, July 2020)

Three factors explain this growth:

– A wider scope of the information exchanged;

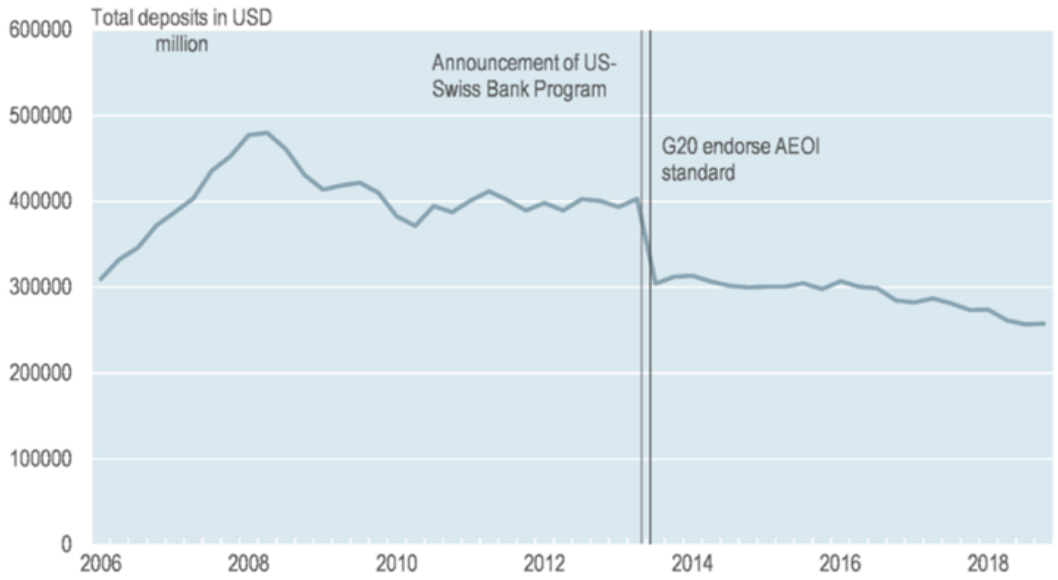
– An increase in the number of exchange relationships;

– An increase in the response rate.

Early impact at a global level

As of 2019, €102 billion of additional tax revenues worldwide have been identified for collection due to AEOI.[1] Some of the rules regarding AEOI have had an impact even before being implemented, since some taxpayers preventively brought back their offshore wealth. For instance in Switzerland (see Figure 12 below), foreign-owned bank deposits started to drop as soon as measures to fight tax evasion (from both the U.S. and OECD) were announced, even before they were implemented. Overall, O'Reilly et al. (2019) found that foreign-owned bank deposits in International Financial Centers (IFC) were reduced by 22% following the implementation of AEOI.

Figure 12 – Foreign-owned deposits in Switzerland



Source: "Exchange of Information and Bank Deposits in International Financial Centres", O'Reilly et al. (2019)

The OECD currently helps and supports 57 jurisdictions implement the new rules. The "Global Tax Forum" is currently conducting an in-depth "peer review" of AEOI schemes in participating countries, with results expected in 2022.

The number of non-compliant jurisdictions dropped over the past few years. Currently, the OECD indicates that 4 participating countries do not comply with tax transparency standards (Dominica, Niue, Sint Maarten and Trinidad and Tobago).[2]

[1] Report to G20 Finance Ministers and Central Bank Governors (OECD, July 2020).

[2] *Idem*.

Overall, the current progress regarding AEOI contributed to securing a new tax base by making it harder to hide wealth offshore. It also created new deterrents for illegal moves of financial capital.

More recently, the G20/OECD framework has expanded the principle of AEOI beyond its original scope. In June 2020, the framework approved "Model Rules for Reporting by Platform Operators", a set of measures aimed at compelling some internet platforms (especially in the transportation and accommodation sectors) to disclose the identity and transaction details of sellers on their platforms to tax authorities, to prevent tax avoidance and level the playing field between income earners in traditional sectors and those in the emerging "gig" economy.

In the European Union

Quick adoption

The EU has been progressively implementing the standards for AEOI during the past decade, following the OECD guidelines (and sometimes preceding them). Several Directives on Administrative Cooperation ("DAC") have been adopted between 2011 and 2018, to deepen and strengthen cooperation between members states' tax authorities. The scope of information exchanged is broader than required by OECD guidelines, since it includes additional categories of assets or incomes (such as pensions or real estate). By the end of 2018, all EU countries had begun implemented AEOI.

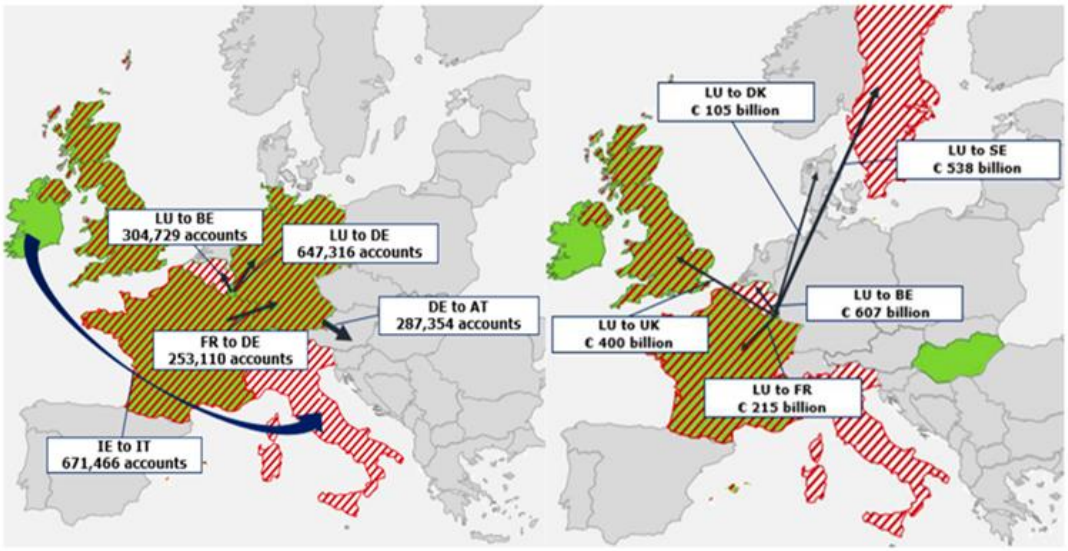
Early results

In 2018, EU countries exchanged information on 8.7 million accounts, totaling €2.9 trillion worth of assets.[1] Those numbers are expected to increase in the next few years, since a few EU members implemented AEOI exactly in 2018, and as tax administrations ramp up exchanges with more countries.

Although all EU member states now undertake AEOI, no consolidated EU-wide results on actual tax revenues are available as of now due to how recent the reforms are. Furthermore, the amount of data being exchanged often requires tax administrations to update their statistical abilities as well in order to provide detailed results. However, some early bilateral results are available (see Figure 13).

[1] EU Commission (2018), *Report from the Commission to the European Parliament and the Council. On Overview and Assessment of the Statistics and Information on the Automatic Exchanges in the Field of Direct Taxation*, Brussels, December.

Figure 13 – Main bilateral flows: number of accounts (left) and value of information exchanged (right)



Source: "Overview and Assessment of the Statistics and Information on the Automatic Exchanges in the Field of Direct Taxation" (Commission, 2018)

In France

Quick adoption

On the diplomatic side, France has regularly pushed for a quick implementation of AEOI at the EU level. Regarding legal aspects, the French Parliament approved Automatic Exchanges of Information in 2015. On the practical side, it should be noted that the French administration aims at modernizing its processes to embrace the new rules, for instance by leveraging advanced statistical techniques ("Deep Learning") or by boosting cooperation within the internal services of the tax administration.

Early results

In 2017, 5.9 million of pieces of information about personal accounts were exchanged (sent and received, with both EU and non-EU states) by the French tax administration, up from 1.7 million in 2016.[1] Similarly to other countries, the French willingness to implement AEOI had an impact even before the law came into force. The desk opened by the French administration between 2013 and 2017 to allow taxpayers to voluntarily bring back offshore

[1] Assemblée nationale (2019), *Rapport d'information sur le bilan de la lutte contre les montages transfrontaliers*, by Cariou É. et Cordier P.

wealth (*Service de traitement des déclarations rectificatives*) generated €9.4 billion in additional tax revenues from about 50,000 cases.[1]

Current challenges

It should be noted that, although it makes it much harder for taxpayers to hide wealth offshore, those taxpayers can still move to countries with low or no taxes on wealth, preventing their home country from earning tax revenue on such offshore capital.

Furthermore, the OECD mechanisms are not universal, since they coexist with FATCA. The United States are currently requiring countries to *automatically* provide information about assets held by U.S. citizens, but there is not the same degree reciprocity. Countries who still want to access information on assets held offshore by their citizens have to make a *targeted* request to U.S. authorities (exchange is not automatic).

Lastly, AEOI focuses on exchanging *financial* information. As mentioned above, most of the non-financial wealth (e.g.: real estate) is excluded from the scope. While some countries and jurisdictions decided to include other asset classes (e.g.: the EU), doing so is not a requirement at the OECD level.

3. Tax Expenditures (*niches fiscales*)

3.1. France has numerous tax expenditures, many of which are imperfectly evaluated

Tax expenditures (*niches fiscales*) are derogatory measures to general principles of the tax law, which reduce the burden of taxation. They serve diverse economic, political and social goals, such as helping specific industries, encouraging investments in some territories or increasing the disposable income of citizens.

There were officially 474 tax expenditures in 2019, which amounted to an estimated €99.4 billion of "lost" revenue to public administrations (or about 36% of net tax revenues).[2] The value of tax expenses has been steadily increasing since 2013, when it amounted to €72 billion (25% of net tax revenues).[3] Most of this increase is due to the CICE.[4] Although the definition of tax expenditures seems clear in theory, in practice the legal determination

[1] République française (2020), *Lutte contre l'évasion et la fraude fiscales*, French budgetary document.

[2] Cour des comptes (2020). *Les dépenses fiscales. Note d'analyse de l'exécution budgétaire 2019*.

[3] Evaluation of lost revenue assumes that behaviors of economic agents would remain unchanged.

[4] CICE (*Crédit d'impôt pour la compétitivité et l'emploi*) was a set of tax expenditures for firms between 2013 and 2019. It has been replaced by a permanent reduction in social contributions (under conditions) for employers.

of what constitutes a tax expenditure can sometimes be confusing. An example of that are rebates on VAT rates: some are legally labelled as tax expenditures while some others are not, depending on their intended economic and social objectives. The distributional impact of tax expenditures is very rarely detailed. The Minister of Public Action and Accounts disclosed in February 2019 that more than half of all the tax expenditures which allow households to reduce their income tax benefit those in the top 9% of the income distribution.

The 15 largest tax expenditures (cf. list below) amounted to €57 billion in 2019 – more than half of the overall "cost" of *niches*. There exists a cap to the total "cost" of tax expenditures on tax revenue since 2013. However, it has so far not had a "hard" impact, the cap being 10% higher than the actual amount of tax expenditures in 2019.

Table 3 – The 15 largest tax expenditures (in value)

Tax expenditure	Estimated cost €M, 2019
Crédit d'impôt en faveur de la compétitivité et de l'emploi (CICE)	19,621
Crédit d'impôt en faveur de la recherche (CIR)	6,200
Crédit d'impôt pour l'emploi d'un salarié à domicile [...]	4,760
Abattement de 10 % sur les pensions et retraites	4,200
Taux de TVA de 10 % pour les travaux de rénovation de certain logements	3,200
Taux de 10 % pour la restauration	2,899
Régime TVA de la Guadeloupe, de la Martinique et de la Réunion	1,900
Exonérations liées à la garde d'enfant	1,897
Déduction des revenus fonciers des dépenses de grosses réparations	1,845
Exonération d'impôts locaux de personnes âgées, handicapées, condition modeste	1,681
Exonération [...] au titre de l'épargne salariale	1,660
Remboursement de TIC sur le gazole [...]	1,543
Exclusion des DOM du champ TIC carburants [...]	1,272
Réduction d'impôt au titre des dons	1,495
Exonération ou imposition réduite des produits attachés aux bons ou contrats de capitalisation et d'assurance-vie	1,523

Source: derived from "Les dépenses fiscales" report by the French court of audit (Cour des comptes) (2020)

Table 4 – Tax expenditures by category of beneficiaries (2019)

Category of beneficiaries	Cost *(€ million)*	% of the cost
Households	36,708	37,0%
Enterprises	61,351	61,8%
Enterprises and households	1,241	1,2%
Total	**99,300**	**100%**

Source: Parliament document "Rapport d'information sur l'application des mesures fiscales", a.k.a "Giraud report" (2019)

Firms enjoy about 62% of tax expenditures (in value), while households enjoy 37% (see Table 4).

The largest tax expenditures have enjoyed attention from economists and political leaders, and impact studies do exist, from entities such as France Stratégie or Cour des comptes. However, the Cour des comptes often reminds that data remains incomplete (and sometimes nonexistent) for many other tax expenditures. For instance, the number of beneficiaries remain unknown for 223 *niches*. The actual cost of some *niches* remains imprecise (and sometimes even unknown), while the impact of some others has never been evaluated. Even for large tax expenditures, progressive or regressive effects are often overlooked. The "2019 report on implementation of tax measures" ("Giraud report") calls "tax black holes" (*trous noirs fiscaux*) tax expenditures for which there is simultaneously no amount available, the number of beneficiaries is unknown, and which do not expire (no *temporal bornage*). One tenth of tax expenditures falls into such a scope.

Estimating the impact of some *niches* can be challenging. However, the Cour des comptes has regularly reminded that a better evaluation of *niches fiscales* is an important tool to determine their usefulness and efficiency. In particular, providing data on the impact of tax expenditures across the income distribution could be useful in evaluating the progressivity of tax expenditures. As an example, the U.S. Congress's Joint Committee provides data on selected tax expenditures beneficiaries by household income brackets.[1]

[1] Joint Committee on Taxation (2019). *Estimates of Federal Tax Expenditures for Fiscal Years 2019-2023*, December.

An example of evaluation effort was the Committee on evaluation of tax expenditures ("Comité Guillaume") set up in 2011, an ad hoc Commission which reviewed every single tax expenditure and attributed a score based on their efficiency. However, such an initiative has not been renewed since 2011.

A recent initiative towards a better of evaluation of tax expenditures has been the creation of a "statistics office" (*bureau chiffrages et études statistiques*) within the tax law department (*direction de la législation fiscale*) in September 2019.[1]

France is not the only country where estimating the real cost and impact of many *niches* has proven difficult. A UK Parliament report estimated that no estimation were available for 204 tax reliefs in the United Kingdom (out of 362).[2]

3.2. Distributional impact at the European level

A very limited numbers of studies tried to evaluate the redistributive impact of tax expenditures at the European level. Using an EU-wide microsimulation (EUROMOD), Adams (2018) evaluates the distributional consequences of tax expenditures (divided in both tax allowances and tax credits) on personal income tax across 6 EU countries (Czech Republic, Denmark, Germany, France, Italy and Spain).

As evidenced in Figure 8, countries have differentiated ways of using tax allowances and tax credits. Denmark exclusively uses tax allowances, while a higher number of households in France benefit from tax expenditures with a tax allowance rather than with a credit.

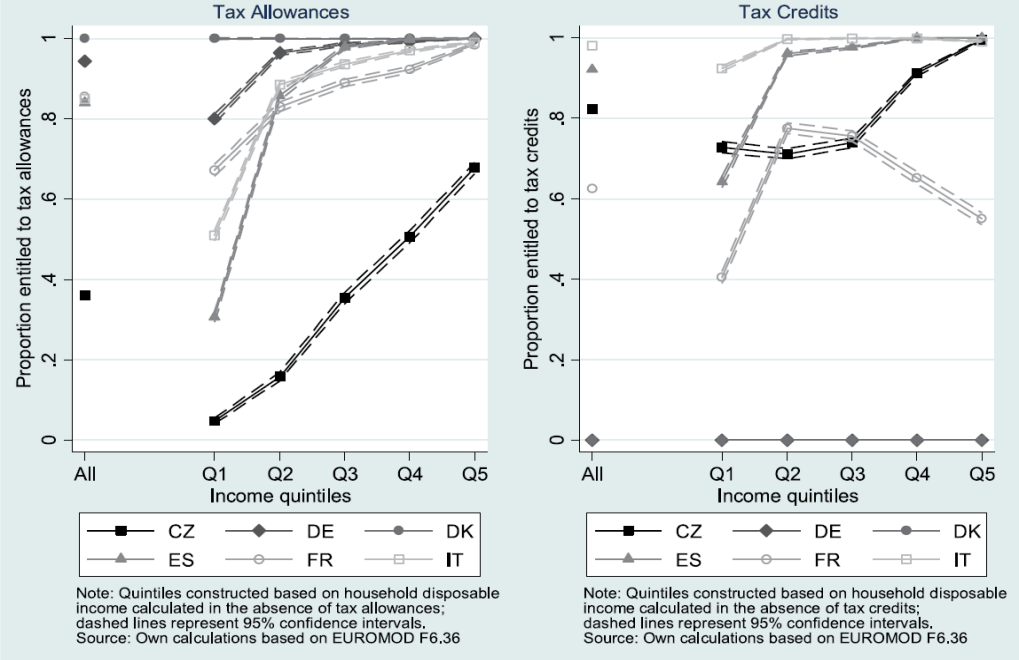
Eligibility to tax allowances can vary a lot by income deciles (such as in Czech Republic) or remain relatively flat across most income deciles (such as Germany). France is in-between: among the lowest income quintile, two thirds of households are eligible to tax allowance, while virtually all households are eligible to some form of tax allowance.

When it comes to tax credits, there are a lot of differences amongst countries. In France, the top and bottom quintile of the distribution are less likely to be eligible than the middle of the distribution.

[1] Cour des comptes (2020). *Les dépenses fiscales. Note d'analyse de l'exécution budgétaire 2019*.

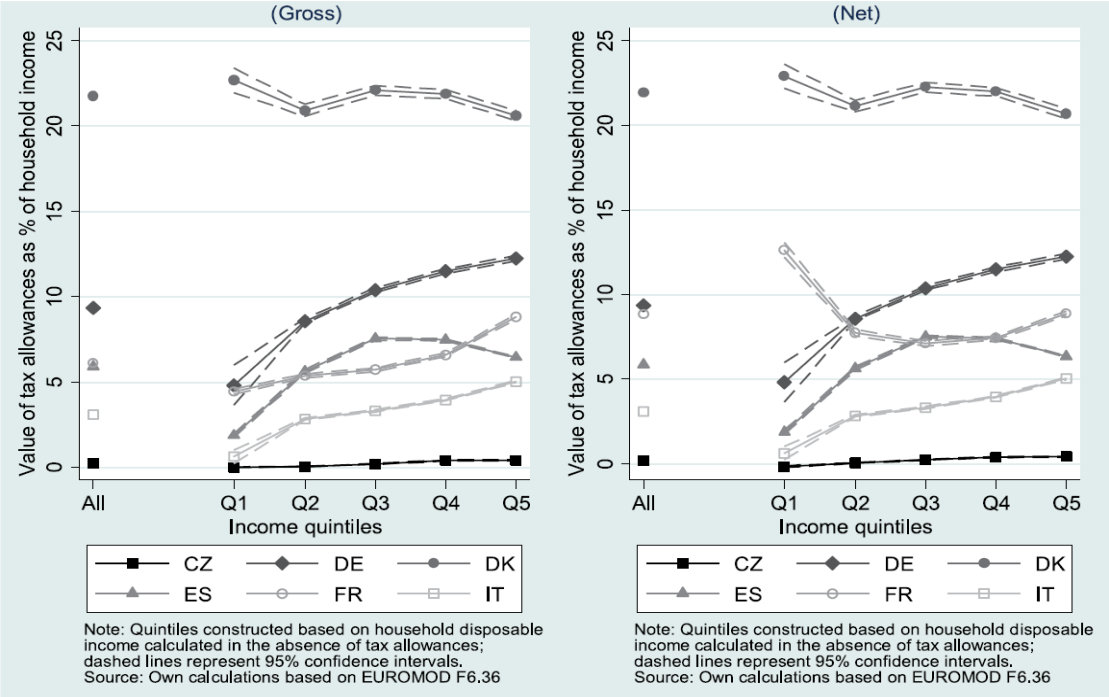
[2] UK House of Commons, Public Accounts Committee (2020), *Management of Tax Reliefs: Twelfth Report of Session 2019–21*," July.

Figure 14 – Proportion of individuals in households entitled to tax allowances (left) and tax credits (right) by income quintile



Source: "Who benefits from the 'hidden welfare state'?", Avram (2018)

Figure 15 – Left: Average net values of tax allowances as a percentage of rank Household Disposable Income (HDI). Right: Average net values of tax credits as a percentage of rank HDI



Source: "Who benefits from the 'hidden welfare state'?", Avram (2018)

In terms of value relative to income, the higher the income household, the more valuable tax allowances are in many countries except in France, where bottom and top quintile tend to benefit more than middle ones (the figures are net, which mean they include income-based benefits). This shows that tax allowances tend to be regressive in many countries, except in France where there is some degree of progressivity at the bottom of the distribution, and some degree of regressivity at the top. Tax credits are generally progressive, although they are of low value for households in France.

Overall, the study shows that tax expenses for households can have progressive or regressive effects depending not only on their own characteristics, but also on the way they interact with the overall tax system.

3.3. Examples of potentially regressive tax expenditures in France

*Uncapped sale of primary residence (*résidence principale*)*

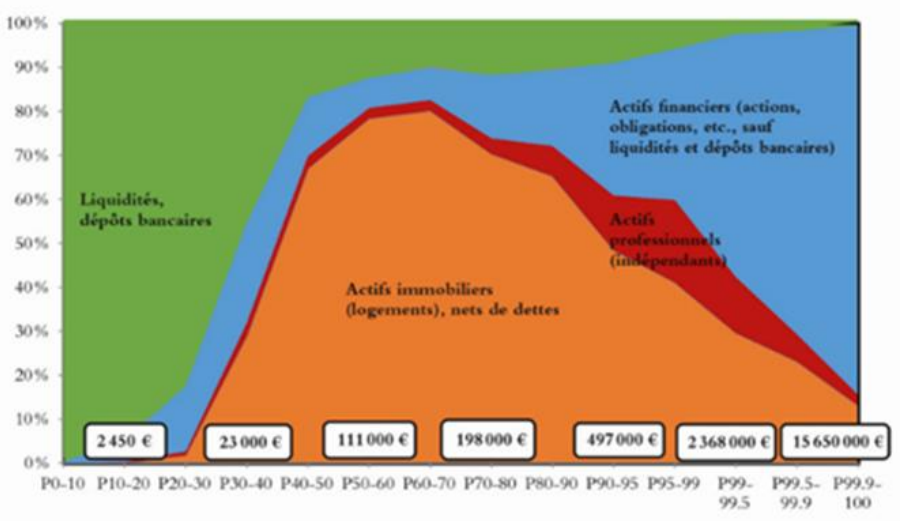
France, like other countries in Europe, does not tax capital gains on the sale of the primary home (although some other countries require a minimum length of holding time to enjoy such an exemption).[1] The "cost" of this exemption in terms of tax revenue is estimated to be €1.2 billion.[2] The sale of other properties (secondary homes, rented houses) is taxed at a rate of 36.2%.

Currently, real estate makes up most of the wealth of the middle class (Figure 16). The poorest households tend to hold their wealth as cash, while the richest ones tend to own relatively more financial assets. In order to have a progressive tax on the capital gains from the sale of primary housing, the threshold has to be high enough so that it only impacts high value real estates and "skips" middle-class properties. Such a tax would also generate some additional revenue for the Government.

[1] This specific exemption is not legally considered a tax expenditure (it is a *modalité de calcul de l'impôt*), although the "Giraud report" (2019) mentions that many relatively similar measures are considered tax expenditures.

[2] République française (2019). *Évaluation des voies et moyens*, Vol. 2: *Les dépenses fiscales*, Liste des dépenses fiscales (available online only).

Figure 16 – Composition of wealth in France, 2015



Note: The Green area represents the share of wealth held in cash and banks deposits. The Blue area represents financial assets, the red area professional assets, and the orange area real estate assets.

Source: Capital et Idéologie*, Piketty (2019)*

The Plan d'épargne en actions

The *Plans d'épargne en actions* (PEA) allow households to invest a maximum of €150,000 of their savings on financial markets. Gains on the PEA are taxed at a flat rate of 30% if they have been held for less than 5 years. However, gains held in the PEA for longer than 5 years (including dividends) are exempt from income tax and *only* have to pay social contributions (17.2%).

PEA can benefit from 3 different tax expenditures. The cumulated "costs" of 2 of those expenditures was €240 million in 2018,[1] the cost of the third one being unknown. No forecasts have been made for 2019 and 2020.

Exemptions from the "Pinel Act"

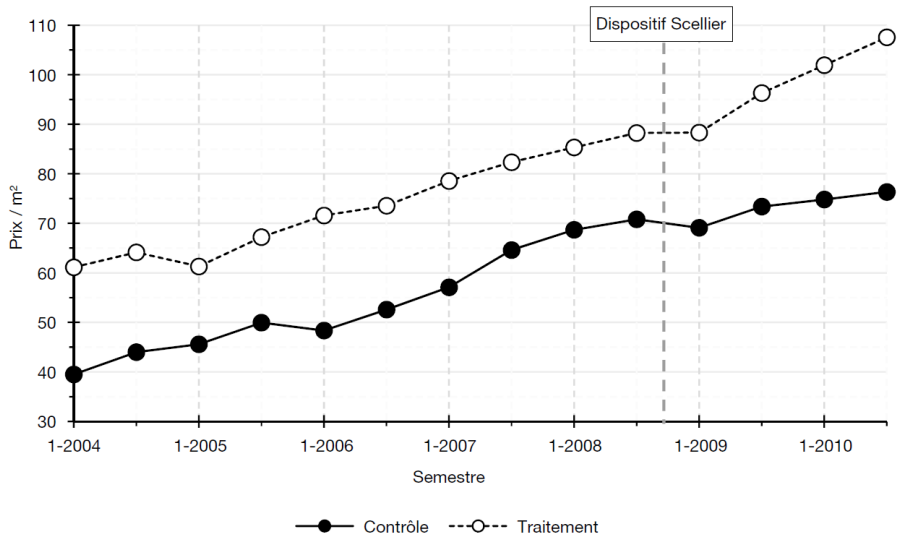
France has had tax exemptions on buy-to-let properties for several years, although the specificities have evolved over time. The latest iteration, called the "Pinel Act", allows French residents who want to invest in a buy-to-let property to enjoy a tax rebate from 12% to 21% of the value of the property (capped at €63,000 depending on how long the house or the flat is being rented – minimum 6 years). The property has to be a new built and be located in a "saturated area" (*zone tendue*) to be eligible. The cost of this measure was

[1] Derived from République française (2019). *Évaluation des voies et moyens*, Vol. 2: *Les dépenses fiscales*, *op. cit*.

€784 million in 2019.[1] When taking into accounts Pinel *and* the previous tax exemptions on buy-to-let properties (Scellier, Robien, etc.), the "cost" of tax expenditures for buy-to-let investment is expected to reach €2.16 billion.[2] France is one of only a few countries to offer such a tax expenditure. Since 2018, the "Denormandie" exemptions extends the Pinel Act and offers similar tax rebates for buy-to-let existing (*ancien*) accommodation in which the acquirer undertakes *substantial renovation works*.

Trannoy et al. (2019) showed using a difference-in-difference study that Scellier measures (from 2009 to 2012) created an inflationary pressure on land prices (see Figure 17). Chapelle, Trannoy and Wasmer suggest in a public note (2020) that a reduced VAT rate of 10% on buy-to-let investments in replacement of the Pinel-Denormandie measures could have a strong impact on buy-to-let investments for roughly half of the cost of the current measure, all with reduced complexity. This proposal assumes a high degree of competition on the supply side.

Figure 17 – Price of the square meter for control and treatment groups, all zones, by semester, 2004-2010



Source: "L'impact du dispositif Scellier sur les prix des terrains à bâtir" (Bono and Trannoy, 2019)

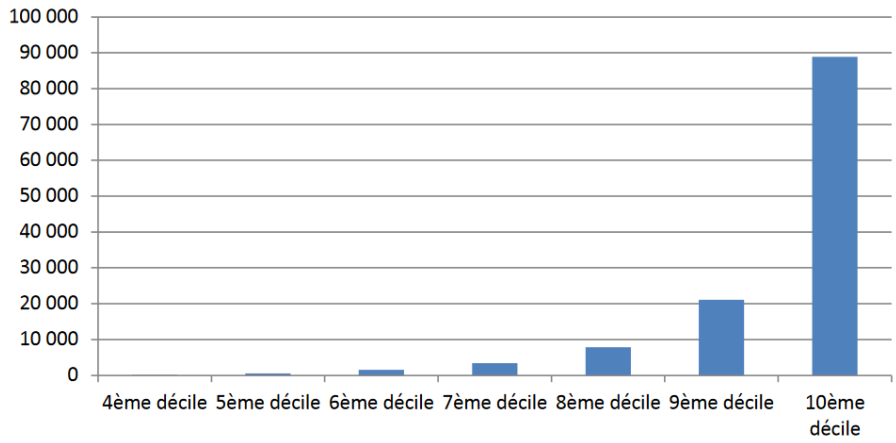
[1] *Évaluation des voies et moyens*, Vol. 2: *Les dépenses fiscales, op. cit*. Estimations includes the Duflot exemption (from January 2013 to August 2014) which was replaced by the Pinel exemption, as budget documents do not distinguish between the two.

[2] Inspection générale des Finances-IGF (2019). *Évaluation du dispositif d'aide fiscale à l'investissement locatif Pinel*. November.

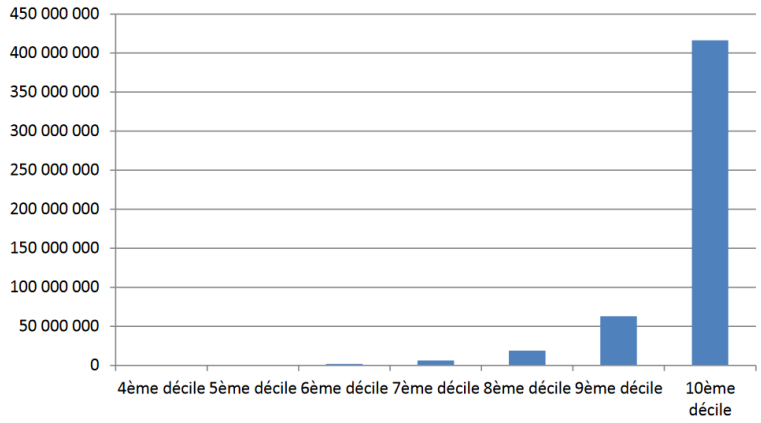
Furthermore the 2019 “Giraud report” shows that the vast majority of beneficiaries of the Pinel exemption are in the top income decile. Households in this decile enjoy more than 80% of the tax expenditure (in value), as evidenced by Figure 18.

Figure 18 – Number of beneficiaries and amount rebated by income decile

A. Exemptions from the “Pinel Act”: number of beneficiaries



B. Exemptions from the “Pinel Act”: amount rebated by income decile (euros)



Source: Rapport d’information sur l’application des mesures fiscales (“Giraud report”, 2019, p. 289)

Overall, a 2019 report from the Inspection générale des finances (IGF) shows a nuanced impact of the Pinel exemption. On the one hand, the IGF considers that the Pinel exemption has increased the number of private rentals on the market. On the other hand, the report mentions that accommodations have become increasingly standardized, that it incites individuals to make investments with negative returns to enjoy the rebate (there is a strong post-purchase discount [*décote*] of newly built homes), and that it does not decrease rents enough. The report believes in modifying (rather cancelling) the Pinel exemption and suggests some technical reforms to the scheme.

Scope of tax expenses cap

The French tax law has "a global cap on tax expenditures" for households: the amount of tax allowance or tax credit that households can enjoy on their income tax could not be higher than €10,000. However, households are allowed to benefit from an additional €8,000 of tax expenditures via specific investments, such as if they invest money in overseas *départements* (DOM). Furthermore, many tax reliefs are excluded from this scope (such as charity donations).

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APPENDIX 4

CORPORATE TAXES (BEPS)

1. BEPS 1.0

1.1. Origins and definition

Following the 2007-2008 crisis, tax practices of multinational companies (MNEs) have been under increased scrutiny from both tax authorities and public opinions around the world. The rise of information technologies, the lower barriers to cross-border flows of capital, and the existence of low or no-tax jurisdictions ("tax havens") have allowed some MNEs to pay extremely low taxes on their profits. Such practices have not only deprived governments of legitimate tax revenues (estimated at between €100 billion and €240 billion each year by the OECD) but also undermined the legitimacy and confidence of citizens regarding taxation, a key pillar of social contracts.

There has been a growing sentiment that the tax principles related to multinationals, which mainly date from the 1920's, were not reflecting the reality of business activities in the 21st century. In 2013, the G20 and the OECD member countries took the decision to create a new set of international rules related to profit shifting. This new international framework was disclosed in 2015, and bears the name of BEPS ("Base Erosion and Profit Shifting"):

- **"Base erosion"** refers to practices in which multinationals use financial and accounting tools (interests, royalties...) to reduce their tax bills;
- **"Profit shifting"** refers to allocating profit from one jurisdiction (usually with a higher tax rate) to another (usually with a lower tax rate).

There have been 2 rounds of BEPS negotiations: the original BEPS, later nicknamed BEPS 1.0, started in 2013. The second one, labelled BEPS 2.0, started in 2017 and is currently under discussion (we detail it in section 2).

Although the OECD is the organization which has been leading the negotiations, BEPS 1.0 scope goes beyond OECD members countries. Currently, 137 jurisdictions are involved in

the project (of which 66 are developing countries). Indeed, BEPS 1.0 is not only a relevant initiative for developed countries, but also for developing ones that rely on corporate tax income to finance their public policies. The OECD has put in place several tools to coordinate efforts and help developing countries implement measures and reduce tax evasion.

BEPS 1.0 measures have been made all the more relevant by the recent Covid-19 crisis. Governments around the world have been heavily using fiscal policy as a tool to counteract the economic impact of the pandemic. Fighting tax evasion could generate much needed tax revenues to cope with the tax shortfalls.

1.2. BEPS 1.0 Principles

BEPS 1.0 consists of a set of 15 specific actions (see Box A below) revolving around 3 principles: **Transparency** (improving tax reporting), **Substance** ([re]connecting taxation with value-added activities), **Coherence** (removing tax gaps and loopholes). BEPS 1.0's actions cover a range of tools and concepts aimed at fighting tax evasion through:

- **Combating harmful tax practices**: "Harmful tax practices" refer to opaque practices whereby a country offers very low tax rates to foreign companies without substantial business activity, resulting in a detrimental effect on the tax base of other jurisdictions. Intangible assets (such as intellectual property or trademarks) can be an important component of "harmful tax practices".
- **Change in the definition of "permanent establishment"**: Some MNEs have been using sophisticated schemes to avoid paying taxes in countries in which they have significant sales on the premises they have no "permanent establishment" in such countries. BEPS 1.0 aims at preventing such situations from happening by providing a new definition of what a "permanent establishment" is.
- **Precisions regarding transfer-pricing**: Transfer-pricing refers to internal financial flows between the foreign subsidiaries of a multinational company. Such transfers are supposed to follow the "arm's length" principle: the amount paid for a good or service between two subsidiaries should be similar to what independent companies would have paid each other. Although transfer pricing can reflect legitimate business purposes, it has also been used as a way to evade taxes by shifting profits from high-tax jurisdictions to low-tax ones. BEPS aims at strengthening tools for tax administrations to evaluate if transfer pricings are aligned with actual value creation. An important tool here is **Country-by-Country reporting (CbCr)** which compels firms to report activities of their overseas subsidiaries to the tax administration of their home jurisdictions. Since 2018, those reports have been exchanged between tax authorities. Most of the CbCr transmitted to tax authorities are currently not made public, although some countries are considering doing so.

- **Change in "Controlled Foreign Companies" (CFC) rules**: BEPS recommends changes related to the definition of Controlled Foreign Companies and how their incomes should be considered (depending on the effective business activities). Those rules aim at circumventing the creation of offshore subsidiaries for tax evasion purposes.

To speed up the implementation, the BEPS 1.0 framework offers an innovative diplomatic tool: **the Multilateral Instrument (MLI)**. This international scheme allows signing countries to easily modify bilateral tax treaties (which are numerous and complex). This saves times and resources as it avoids renegotiating each one of the thousands of existing tax treaties.

Box A – List of 15 actions from BEPS

1. Address the tax challenges of the digital economy.
2. Neutralize the effects of hybrid mismatch arrangements.
3. Strengthen CFC rules.
4. Limit base erosion via interest deductions and other financial payments.
5. Counter harmful tax practices more effectively, taking into account transparency and substance.
6. Prevent treaty abuse.
7. Prevent the artificial avoidance of PE status.
8. Assure that transfer pricing outcomes are in line with value creation: intangibles.
9. Assure that transfer pricing outcomes are in line with value creation: risks and capital.
10. Assure that transfer pricing outcomes are in line with value creation: other high-risk transactions.
11. Establish methodologies to collect and analyse data on BEPS and the actions to address it.
12. Require taxpayers to disclose their aggressive tax planning arrangements.
13. Re-examine transfer pricing documentation.
14. Make dispute resolution mechanisms more effective.
15. Develop a multilateral instrument.

Source: "Action Plan on Base Erosion and Profit Shifting", OECD (2013)

1.3. Progress

Implementation measures of BEPS 1.0

BEPS 1.0 initially set 2 to 3 years deadlines to implement the measures. Some jurisdictions have implemented most or all the measures swiftly (such as EU countries), while there have been delays in some others due to lack of political willingness or practical difficulties.

Some aspects of BEPS 1.0 have seen progress:

- The OECD/G20's framework related to combating harmful tax practices reviewed about 300 schemes in over 70 countries. Almost all of them are now considered compliant (the non-compliant ones were abolished or transformed). A further 100 schemes are under review.
- The first exchanges of country-by-country reports happened in mid-2018. About 100 countries have introduced (or are about to do so) CbCr obligations, covering nearly all of MNEs with revenues above €750 million. Preliminary data from 26 countries were released in July 2020,[1] and more is expected in the coming months. Although some caution should be taken due to the low number of countries in this data submissions, early results (see Figure 1) show that, on average, MNEs report a relatively high share of profits (25%) in investment hubs compared to their share of employees (4%) and tangible assets (11%), which shows discrepancy between profits and employees/asset location. In addition, those early results confirm disproportionate revenue/employee ratios in jurisdictions with no corporate income tax (CIT) – although this might be due to more productive employees in such jurisdictions: The median value of revenues per employee in zero CIT rate jurisdictions is above $1.4 million as compared to $240,000 for jurisdictions with CIT rates higher than 20%.

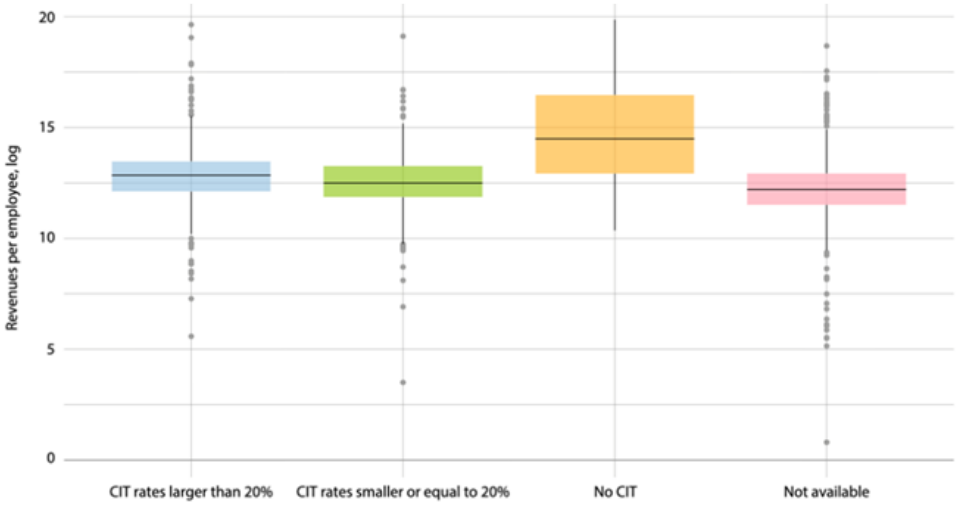
[1] OECD (2020), *Corporate Tax Statistics*, Paris: OECD Publishing, Second Edition.

Figure 1 – Corporate income tax rates: average revenues per employee distribution

Note: High income, Middle income, and Low-income country categories are based on the World Bank classification. The OECD defines Investment hubs as "jurisdictions with a total inward Foreign Direct Investment (FDI) position above 150% of GDP".

Source: "Corporate Tax Statistics", Second Edition (OECD, 2020)

Figure 2 – Corporate income tax rates: average revenues per employee distribution



Note: Scale is logarithmic.

Source: "Corporate Tax Statistics", Second Edition (OECD, 2020)

- After domestic negotiations and discussions by national authorities and parliaments, the MLI is gaining traction. 49 countries have ratified the diplomatic instrument, a figure expected to reach 94 in the short to medium term. 300 bilateral treaties have already been modified through the MLI (the goal is 1,680 in total).

Two main implementation challenges remain

- **Although many developed countries have quickly implemented BEPS measures, a lot of developing ones are still at an early stage, either due to a lack of political will or to limited resources.**

However, it should be noted that the OECD has been ramping up help and support to help with the challenges faced by developing countries (66 out of 137) and speed up adoption of measures, in coordination with the United Nations. To offset the lack of financial means or expertise of some countries in highly technical subjects, the OECD has launched programs such as "Platform for Collaboration on Tax" (which helps tax administrations implement international norms by providing toolkits) or "Tax Inspectors without Borders" (in which tax experts from various countries share expertise and experience).

- **Evaluating the impact of those measures will require data collection and sharing efforts.**

It is still very early to quantify the impact of BEPS measures. Countries have been implementing measures at various paces. Among countries still in the planning phase of measure implementation, some do not necessarily have the statistical ability to collect the data required. Even for those who have such capabilities, some time is required before the data are detailed enough to allow impact studies. Although there has been some promising early-stage data collection (such as CbCr statistics from 26 countries published in July 2020), implementing accurate data collection in participating jurisdictions should be a priority to allow evaluation and improvement of BEPS 1.0 measures in the coming decade.

1.4. Impact of BEPS 1.0 in Europe

In the European Union

The EU has taken swift steps to implement BEPS 1.0, even acting preventively at times:

- Over the last decade, six "Directives on Administrative Cooperation" (DAC) have progressively boosted automatic exchanges of various tax information (accounts, CbCr, tax rulings...) between member states;
- The 2016 Anti-Tax Avoidance Directive (ATAD) strengthened anti-tax evasion tools within the EU and harmonized relevant practices among EU member states.

Although it is still too early to have an EU-wide impact study, one should note the early results regarding clarifying tax rulings (preferential tax schemes given by a country to a company)

of members states, which are now accessible in a central registry. As of 2019, the registry contained 18,000 tax rulings (75% coming from Netherlands and Luxembourg).[1]

In France

France had started implementing measures aimed at fighting tax avoidance and improving transparency even before BEPS 1.0 negotiations. For instance, article 57 of the French Tax Laws (*Code général des impôts*) allowed the Tax Administration to correct excessive transfer pricing, while article 209 B was already setting guidelines regarding Controlled Foreign Companies (CFC).

Despite some pre-existing measures, BEPS 1.0 still had an important impact on French tax laws and practices by introducing new rules, strengthening and modernizing processes, and adapting the tools available to fight tax evasion to international standards, hereby making cooperation with foreign tax authorities easier. France acted quickly to reform its internal laws following BEPS 1.0 agreements and EU directives. In particular, 2018 in France implemented:

- the beginning of country-by-country reports submission;
- the clarification of transfer pricing in domestic law;
- the vote of a new law strengthening fight again tax evasion;
- the ratification of MLI.

Although it will take a few years to study the impact of BEPS measures implementation on France, some preliminary results can be shared:

- French companies have sent 1,300 country-by-country reports so far. Those reports have allowed French tax services to better understand intra-firm financials flows[2];
- Out of all the tax rulings exchanged in 2018, 204 were related to an entity in France[3];
- Data on 115,000 accounts of juridical entities (*personnes morales*) have been exchanged between the French and foreign tax authorities in 2017, almost twice as much in the previous year (58,900 in 2016)[4].

[1] République française (2020), *Lutte contre l'évasion et la fraude fiscales*, French budgetary document.

[2] *Idem.*

[3] *Idem.*

[4] Assemblée nationale (2019), *Rapport d'information sur le bilan de la lutte contre les montages transfrontaliers*, by Cariou É. et Cordier P.

Early impact on domestic procedures

In addition to changes in law, the French Tax administration has been embracing new practices and tools to fight tax evasion, such as:

- **Increased collaboration with foreign tax authorities**, as evidenced by the increasing volume of information exchanged (not only about companies, but also about individuals. For instance, information on 5.9 million bank accounts have been sent or received in 2017[1]);
- **Use of digital tools**: the share of targeted controls coming from advanced statistical tools (AI, data mining...) is expected to increase steadily, from 6% in 2017 to 30% in 2020, with a target of 50% in 2023.[2]

Challenges in France regarding BEPS 1.0

There are 2 main challenges regarding the impact evaluation of BEPS 1.0 on France:

- Measures have been progressively implemented in France over second half of the 2010's and are still ramping up. Data collection is still in an early stage and it will require a few years before detailed and comprehensive impact studies are available.
- It can sometimes be challenging to estimate the effect of a specific BEPS 1.0 measure when other reforms which might influence business practices took place in the same period.

2. The New Initiatives to Fight Tax Avoidance by MNEs: GILTI (US) and BEPS 2.0 (OECD)

Although BEPS 1.0 was a first step in fighting tax avoidance, many participating countries felt it did not go far enough, especially regarding the increased impact of digital on business practices and the sustained practices of profit shifting. Tørsløv, Wier and Zucman (2018) estimate that $616 billion (about 40% of all multinational profits) were shifted to tax havens in 2015.

One of the United States' answer to those challenges has been enacting the Global Intangible Low-taxed Income (GILTI), a minimum tax threshold for profits earned outside the U.S. by U.S. firms. The international community has followed with BEPS 2.0, at the initiative of the OECD, which contains proposals related to aligning taxation

[1] *Idem.*

[2] Ministère de l'Économie, des Finances et de la Relance (2020), *Lutte contre l'évasion fiscale et la fraude en matière d'impositions de toutes natures et de cotisations sociales*.

with the country of actual business activities (Pillar 1) and a proposal to implement a minimum tax rate on profits earned by multinationals outside the country of incorporation, similar to GILTI (Pillar 2). Those 2 pillars are still under negotiation. The OECD expects negotiations to conclude by mid-2021.

2.1. Enacted measures, current negotiations and proposals

GILTI

The United States enacted the Global Intangible Low-Taxed Income (GILTI) in 2017, which is a first step towards a minimum tax on global profits. GILTI creates a minimum corporate income tax rate which will reach 13.125% of U.S. companies' profits (in excess of a 10% rate of return) earned abroad by 2025. With this scheme, companies can still locate their profits in low-tax jurisdictions, but if the *average* tax rate on profits earned is less than the GILTI threshold (13.125%), the United States would tax the difference (only on profits above a 10% rate of return). Profits on which more than 13.125% has been paid in taxes abroad are not impacted.

GILTI was preceded by a strengthening of "anti-inversion" rules, which seek to deter companies from incorporating in another country for tax evasion reasons.

First data on the impact of GILTI on tax revenues are not yet available. The U.S. Joint Committee on Taxation estimates that the tax should bring about $10 billion on revenues per year. It should be noted that there have been some initial technical difficulties in implementing GILTI, and that the U.S. tax administration has refined the details of its implementation regularly since 2017.

The second pillar of the OECD proposal has many similarities with GILTI.

BEPS 2.0: Pillar 1

Current international norms link taxation to physical establishments of companies. However, some companies (especially digital companies) can sell services and generate revenues anywhere in the world while paying limited or no taxes in the countries in which they operate since they might not have a permanent residence in such jurisdictions.

The first pillar of the OECD framework aims at changing such practices. A key aspect of Pillar 1 would be the **reallocation of a *share* of profits** (called the "residual profit") to the markets where companies conduct businesses (such as the countries of residence of the user base), even if companies do not have a physical presence. In addition, Pillar 1 aims to define a "fixed return for certain baseline marketing and

distribution activities taking place physically in a market jurisdiction" (OECD, 2020), and improve dispute prevention and resolution on tax matters.

Negotiations about the technical aspects of Pillar 1 are at an advanced stage, and technical specificities were presented in details in October 2020. However, discussions are not complete yet, and the OECD notes that "political decisions are required on a number of issues".

Although the negotiations are being led by the OECD, the scope of both pillars are broader since more than 130 jurisdictions are currently involved. The OECD hopes that a final agreement will be reached by mid-2021.

BEPS 2.0 Pillar 2

Pillar 2 of the OECD framework (also called "GloBE", for Global Anti-Base Erosion) has a lot of similarities with GILTI implemented by the United States. It is a multilateral initiative, aimed at effectively implementing **a minimum tax rate on foreign profits** of large multinational companies by allowing countries of corporate residence to "tax back" profits located in low-tax jurisdictions.

The OECD framework would consider GILTI a "compliant income inclusion rule" under Pillar 2, allowing both mechanisms to co-exist.

Similarly to Pillar 1, negotiations about the final details Pillar 2 are still ongoing regarding important aspects of the measure, such as the rate at which country could tax foreign residual profits (the OECD has done simulations based on a rate of 12.5%) or the scope of industries impacted.

Beyond GILTI and BEPS 2.0: The Clausing-Saez-Zucman proposal for a comprehensive tax on corporate profits

Although GILTI is a first step towards a new tax system on overseas profits, some caveats remain:

- The tax only applies to profits in excess of a 10% rate of return, which reduces the tax base (and hence the additional tax revenue);
- GILTI calculates an *average* tax rate on foreign profits, which means countries with higher tax rates offset countries with lower tax rates;
- The GILTI threshold will rise to 13.125% in 2025, but is still below the 21% tax rates which exists for profits made in the United States.

To improve the mechanism, researchers Clausing, Saez and Zucman (2020) have made several proposals for a more comprehensive and ambitious tax on foreign profits:

- Such a tax would apply on *all* foreign profits, and not just on profits in excess of 10% return on capital;
- Companies' taxes on foreign profits would be evaluated on *a country-by-country* basis (instead of an *average* basis). Therefore, profits located in high-tax jurisdictions could not be used to offset profits in tax havens;
- The tax rate on foreign profit would be decided by the Parliament, but could potentially be higher than the current GILTI threshold of 13.125% (Clausing, Saez and Zucman [2020] mention 21%, the current corporate income tax rate in the United States).

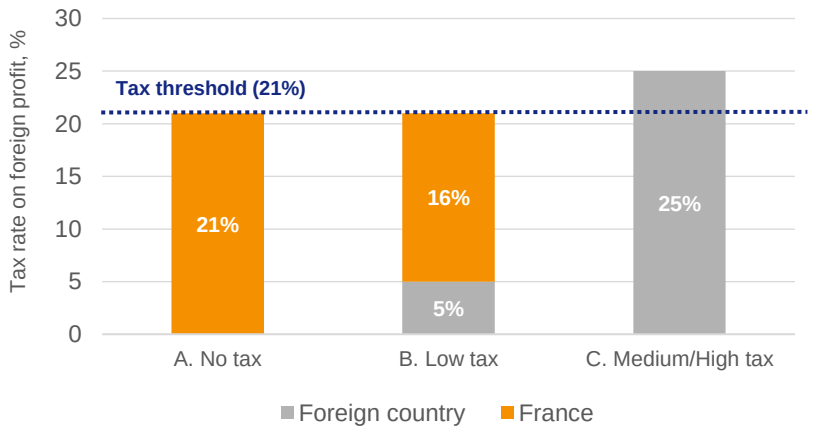
This scheme does not directly compel countries to change their tax rates. Any country can still implement low taxes if it wants to, but profits from U.S. companies flowing to this jurisdiction will be taxed at 21% (or any other chosen minimum) in the United States.

The authors of this appendix consider that this tax could potentially have a major effect on the very existence of tax havens, and on globalization more generally: countries could no longer simply compete to attract foreign profits by lowering their tax rates, since firms would pay the minimum tax on global profits anyway. Such a tax could potentially put an end to the race-to-the-bottom regarding taxation which has prevailed in the previous decades. Furthermore, authors argue that since countries who want to attract companies can no longer rely on low taxes, they would have to find other ways to attract businesses, such as with a productive workforce, transportation links... This could have a significant impact on the economic development of such countries.

In addition to fighting tax havens, such a tax would also generate additional tax revenue for countries which implement it. For instance, Clausing, Saez and Zucman (2020) estimate that a 21% tax on foreign profits could bring between $57 billion annually on average to the United States in the next decade (compared to the $14 billion/year estimated for GILTI).

Finally, such a tax would massively reduce tax optimization and tax evasion by MNEs, which would decrease feelings of injustice which have been prevalent in many societies around the world.

Figure 3 – How the Clausing-Saez-Zucman minimum tax on foreign profit works: Example with France



Scenario A – Profits located in a "No tax" country: Since the French company pays no corporate income tax in the country of profit location, France can tax the firm's profits in that country at 21% (the threshold). The tax is paid in France (where the company is incorporated).

Scenario B – Profits located in a "Low Tax" country: Since the foreign country only taxes profit at 5%, France can tax the firm's profits in that country at 16% (the difference between the 21% threshold and the other country's tax rate).

Scenario C – Profits located in a "Medium/High Tax" country: Since the foreign country taxes profits at 25% (hence above the threshold), France does not tax anything.

Source: Scenario based on "Ending corporate tax avoidance and tax competition: A plan to collect the tax deficit of multinationals" (Clausing et al., 2020)

2.2. Implementation and potential impact of the BEPS 2.0 proposals

Challenges remaining to reach a deal

Although BEPS 2.0 negotiations are at an advanced stage, some challenges still have to be overcome to reach an agreement. From a practical standpoint, the immediate challenges related to the Covid-19 crisis have shifted the attention and resources of many participating countries and might generate delays in reaching an agreement.

One of the most contentious points regarding negotiations is about Pillar 1. Although impact assessment shows that most countries will be gaining, a few jurisdictions will be losing, which might negatively impact negotiations. Countries with low-tax rates in particular might be reluctant to reach an agreement which will seriously impact their current tax base.

The United States' call in December 2019 to create a "safe harbor"', which de facto corresponds to making Pillar 1 optional, has created uncertainty, reinforced by the U.S. Treasury Secretary comments in June 2020, calling the current negotiations an "impasse". Although negotiations have been stalled, the new administration Biden could provide an

opportunity for more certainty and lead to an agreement down the road. The situation is becoming all the more pressing, since some European countries (including France) have implemented (or are about to) new taxes on digital companies. Although they are supposed to be temporary until the Pillar 1 deadlock gets resolved, failed negotiations could make them permanent, increasing uncertainty.

Ongoing negotiations seem to be more promising regarding Pillar 2. However, there are still discussions about potential carve-outs, and what such carve-outs could look like (for instance, for specific sectors, or for large corporations with a lot of domestic business and few international operations). More generally, even countries which do not support Pillar 2 will be impacted by a potential international agreement, which creates incentives for them to join the negotiations and help them shape the measures rather than passively see them implemented.

Overall, although reaching a negotiation agreement on BEPS 2.0 could seem detrimental to tax havens, *not* reaching an agreement might be even worse for them (and for everyone), since each country could implement its own tax on global profits, creating a free-for-all situation and potentially numerous legal issues for multinational businesses around the world (such as double taxation).

Impact worldwide

The OECD released its impact assessment of BEPS 2.0 in October 2020. The Organization estimates that both pillars *and* GILTI could increase global CIT revenues by up to 4% (or about $102 billion). For pillar 1 specifically, the additional tax revenue worldwide would increase by up to 0,5%, or $12 billion. Most countries would see small gains on their CIT revenue. Beyond financial gains, Pillar 1 could provide political benefits to countries who implement it, since it would signal willingness to fight tax avoidance.

The OECD estimates that Pillar 2 could bring about $70 billion in additional tax revenue worldwide (or 3.3% of global CIT), assuming a global minimum tax of 12.5%.[1] This increase in tax revenue would be due to 2 effects:

– Increase in tax revenues on profits located *outside* the country of incorporation;

– Increase in CIT revenue from profits located *within* the country of incorporation due to less profit shifting.

A third “neutral” effect might be an increase in tax rates of former tax havens (who no longer have incentives to maintain their low taxes). This would not increase global tax

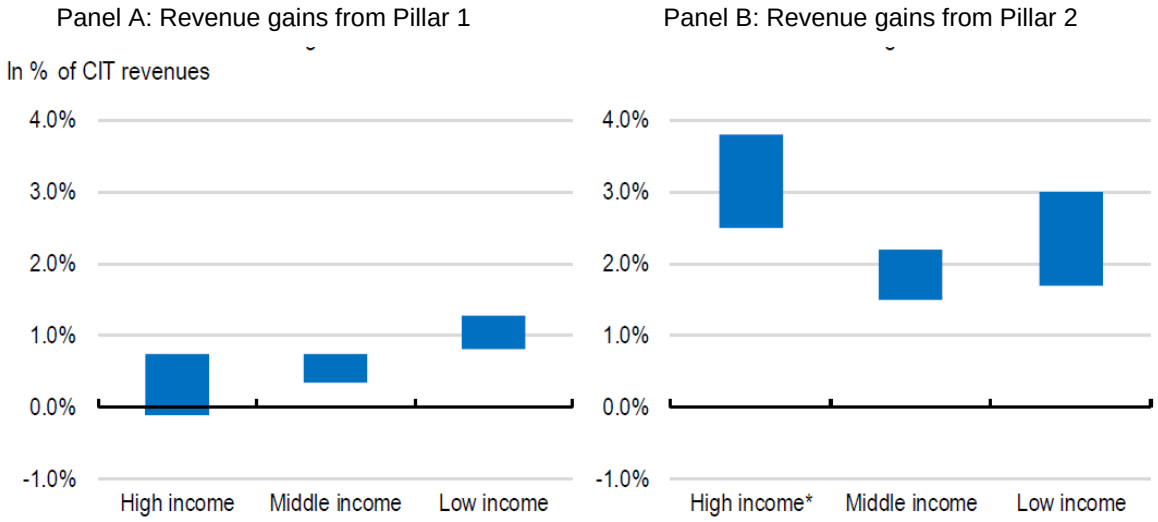
[1] GILTI is *not* included in Pillar 2 estimations. GILTI would bring between $9 and $21 billion in tax revenue according to the OECD.

revenue, but would rather virtually “shift” the CIT revenue from countries of incorporations to the former low-tax countries.

It should be noted that the above estimates were made using a tax rate for Pillar 2 of 12.5% and that final revenues could be significantly different (either higher or lower) depending on the final design of the tax. The graph below illustrates the gains in CIT from both pillars according to countries’ income levels. Middle-income and low-income countries would benefit more from Pillar 1 than high-income countries, while Pillar 2 would benefit high-income countries the most.

Figure 4 – Estimated effect of the proposals on tax revenues, by jurisdiction groups

Estimates based on illustrative assumptions on the design and parameters of Pillar 1 and Pillar 2



* Excluding the United States (given illustrative assumption that the US GILTI would co-exist with Pillar 2).

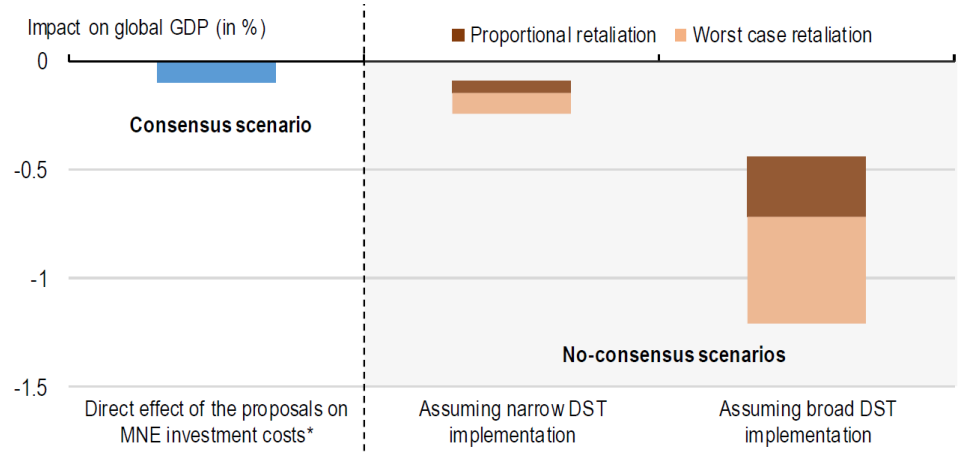
Note: Estimates based on illustrative assumptions on the design and parameters of Pillar 1 and Pillar 2.

Source: Tax Challenges Arising from Digitalisation – Economic Impact Assessment (OECD 2020)

Despite potential significant gains, it should be reminded that most companies in the world would not be impacted, as the 2 pillars would only apply to large corporations with a strong international presence.

Proposals from the OECD would be almost neutral on Global GDP (-0,1%). However, the OECD warns that negotiation failures could lead to a series of uncoordinated Digital Services Taxes (DST) across countries in the world. Besides added complexity and uncertainty for businesses, such measures could lead to trade disputes and trade retaliation, which would impact global GDP much more than the OECD coordinated approach (see Figure 5).

Figure 5 – Estimated effect on global GDP in stylized scenarios



* The proposals would also have positive impacts on GDP through indirect channels (e.g. increased tax certainty, reduced need to increase other distortive taxes) which are not quantified in this figure.

Note: The estimate in the consensus scenario only takes into account the direct effect of the proposals on MNE after-tax investment costs and its implications on MNE investment and ultimately GDP. The range reflects uncertainty on the tax sensitivity of the affected MNEs as well as uncertainty about whether lower investment in a jurisdiction where after-tax investment costs are increased would result in higher investment in other jurisdictions (where some of the investment may be relocated) or not. In the no-consensus situation, two cases are considered: (i) a narrow digital services tax (DST) implementation, where jurisdictions currently subject to Section 301 investigation by the United States introduce a DST, the United States retaliates with tariffs and these jurisdictions counter-retaliate also with tariffs; and (ii) a broad DST implementation, where all jurisdictions except the Unites States, China and Hong Kong (China) introduce a DST and reactions similar to the previous case ensue. In each case, the uncertainty ranges correspond to the range of outcomes between scenarios with 3% to 5% DST rates and 1-time (i.e. "proportional") to 5-time (i.e. "worst case") trade retaliation factors.

Source: Tax Challenges Arising from Digitalisation – Economic Impact Assessment (OECD 2020)

In addition of their impact on tax revenue, those new measures will be evaluated on:

- Their ability to create a fairer tax system;
- Their consequence on business practices;
- Their impact on tax havens.

In addition to the well-known adverse effects of tax avoidance, the OECD mentions in its impact assessment that the 2 pillars would level the playing field between large multinationals, which might in turn reduce industry concentration. This would be an unintended effect, since the 2 pillars are "not targeted to influence competition dynamics among firms" (OECD, *Economic Impact Assessment*, 2020). Such a statement is in line with previous research, which find that tax avoidance can give companies which adopt such practices a competitive edge (Martin, Parenti and Toubal, 2020) and that strong anti-

avoidance rules can in certain circumstances reduce industry concentration (Sorbe and Johansson, 2017).

EU implementation & impact

Current challenges

How to make digital firms pay their fair share in taxes has been on the EU's agenda for a few years. Although the EU published a package on fair taxation in March 2018 (which includes a proposal for a directive about a "digital tax"), the EU Commission's position remains to find a solution within the OECD's BEPS 2.0 framework. Any measure taken in the meantime is expected to be temporary, until an agreement has been reached within the OECD framework.

Since the EU is still waiting for the outcome of the OECD talks before taking potentially new measures, some member states have already begun implementing a digital tax. France has introduced a "digital services tax" in 2020, similarly to Italy and Austria. Slovakia has enacted a tax in 2018 on digital accommodation and transportation platforms who have activities in the country, even though they have no official "permanent establishment". Belgium, Spain, Czech Republic, Slovenia are (or have been until recently) discussing a digital tax as well.

Although some EU states have decided to implement digital taxes unilaterally, such measures will most likely be amended if an international agreement is reached (some countries, like France, have acknowledged it explicitly).

Although the OECD remains the main framework for discussion (at this stage), it should be noted in the event of an EU solution that EU rules regarding fiscal matters require unanimity. Most of EU countries would benefit from the rules, but a few numbers of EU states would see their home market become less attractive (see Figures 6 and 7). This can make an agreement at EU-level challenging.

Estimates

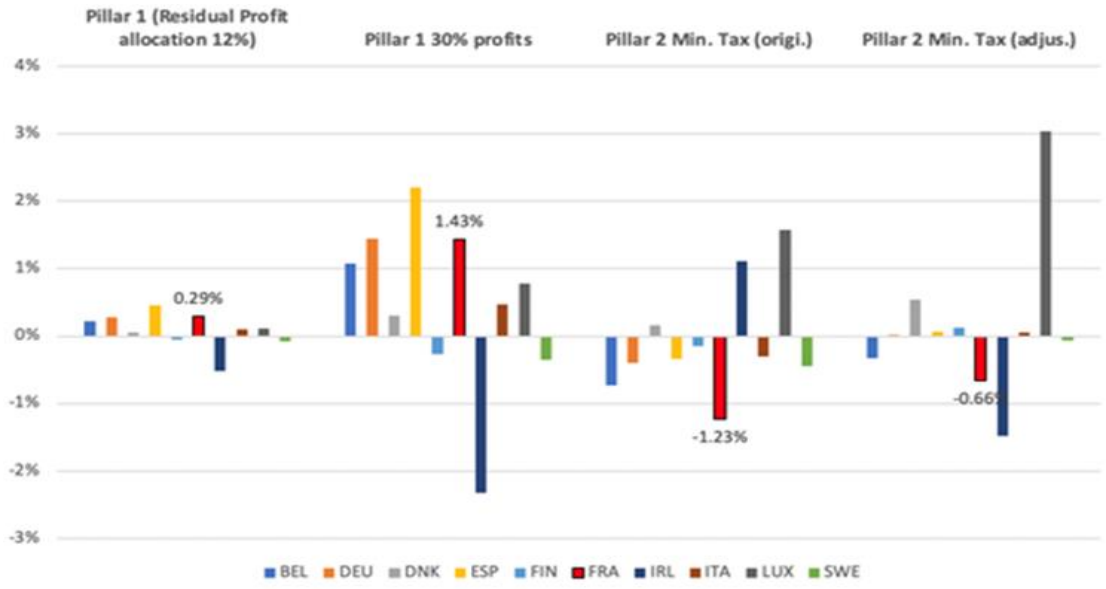
The Conseil d'analyse économique (CAE) has published a note (written by Fuest, Parenti, and Toubal) in November 2019 to estimate the impact of Pillars 1 and 2 across many countries under different scenarios.

Regarding Pillar 1, the CAE estimates the impact of reforms with an RPA (residual profit allocation), "residual profits" being defined as above 12%. This is relatively close to the spirit of Pillar 1. The CEA estimates a second scenario in which 30% of *all* profits are taxed in the destination market. Regarding Pillar 2, the CAE estimates a scenario with a 15% effective tax of foreign profits *without* reaction of tax havens and another "adjusted"

scenario in which tax havens respond to the tax on foreign profits by increasing their own corporate tax rates to 15%.

The CAE note estimates the impact of those various on relative attractiveness of countries, as well as on tax revenues. Figure 6 shows that Pillar 1 measures would have a small impact on the relative attractiveness of countries. Many (but not all) countries studied here would become relatively more attractive, while Ireland's attractiveness would drop. The effects are amplified in the "30% profit" scenario (compared to the "12% RPA"). The CAE note indicates that France and Germany are slightly more attractive in both Pillar 1 scenarios since the current higher tax rates of both countries would have less impact on firms due to the profits reallocation. The impact of Pillar 2 scenarios on EU countries' attractiveness is differentiated, but again remain relatively small for most of them.

Figure 6 – Impact of various scenarios on relative attractiveness of select countries (in %)



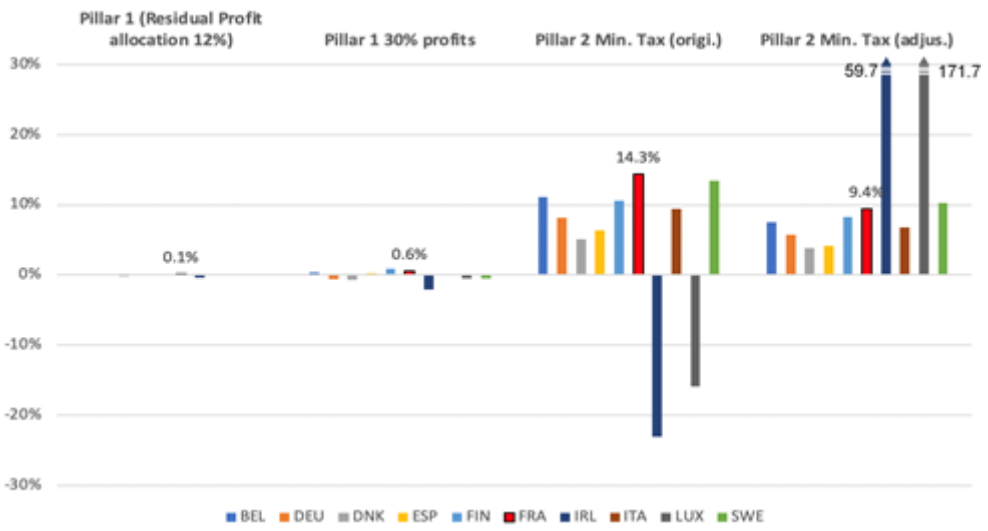
Source: "Fiscalité internationale des entreprises : quelles réformes pour quels effets ?", CAE (2019) and data received from Farid Toubal

In terms of impact on CIT revenues, gains from Pillar 1 would allow countries to gain a new tax base on one hand (foreign firms operating in the country), but they would lose some of their current base on the other hand (national companies now being taxed in foreign markets where they operate). The net impact of Pillar 1 would depend on the trade characteristics of each countries and would usually be small (+0.1% for France in the Pillar 1 "12% RPA" scenario). However, Pillar 2 could have significant impact on tax revenues. In scenario 4 ("min Tax adjus." in which tax havens respond to the tax on foreign profits by increasing their own corporate taxes to 15%), France would earn +9.4% in extra corporate income tax revenue, while Germany would earn +5.7%. Interestingly, *all* countries

considered would earn additional revenues (including tax havens). Those effects are evidenced in Figure 7.

In absolute values, the extra tax revenue from Pillar 2 from the CAE model would amount to between €3 and €4 billion in France. Gabriel Zucman's estimates of a coordinated tax lead to a higher estimation, of €5 to €6 billion in extra revenues for a minimum tax rate of 15%. For a minimum tax rate of 25%, additional tax revenue would amount to €9 to €10 billion.[1]

Figure 7 – Impact of various scenarios on revenues from corporate income tax (in %)



Source: "Fiscalité internationale des entreprises : quelles réformes pour quels effets ?", CAE (2019) and data received from Farid Toubal

The CAE note briefly mentions potential challenges and alternatives to the current design of Pillar 1 (based on *residual* profit allocation). For instance, the note mentions the work of academics which suggest using an "apportionment formula" – a mechanism which weight profit by selected criteria (such as sales, employees) – to reallocate *overall* profit (instead of *residual* profit) to destination markets. In such a scenario, detailed country-by-country reporting (cf. I.B.) would be a very important tool to allow tax authorities to evaluate the activities and cash flows of an MNE's subsidiaries around the world.

Another option mentioned in the CAE note would be a "Destination Based Cash-Flow Tax (DBCFT)", as put forward in a paper by Auerbach et al. (2017), which is based on consumption in local markets and presents similar characteristics to a VAT mechanism.

[1] Source: estimates computed using information received from Gabriel Zucman.

Implementation and impact in France

While discussions within the OECD framework are still ongoing, France has adopted its own tax on digital services in July 2020. It will apply to specific digital companies or companies with digital business models, who earn more than €750 million in revenues worldwide, of which €25 million can be attributed to French users. The tax rate is 3% of revenues in which French users are deemed to play an important role in value creation. About 30 multinational companies are expected to be impacted. Among them are 17 U.S.-based ones, which has created diplomatic tensions. France has indicated that a tax within the OECD (or at least, within the EU) remains its priority, and hence this tax on digital services might be replaced by the BEPS 2.0 measures in the future if an agreement is reached.

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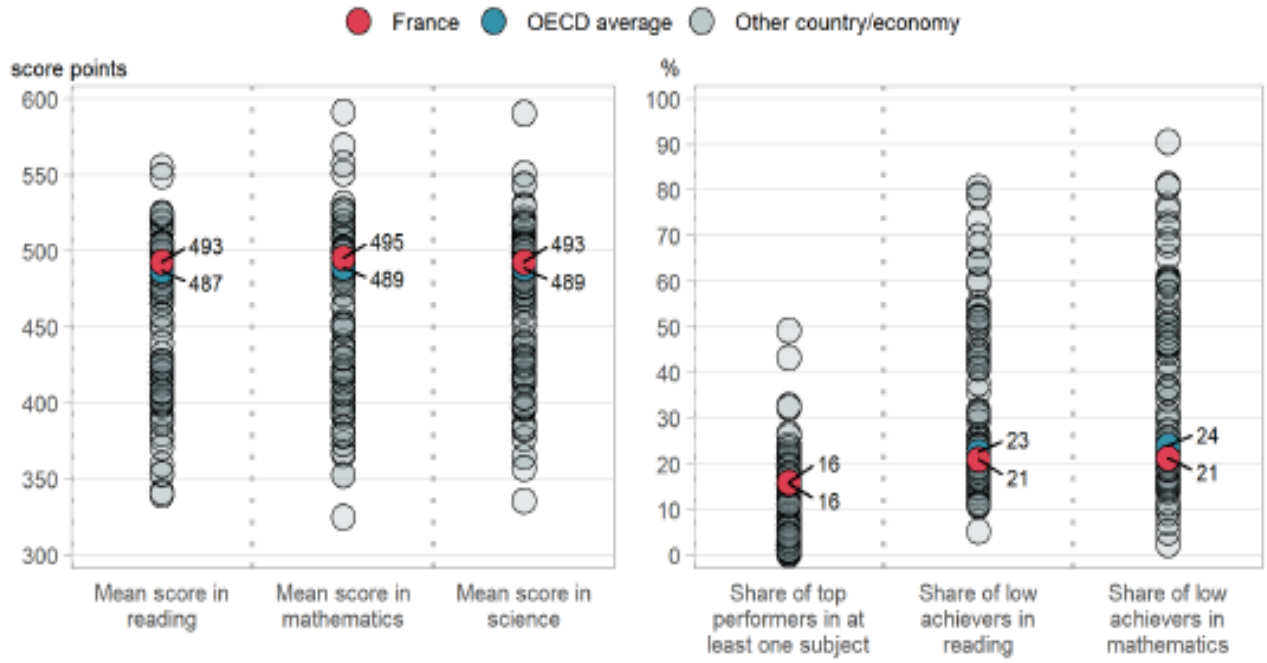
APPENDIX 5

FORMAL EDUCATION

1. Students from France Have an Academic Performance Slightly Above International Average

Results from the latest Programme for International Student Assessment (PISA) study (2018) show that French students have an academic performance slightly above the OECD average in Reading, Maths and Sciences. When looking at the ends of the performance spectrum, a similar proportion of French were excelling in one topic (vs. OECD) and a roughly similar proportion were struggling in either Reading or Maths (Figure 1).

Figure 1 – Academic performance in the PISA study



Note: Only countries and economies with available data are shown.

Source: Programme for International Student Assessment (PISA) study (2018)

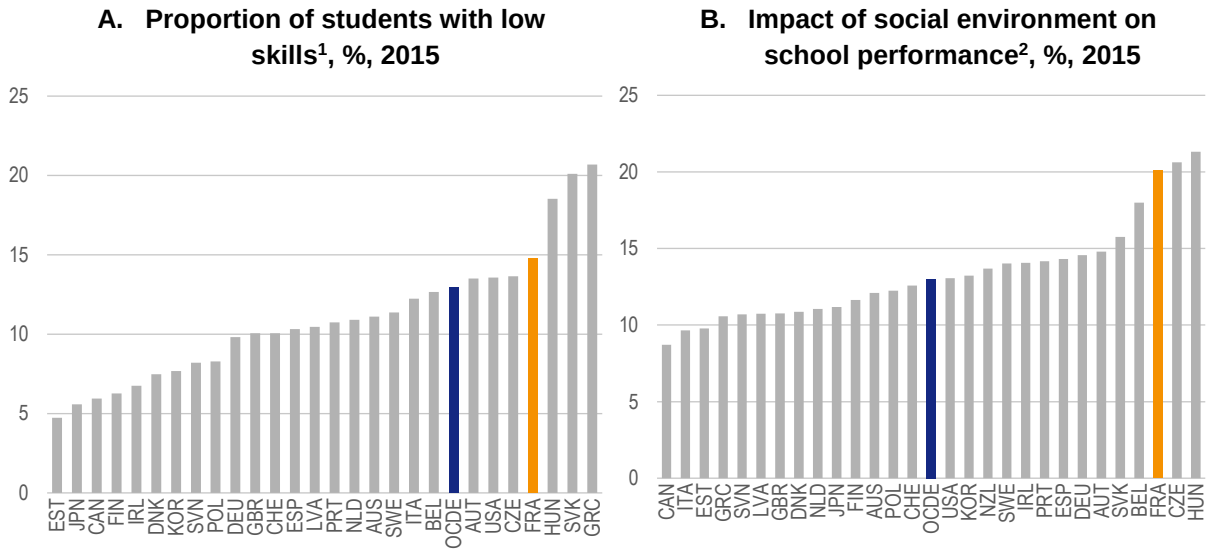
The academic performance of students from France is more or less equivalent to that of students from Portugal, Austria or Czech Republic. It should be noted that, since the beginning of the PISA study in the early 2000's, France's performance has always been close to the OECD average (either slightly below or slightly above). Out of the 10 countries and territories with the highest academic performance, 7 were East Asian.

2. However, the French System Remains Very Unequal

A lot of inequalities remain in the French education system. There is a 107 points gap in Reading Comprehension – the main component of PISA tests – between students from privileged background and those from disadvantaged ones. This is one of the highest gaps in the study (average is 87 points). The OECD also finds that socio-economic status impacts academic performance much more in France than in other countries (Figure 2).

Overall, a disadvantaged student is 7 times more likely to be a low performer than an advantaged student in France, a higher odd than in most countries.

Figure 2 – Education system perpetuates significant disparities



1. Percentage of students with poor results in the three PISA fields (Sciences, Reading and Mathematics).

2. Change in students' performance in mathematics explained by the socio-economic context as measured by the PISA index of economic, social and cultural status.

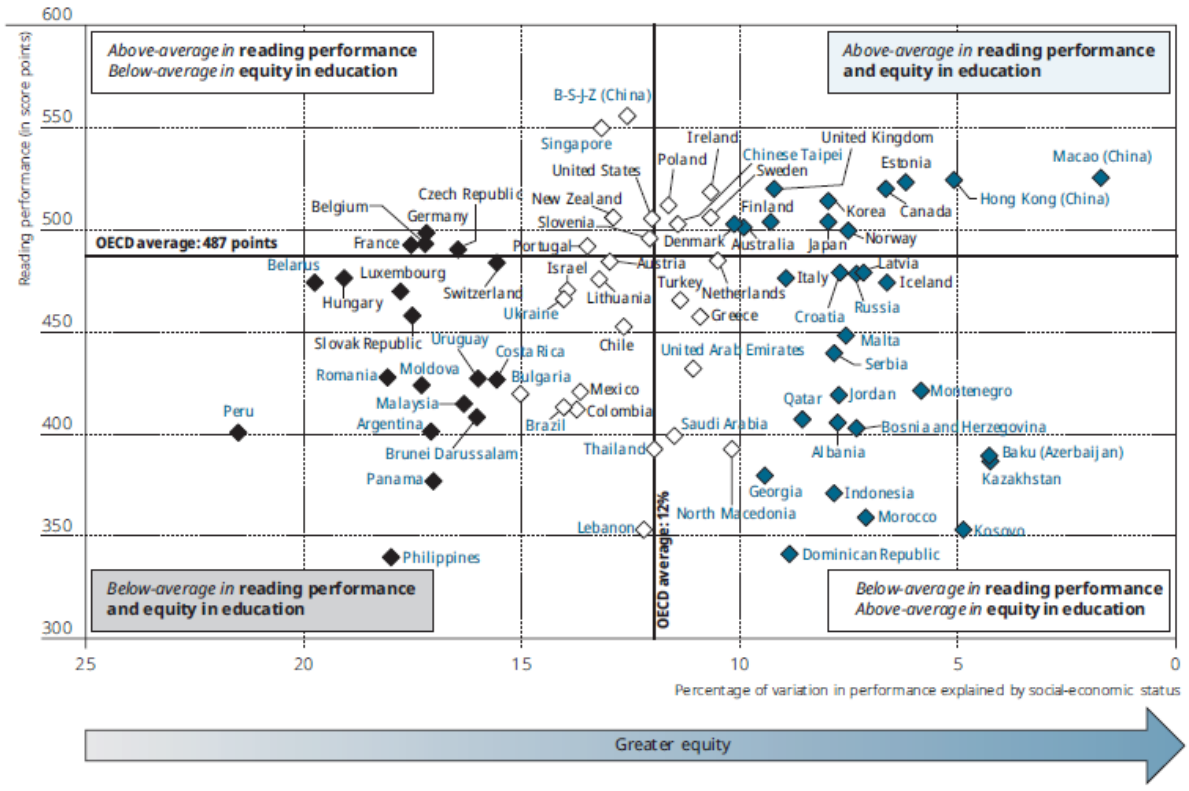
Source: PISA results (Vol. I), "Excellence and Equity in Education" (OECD, 2015)

Inequalities are also strong when considering parents' origins. The performance gap between students who are first generation immigrants and the rest of students is higher in France (77 points) than in in the rest of OECD countries (54 points). The academic performance gap with the rest of the population for "second generation" immigrants is

smaller than for first generation immigrants, but remain higher in France compared to other countries. One should keep in mind that averages are by definition aggregate measures, which cannot reflect every single unique path. Although there is an overall academic performance gap for students from immigrant background, 13% of immigrant students still enjoy strong academic performance, as evidenced in the PISA tests.

Regarding gender inequalities, female students score much higher in Reading Comprehension than male students both in France (+25 points) and in the OECD (+30 points on average). In Maths, male students score slightly higher than female (+5 points), which is roughly equal to the average OECD performance. The gender gap in Maths performance is lower than it was about a decade ago. However, gender differences remain when considering future careers: among students with strong performance with Maths and Sciences, 1/3 of boys express interest in becoming a scientist or an engineer, while only 1/6 of girls do so.

Figure 3 – Strength of the socio-economic gradient and reading performance



◆ Strength of the relationship between performance and socio-economic status is above the OECD average

◇ Strength of the relationship between performance and socio-economic status is not statistically significantly different from the OECD average

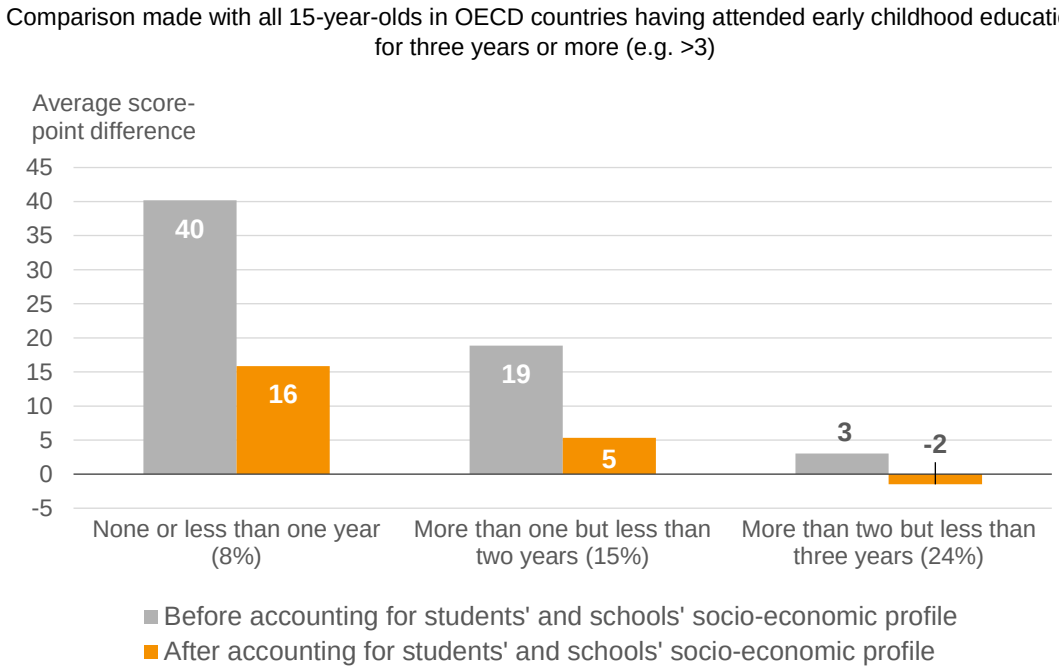
◆ Strength of the relationship between performance and socio-economic status is below the OECD average

Source: PISA results (Vol. II), "Where All Students Can Succeed" (OECD, 2018)

3. Pre-elementary education is a determinant of both overall academic performance and inequalities

Pre-elementary education for children under 6 years old (*crèches*, *maternelles*...) can have a strong impact on academic performance at age 15. A 2017 OECD study derived from PISA results shows that the more years students have spent in a pre-elementary institution, the higher the score in Sciences in PISA tests (Figure 4).

Figure 4 – Average score-point difference in science performance across OECD countries, by number of years spent by 15-year-old students in ECEC (ISCED 0), before and after accounting for socio-economic status (PISA 2015)



Reading: For instance, before accounting for student and school-level socio-economic status, students who had attended early childhood education for three years or more scored an average of 40 points higher in the PISA science assessment compared to those who had attended ECEC for less than one year. The difference is still significant at 16 points after accounting for socio-economic background. On average among 15-year-old students who remember about early childhood education (ISCED 0), 53% of them had attended early childhood education for at least three years. The percentages of 15-year-olds who attended early childhood education (ISCED 0) in each of the other categories are added into brackets next to each category.

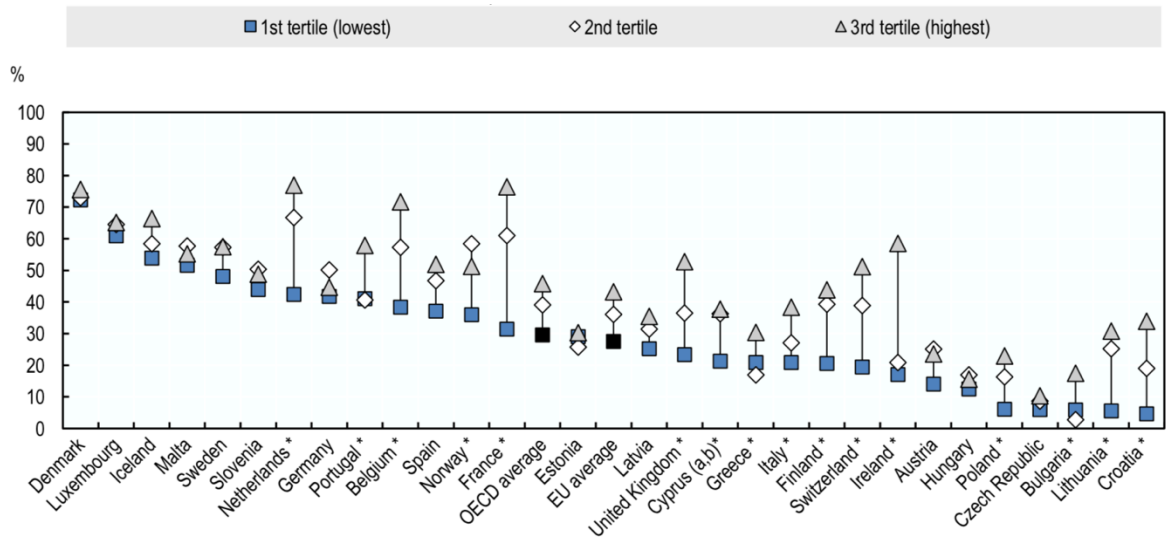
Source: "Starting Strong" (OECD, 2017)

There has been an increased interest in expanding access to pre-elementary institutions in many OECD countries. Enrollment rates of pre-elementary schooling in France are among the highest in the world, with very close to 100% of children between 3 and 6 enrolled in *maternelles*. This figure is expected to remain stable since the compulsory

schooling age has been lowered from 6 to 3 in 2019 in France, making *maternelle* de facto compulsory. However, although the reform reduces ipso facto inequalities in access to pre-elementary schools, inequalities the quality of teaching can remain between *maternelle* schools, depending on criteria such as teachers' experience or financing.

When considering *crèches* enrolment, France has a higher enrolment rate (approximately 55%) than OECD (32%). However, participation to *crèches* is highly differentiated by income (see Figure 5): while about 75% of children from the top tertile of income attend *crèches*, this proportion falls to about 30% for children from the bottom tertile, one of the highest gap in the OECD.

Figure 5 – Participation rates in early childhood education and care by income, 0 to 2 year olds (2017 or latest available)



Source: "Enrolment in childcare and pre-school" (OECD, 2019)

The OECD highlights several important principles that policy makers in developed countries should have in mind, such as providing adequate financing to pre-elementary schools, ensuring the quality of training of teachers, involving parents (which requires improving communication between schools and families), and undertaking impact studies of reforms to help education experts understand better the consequences of measures on various groups of students. In France specifically, the OECD notes that the size of classes in pre-elementary schools remains higher than in other countries, 23 children for one teacher, against 14 for OECD average. Furthermore, teachers' training for institutions dealing with children under 3 (e.g.: *crèche*) in France remains heterogenous, according to the OECD.

4. Teacher Status and Working Conditions in France

Teachers in France are highly qualified: 70% of them have a Master or more (the OECD's average is 45%). However, only 66% of French teachers declare having been training to in-class pedagogy and practices (vs. 79% in average OECD countries). Furthermore, only slightly more than 1 in 2 school leaders believe that teachers are ready to use Information and Communications Technology (ICT) vs. 70% on average among OECD countries.[1]

The best performing countries in the PISA test all have a strong initial training of their teachers, combined with frequent learning opportunities along their careers, to ensure professors are equipped with the most relevant and up-to-date academic and pedagogical tools (lifelong learning). French teachers currently declare engaging much less in "high-impact" training activities, such as peer-to-peer coaching, than other countries (see Figure 6).

Regarding teachers' working conditions, nearly 3/4 of teachers in France say they like their job. However, only 7% feel valued by society (one of the lowest rates of OECD countries). Teachers' salary progression is also slower in France vs. other countries: French teachers earn 5% less in early career, but 18% less by the time the reach the middle of their career.[2]

A 2017 report from the Cour des comptes[3] highlighted that younger teachers in France were quite often sent to underprivileged schools, despite their lack of experience. South Korea, for instance, offers many financial and career benefits to teachers who decide to go to underprivileged neighborhoods, the most attractive of which are fast-track promotions and priority in choosing their next position. France has recently aimed at making teaching in challenging areas more attractive, for instance by giving a bonus of €2,000 after-tax to some teachers in those areas.

The most recent reforms in France have aimed at improving teachers' training (both initial and lifelong). The newly renamed *Instituts nationaux supérieurs du professorat et de l'éducation* (INSPÉ) have the mission of harmonizing teacher training in France. *Pré-professionalisation* initiatives have been launched to help future teachers get early exposure to schools, along with financial support, before taking teachers exams. Lifelong training became "compulsory" for all teachers, and young teachers can receive additional support following graduation to help them adapt to the unique characteristics of the school and the area in which they are teaching. Regarding digital, a recent reform to teach IT skills in secondary education (since 2019) will necessitate having teachers who are proficient with new technologies.

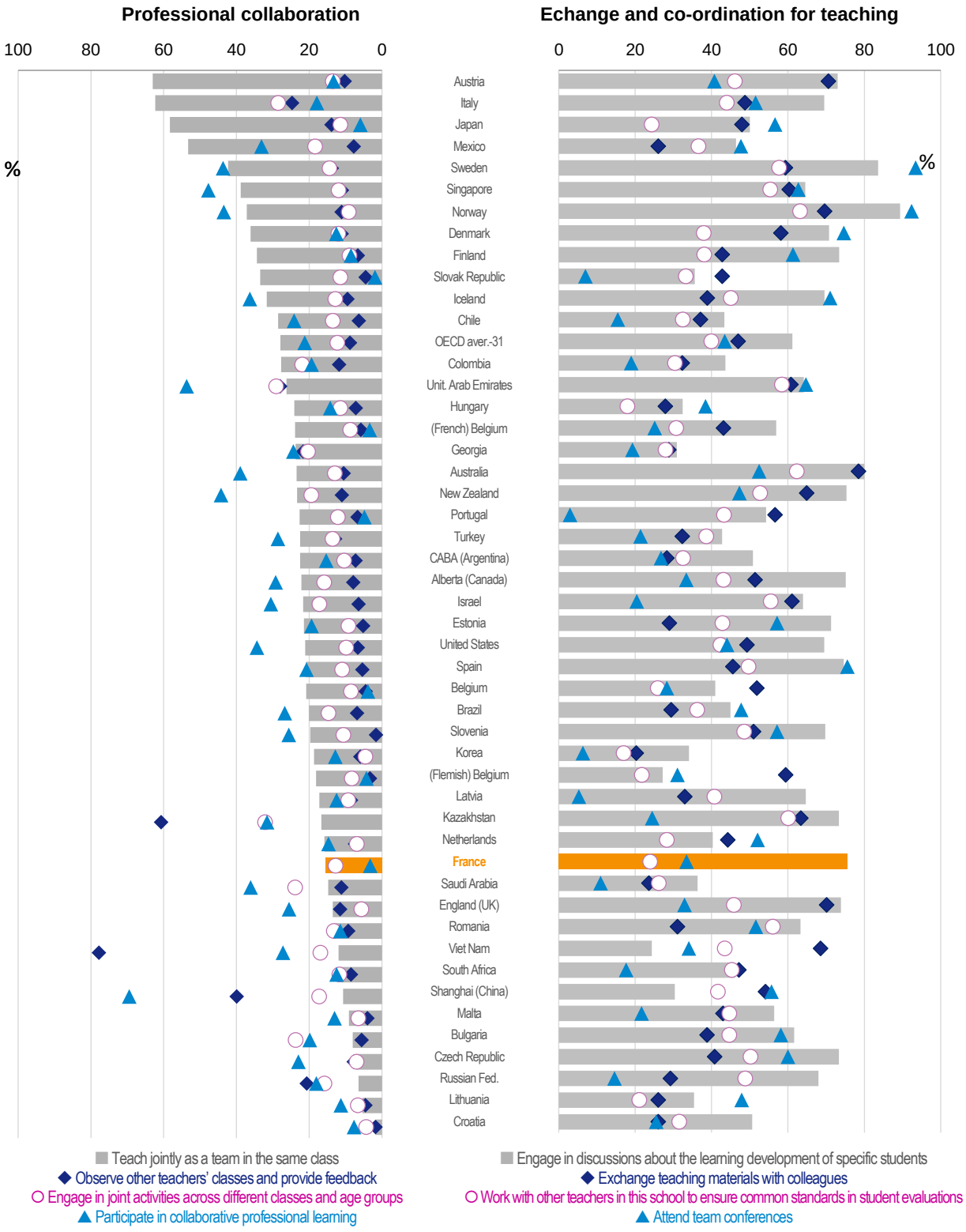
[1] OECD (2020), "Perspectives des politiques de l'éducation - France", June.

[2] *Idem.*

[3] Cour des comptes (2017), *Gérer les enseignants autrement. Une réforme qui reste à faire*, report.

Figure 6 – Professional collaboration and exchange and co-ordination for teaching

Percentage of lower secondary teachers who report engaging in the following activities in their school at least once a month



Source: TALIS results (Vol. II), "Teachers and School Leaders as Valued Professionals" (OECD, 2018)

5. Vocational Tracks (High School and Higher Education)

39% of high-school students in France are in a vocational track, slightly below OECD average (42%). About 25% undergo training which combine a traditional academic curriculum with professional experience (*formation en alternance*), compared with about 33% on average in the OECD.[1]

It should also be noted that social inequalities remain high in vocational tracks in high school. Only a small minority (13%) have at least a parent who has a higher education degree.[2]

At the higher education level, 2 year vocational training in (BTS or DUT) have been very popular among both employers and students. Students engaged in vocational higher education degrees enjoy a higher on-time degree completion rate (61%) than bachelor students in general tracks (41%).[3]

Employment rates for students from vocational training is 83% (the same level as students from the general track). A graduate from higher education vocational training earn on average 26% more than a bachelier (in any track).[4]

6. Transition to Higher Education

There is a high rate of dropout at bachelor level in France (only 41% complete the bachelor [*licence*] on time, as mentioned previously).

Career guidance is an important component to a successful transition to higher education or to the workforce after high school. PISA studies have shown that, although 15-year-old students mostly know what they want to do, they have expectations which might not necessarily be aligned with jobs offered on the labor market. A review of empirical studies undertaken by Hughes et al. (2016) points to a strong positive impact of career guidance services on future employment and earnings, primarily by boosting confidence and knowledge about professional opportunities of students.

France has recently reformed its high school system to improve the high school or higher education transition. A core curriculum is now combined with elective classes, so students

[1] OECD (2020), *Regards sur l'éducation*.

[2] OECD (2020), *Education Policy Outlook - France*.

[3] OECD (2019), *Regards sur l'éducation*. Including late graduates, 77% of student in short cycle BTS/DUT complete their degrees (67% of students in Bachelor).

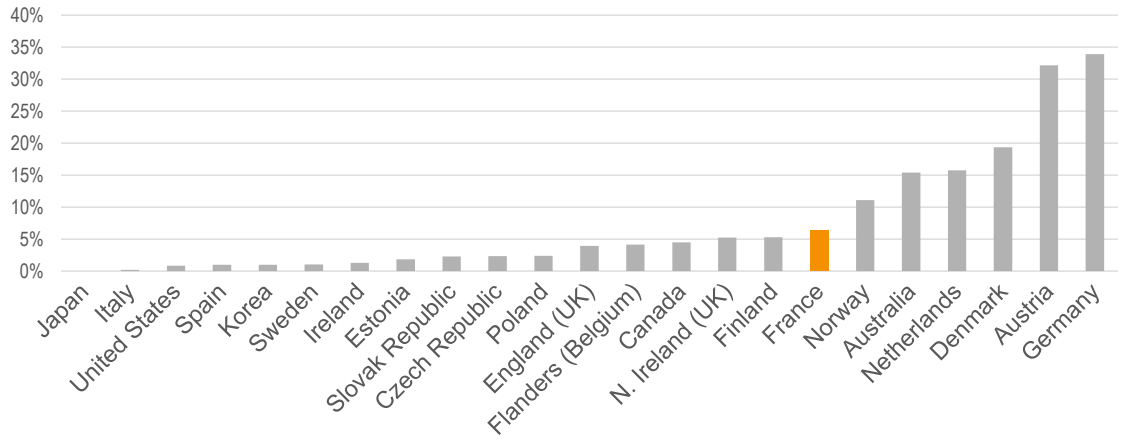
[4] OECD (2019), *Regards sur l'éducation*.

can experiment subjects they might be interested in, as well coaching and support to choose the best higher education track. Regarding the *baccalauréat*, *contrôle continu* has been very recently implemented in France, similarly to what most OECD countries are already doing.

7. The Importance of Engaging with Employers

The empirical evidence shows that engaging with employers early on is a very important component of a successful transition to the job market, at any level of study. One aspect of such engagement could be apprenticeships. Many believe that such curriculae vitae help students learn on-the-job-skills, create a professional network, and understand better how to be successful in their sector's employers. It is also considered beneficial to employers who know that graduating students already had professional exposure even before graduating. France currently has about 5% of high school and short-cycle higher education students enrolled in some sort of apprenticeships. Leading countries (Germany and Austria) have more than 30% (see Figure 7). Apprenticeships can go beyond manufacturing and crafting jobs, given the move of developed economies towards services and digital. In Germany or Austria, the share of apprenticeship in sectors such as management or trade and finance is significant. Apprenticeships could provide benefits not only to vocational students, but also to those in the general track (such as STEM students). There exists schemes for public employers, such as local or central administration (for instance, the United Kingdom has a *Civil a Service Fast Track Apprenticeship* scheme).

Figure 7 – Current apprentices in programs leading to upper-secondary or short post-secondary qualifications as a share of all students enrolled in upper-secondary and short post-secondary education



Source: TALIS results (Vol. II), "Teachers and School Leaders as Valued Professionals" (OECD, 2018)

8. Review of Relevant International Policies about Education

The below innovative education policies and initiatives have been implemented in various countries around the world. They aim to improve student learning (often using digital technologies) and/or job placement.

Netherlands' Katapult is a network of public-private partnerships which group businesses, R&D centers and schools to train (mostly) VET students and share innovative practices.

France's École 42 is a coding school with no tuition and no classes. Spots are limited, but anyone over 18 can apply to the admission test. Students are evaluated on peer-to-peer projects, and have to undertake internships. Almost all of them found a job post-graduation, with good salaries.

Finland has enjoyed very high rankings in PISA tests and is often considered a role model in education. Distinguishing features are:

- Highly decentralized system which gives a lot of flexibility to local authorities, schools, and teachers;
- High social prestige of teaching professions. The admission rates to education departments in Finland's universities are very low (10%), which allow them to choose the best students. Education degrees are also sought after outside of the teaching realm (public sector, HR positions in private firms...);
- No-grade policies. There is almost no national standardized exams. Teachers can test students how they want. Students receive qualitative feedback and report much lower levels of anxiety.

South Korea's Cyber Home Learning System is a widely used K12 self-study platform launched by the South Korean government in the mid-2000's. The goal is to reduce inequalities in access to extra-curricular education between urban students and students from remote regions / low-income background, in the context of South Korea's highly competitive education system.

Singapore's "Future Schools" were a network of a dozen pilot schools who experimented incorporating ICT in K12 education, in partnership with researchers and private ICT providers.

USA's Cognitive Tutor is a way of teaching some Maths topics (Algebra, Geometry...) in which a personalized tutoring software complements a textbook. Half a million students have used it over the years, and some studies (including an RCT one) found statistically significant positive impact on algebra learning.

Australia's Group Training Organisations (GTOs) are entities responsible for recruiting apprentices, placing them with host employers (mainly SMEs), and managing the relationship. They have positive impact, sometimes substantial, when controlling for demographics and company size of participants (vs. direct placement).

Estonia's ProgeTiger programme is a national initiative – which has received positive attention from the EU Commission – aimed at increasing the use of various ICT skills (not only coding, but robotics, 3D graphics, etc.) among Estonian students.

The **UK**'s Shireland Learning Gateway is a portal developed by Shireland Collegiate Academy (secondary education) in cooperation with Microsoft to allow students and parents (many from very challenging personal backgrounds) to track student performance and behavior, improve communication with the school, and access extra academic material. To widen access, portal is also available in community settings (such as libraries).

Czech Republic's "Repository of Digital Learning Objects" is a peer-to-peer portal for teachers launched by the Ministry of Education. Teachers can post learning materials to help other teachers and share best practices with one another.

The US' Florida Virtual School is a public online school "in" the state of Florida. Tuition is free for Florida residents. The school offers part-time courses (for 200,000 children in traditional curricula / homeschooled) and Full-Time program (for 6,500 students) based on a traditional school calendar. Students have outperformed other public schools in some subjects. The State of Florida funds the school ($219 million budget) and therefore monitors it carefully (with annual reports, among others).

Japan's "Hello Work for New Graduates" is a partnership between the Japanese PES and high schools, aimed at improving job placements of young Japanese – including high-school students – by partnering with schools. Students who express wishes to find a job straight out of high school receive help and advice from teachers-counsellors and from the Japanese PES at each stage of the job search. The program is extremely successful, with a job placement rate of 98% (70% at 6 months *before* graduation), with no evidence of job instability.

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APPENDIX 6

LABOR MARKET REGULATION

This appendix provides an overview of labor market regulation in France and how it compares to other OECD countries, with a particular focus on collective bargaining, minimum wages, employment protection, and temporary work.

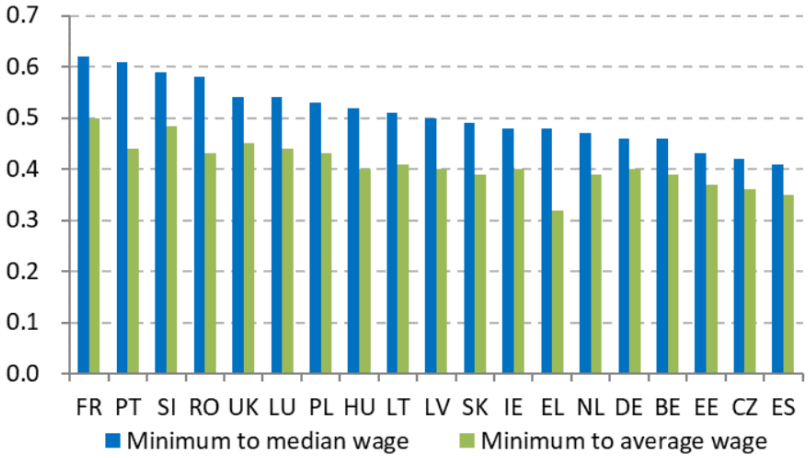
1. Minimum Wage

The national minimum wage level in France is adjusted annually based on inflation and the average wage of low-skilled workers. The government annually reevaluates the minimum wage level based on non-binding advice from an independent expert group and after formal consultations with social partners (Schulze-Marmeling et al., 2020). The level is linked to inflation faced by households belonging to the lowest disposable income quintile and the growth in purchasing power of the average hourly wage for workers (Schulze-Marmeling et al., 2020). However, the expert group has recently been recommending abolishing the automatic indexation mechanism (Eurofound, 2020). The government can also decide discretionary increases of the minimum wage (Eurofound, 2020). While common before 2006, there were no discretionary minimum-wage hikes from 2012 until 2019, when the government raised the minimum wage in response to the *Gilets jaunes* (Yellow Vests) protests (OECD 2019a, France Stratégie, 2020b).

The minimum wage rate in France is high in international comparison. When measured as the share of the average or median wage of full-time workers, France had the highest minimum wage in Europe in 2018. The statutory minimum wage was set at roughly half of the average wage and 61% of the median wage. In 2019, the real minimum wage in France, expressed in 2019 USD PPP, was the third highest in the OECD (OECD, 2020c).

Figure 1 – Minimum wages in Europe range between one-third and half the average wage

Minimum wages as proportion of the median and average earnings of full-time workers (2018)



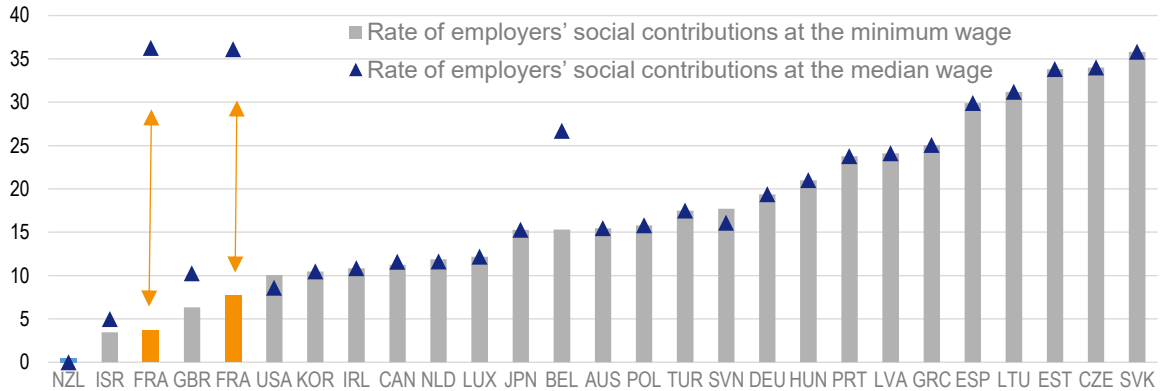
Note: Austria, Cyprus, Denmark, Finland, Italy and Sweden do not have a statutory national minimum wage. For Bulgaria, Hungary and Montenegro, no information is provided by the OECD.

Source: European Commission (2020)

However, labor costs at the minimum wage are at a median level in international comparison (OECD, 2019b). Despite a high gross minimum wage rate, exemptions from social security contributions and the Competitiveness and Employment Tax Credit (CICE) (active from 2013 to 2019) have maintained labor costs at moderate levels. Reforms in 2019, cutting employer social security contributions, further reduced labor cost at the minimum. According to the OECD (2019b), reducing social security contributions at the minimum wage while maintaining them at relatively high levels at the median wage is unparalleled in the OECD countries. Reducing employers' social security contributions can stimulate employment for low-skilled labor. It may, however, also incentivize companies to substitute higher-skilled workers with low-skilled workers and "hamper wage progression and training incentives at the lower end of the wage distribution" (OECD, 2019b).

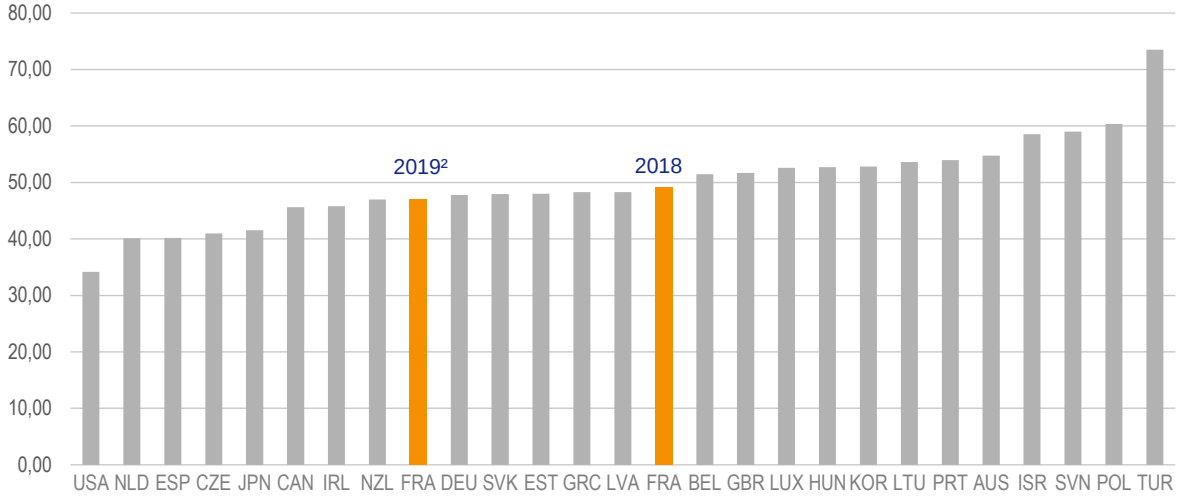
Figure 2 – Targeted exemptions from employer contributions have increased

A. Employers' social contributions at the minimum wage (as a % of gross salary, 2016[1])



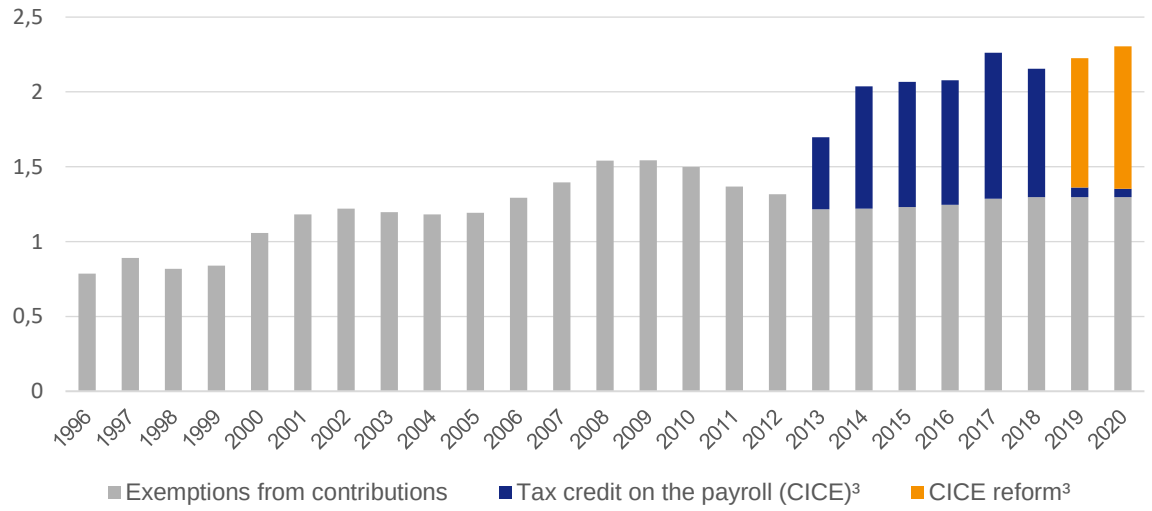
B. Labour cost at the minimum wage

% of the median's worker labour cost, 2018[1]



C. Exemptions from employers' contributions

% of GDP



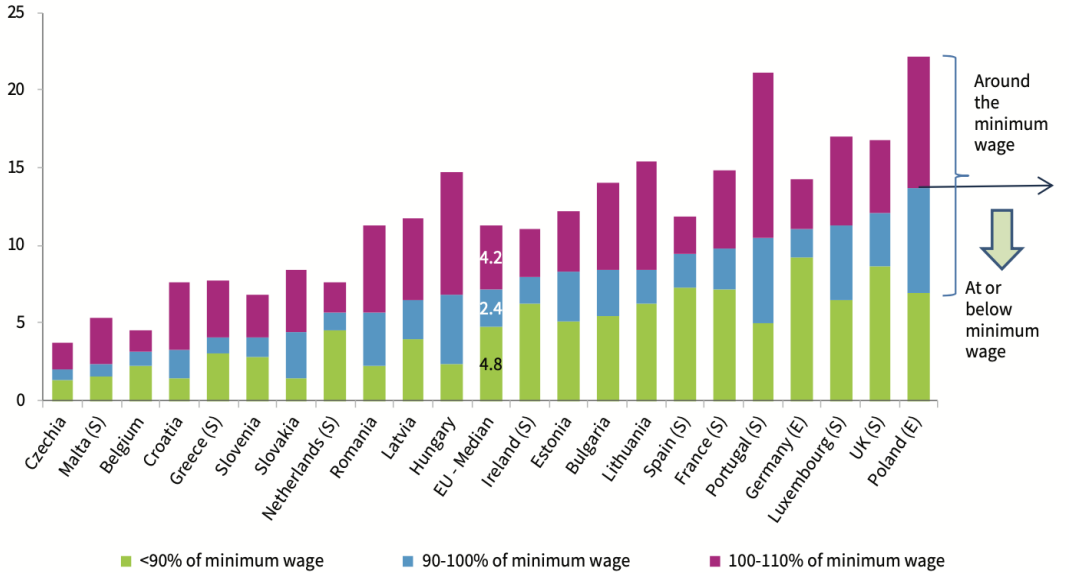
1. Including the amount of the CICE tax credit; estimates based on a household of one single person with no children.
2. The 2019 estimates for France factor in the reforms of employers' social security contributions which are to enter force between the beginning and the end of 2019, but they do not take account of the planned increase in the minimum wage for the same year (Box 1.4).
3. The amount of the CICE tax credit in the national accounts for the year x +1 is included in year x.

Sources: "Secretariat calculations based on the OECD's TaxBEN model", OECD (2019); "Les exonérations générales de cotisations, Monitoring committee for public assistance to businesses and commitments", COSAPE (2017); "Rapport 2018 du comité de suivi du Crédit d'impôt pour la compétitivité et l'emploi", France Stratégie (2018); Finance bill for 2019.

Sub-minimum rates apply to young workers and those at the beginning of their professional lives. Young workers with less than six months of experience, apprentices, and young people on so-called professionalization contracts receive sub-minimum rates (Eurofound, 2020). Similar exceptions exist in many other European countries (Eurofound, 2020).

The proportion of employees earning below or around the minimum wages is above the EU median. In 2016, around 10% of employees in France earned at or below the minimum wage and 5% earned "around the minimum wage" (100-110% of minimum wage) (Eurofound, 2019). The EU median is at 7.2% and 4.2% respectively.

Figure 3 – Percentage of employees earning a certain proportion of the statutory minimum wage (all countries with statutory minimum wage in 2016)



Note: *The EU-SILC 2017 wage data relate to 2016 (2015 for the United Kingdom and Ireland). (S) – Legal sub-minimum rates existed in the country in 2016. (E) – Exceptions from the application of full adult rates exist.*
Source: *Authors' calculations based on the EU-SILC 2017 for the figures related to the percentage of employees covered.*

Source: Eurofound (2020)

The minimum wage level has spillover effects on higher wage levels through sectoral bargaining. Adjustments in the legal minimum wages typically lead to renegotiation of pay scales in different business sectors (OECD, 2019b). Thus, minimum wage increases have spillover effects on higher wages (but almost no effect on wages above twice the minimum) (OECD, 2019b). The high minimum wage thus effectively lowers the dispersion of gross hourly earnings (OECD, 2018).

2. Collective Bargaining

The union density in France is very low in international comparison. With only 8% of workers organized in a union in France, the share is the second lowest in the OECD. By comparison, the union density is around 17% in Germany, 34% in Italy, and 67% in Sweden (OECD, 2019b). The employer organization density, measured as the share of workers in the private sector employed by firms affiliated to an employer organization, is around 78% and relatively high in international comparison (OECD, 2019b).

At the company level, workers are represented through works councils. Works councils are established bodies elected or appointed by all employees in a firm (OECD, 2019a). Until 2017, firms with more than 50 workers in France had a works council (*comité d'entreprise*), union representatives (*délégué syndical*), worker representatives (*délégué du personnel*), and a health and safety committee. The 2017 reform (*ordonnances*) merged these bodies in a single works council, the *comité social et économique* (OECD, 2019a). Thus, in France, like in Austria, Germany, and the Netherlands, works councils are the sole eligible employee representative structure. In other countries, trade unions are the sole representative body or both forms of worker representation are present (OECD, 2019a). Further, in several OECD countries, including France, worker representatives sit on the boards of private companies in firms above a certain size (OECD, 2019a).

The degree of cooperation in labor-employer relations in France is judged to be low by business executives while the general public generally trusts trade unions. A survey of senior business executives published by the World Economic Forum found that labor relations in France are considered the third most confrontational among OECD countries (OECD, 2019a). However, evidence from the World Value Survey shows that trust in unions by the general public is slightly above the OECD average (OECD, 2019a).

Despite a low trade union density, collective bargaining covers almost all workers in France. The share of workers covered by collective bargaining in France is more than 95% and thus among the highest in the OECD (the OECD average is around 32%) (OECD, 2019b). Consequently, a large share of workers' employment conditions in France are effectively influenced by collective bargaining.

The high coverage rate of collective bargaining is largely explained by the quasi-automatic extension of sector-level agreements to firms which have not taken part in negotiations (OECD 2019a, OECD, 2019a). Extensions mean that agreements cover workers in all firms within an industrial sector, including firms that have not participated in collective bargaining (OECD, 2019a). While leading to a high coverage rate, new and small firms are typically less involved in negotiations and thus the extensions can have both good and ill effects; on the one hand workers in smaller firms can benefit from improved working conditions negotiated in larger firms; on the other hand the result can be barriers to entry

and distortionary effects on competition (OECD, 2019b). According to the OECD, extensions or functional equivalents are present in two-thirds of OECD countries but are common and subject to only mild or no criteria in only six countries, including France. While collective agreements negotiated in France cannot be applied retroactively, unlike in most other OECD countries, they typically are of indefinite duration, further contributing to a high coverage rate (OECD, 2019a).

Recent reforms have modified the rules for the extension of sector-level agreements. The 2017 Ordonnances made extensions of sectoral agreements less automatic by requiring specific regulations for small firms and granting social partners the right to solicit the advice of an expert group assessing the potential effects of an extension (OECD, 2019a). Extensions may then be blocked out of public interest considerations, in particular, if they are deemed to impede competition in the sector (OECD, 2019b). Two years after the Ordonnances, however, according to the OECD (2019a), no request of an extension had been refused and no agreement included different provisions for large and small firms.

The number of *branches* (i.e. sectors) has been reduced. Many of the 687 *branches* in 2015 were too small for efficient bargaining and have since been shut down or merged, which, according to the OECD, now puts France in a situation more comparable to Germany and the Netherlands (OECD, 2019b).

Recent reforms also introduced more flexibility for firm-level agreements. Higher-level agreements, such as sectoral level agreements, are more likely to reduce wage inequality by reducing wage gaps not only between workers but also between firms. Firm-level agreements, on the other hand, allow regulations to be tailored to firm-specific conditions, thus potentially improving productivity (OECD, 2019a). Since the 2016 Labor Law ("El Khomri law") and 2017 Ordonnances, firm-level agreements take precedence over sector-level agreements in areas such as working hours, leave, awards and the size of bonuses (OECD, 2019b). The 2016 Labor Law also introduced opt-out clauses from certain agreements in case of economic difficulties to protect employment (OECD, 2019a). However, branches can keep their prerogatives in many key areas, such as minimum hierarchical wages (OECD, 2019b). The space for firm-level bargaining is further constrained by the relatively high minimum wages at the national and at the sector level (OECD, 2019b).

According to the OECD (2019b), in France, there is limited space for active wage coordination for macro-economic purposes across sectors and firms. The role of wage coordination between sectoral or firm-level agreements is to respond to macroeconomic conditions and to "serve as an instrument for wage moderation and earnings flexibility over the business cycle" (OECD, 2019a). The OECD (2019a) distinguishes between strong and limited coordination as well as three modes of wage

coordination: (i) State-imposed, such as in Belgium (ii) pattern bargaining, common in Nordic countries and Germany, Austria, and the Netherlands, "where a sector sets the targets first (usually the manufacturing sector exposed to international trade) and others (or at least some of them) follow" (OECD, 2019a), and (iii) inter- or intra-associational guidelines "where peak level organizations either set some norms or define an intra-associational objective that should be followed when bargaining at lower levels" (OECD, 2019a). In France, the minimum wage serves as a weak form of State-imposed coordination. The OECD (2019a) finds that bargaining systems with strong wage coordination are associated with higher employment and lower unemployment (including among marginalized and vulnerable segments of the population).

Based on the strong role sectoral agreements, wide-ranging use of extensions, still limited scope of firm-level agreements to derogate from higher-level agreements, and weak wage co-ordination, the OECD (2019a) classifies France's collective bargaining system as *centralized* and *uncoordinated*. This puts France in a group of countries including Iceland, Italy, Portugal, and Slovenia. France's system is contrasted by *centralized* and *coordinated* systems, which are characterized by strong forms of State-imposed or induced wage coordination (such as Belgium). On the other end of the spectrum are *decentralized* and *coordinated* bargaining systems, such as the systems in Austria, Denmark, Finland (after 2015), Germany, the Netherlands, Norway and Sweden. The latter provide significant flexibility for lower-level agreements to determine the terms of employment yet have high levels of wage coordination, typically taking the form of pattern bargaining.

3. Employment Protection

The protection of permanent employment has traditionally been strong in France but recent reforms have reduced its stringency. Dismissal regulations protect workers against arbitrary dismissals and help firms internalize the social costs of dismissal (OECD, 2020a). However, if too strict, dismissal regulations also lower job and worker flows and thus slow reallocation of workers from low to high productivity sectors and firms (OECD, 2020a). Reforms between 2013 and 2017 lessened the protection against dismissals of permanent workers, moving France closer to the OECD average (OECD, 2020a). According to the OECD (2019b), France had the 9th highest level of regulatory protection against dismissals of regular workers out of 37 OECD countries in 2018 (with the regulations from 2013 in place, it would rank 4th).

Individual dismissals require employers to follow strict procedures, including early and written notification of employees, a formal interview, the notification of the reasons for dismissal, and provision of severance pay.

– Employers need to notify the employee in a dismissal letter and one to two months before departure (depending on tenure) (France Stratégie, 2020a). France requires the fifth-longest notice period in the OECD (OECD, 2020a). Unlike in some other countries, however, in the case of individual dismissals, employers do not need to notify or get authorization from any other entity beyond the employee, such as the works council or public entities (France Stratégie, 2020a);

– Employers need to list the grounds of dismissal in written form and during a formal meeting, to which the employee may be accompanied by a fellow employee or employee representative (Schulze-Marmeling et al., 2019). The 2016 Labor Law reform clarified and simplified these procedural rules that apply to dismissals. In particular, "an irregular notification of the reason for the dismissal in the dismissal letter is no longer sufficient to make the dismissal unfair" (OECD, 2020a). France ranks now in the middle of OECD in terms of the stringency of procedural requirements for individual dismissals of workers (OECD, 2020a);

– If the job tenure was at least 8 months, dismissed workers are entitled to severance pay equal to 0.25 of their monthly wage per year of service for the first 10 years and 0.33 thereafter (France Stratégie, 2020a). Severance pay was increased as part of the 2017 Ordonnances and is more generous than in most OECD countries (OECD, 2020a).

Recent reforms reduced firms' legal uncertainty surrounding unfair individual dismissals. In France, like in almost all OECD countries, a "dismissal based on a reason that is beyond the scope of allowed (or 'fair') reasons can, if it is challenged in court, lead the employer to pay specific compensation to workers" (OECD, 2020a). The 2016 Labor Law clarified the definition of fair economic reasons for dismissals in France. If at least one of several economic indicators noted in the law, such as sales or turnover, reduces by more than a specified threshold, then the dismissal must be considered fair (OECD, 2020a). **Besides, technological changes can be fair grounds of dismissal even if the reduction does not reach the specified threshold** (OECD, 2020a). The 2017 Ordonnances also introduced a compulsory seniority and age-based reference for the compensation of employees in case of unlawful dismissals on economic grounds, facilitating the resolution of litigation at the conciliation stage (France Stratégie, 2020a). Further, the maximum time to make claim unfair dismissal in court was reduced from an average of 24 months to 12 months, which, however, remains high by international comparison (OECD, 2019b). If a dismissal is unfair, reinstatement cannot be imposed for individual dismissals (OECD, 2020a). An OECD index score of the stringency regulatory framework for unfair individual dismissals of regular workers, taking into account the definition of unfair dismissal, compensation and reinstatement following unfair dismissal, and length of the trial period finds that France ranks 15th out of 37 OECD countries, after Germany and Italy but before Sweden and Spain.

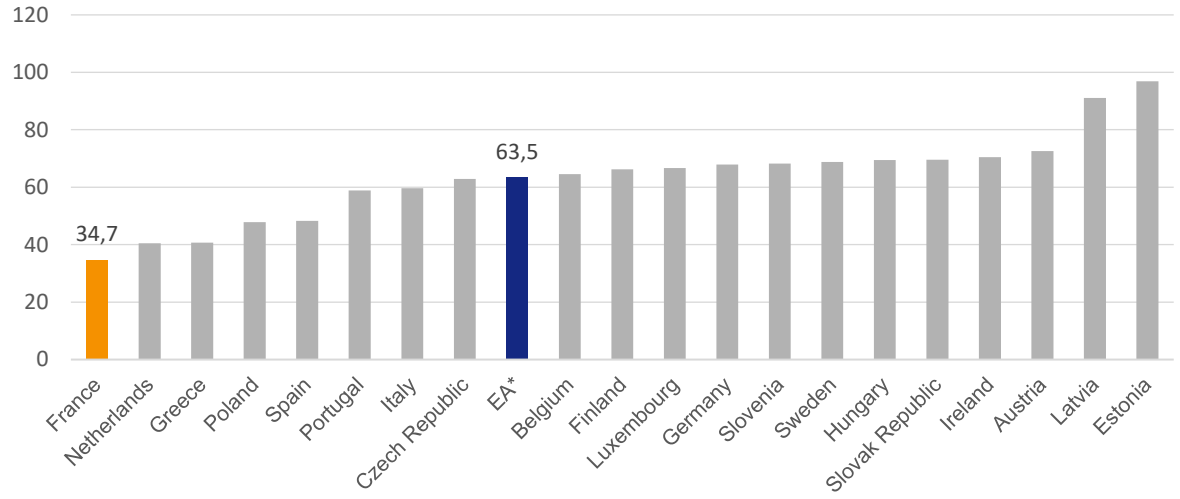
France's regulation for collective dismissals is particularly strict. Most OECD countries, including France, have more stringent regulations for collective dismissals than for individual dismissals (OECD, 2020a). **The OECD classifies France's regulation of collective dismissals as the strictest in all OECD countries** (OECD, 2020a). According to France Stratégie (2020a), there is no legal definition of collective dismissal in France, but the notion of economic dismissal, starting from 10 employees over a period of 30 days. Further, the 2017 Ordonnances introduced a formalized scheme of collective dismissal by mutual agreement between workers and employers (*rupture conventionnelle collective*) (OECD, 2020a). These voluntary departure plans have to be approved by public authorities and set "the number of departures, the eligible workers, the rules to compute their severance pay and measures to ease their guidance and employment" (OECD, 2019b). Further, since 2013, firms with more than 50 employees require the validation of a social plan by public authorities before a collective dismissal (OECD, 2020a). The absence of a social plan can invalidate the collective dismissal procedure, in which case a judge may order the reinstatement of the employees upon their request (OECD, 2020a). In companies with at least 1,000 employees, the employer must also propose employees "reclassification leave" (*congé de reclassement*) of up to 12 months. In companies that are not subject to this obligation, the employer must propose a "professional employability agreement" (*contrat de sécurisation professionnelle*) (France Stratégie, 2020a).

4. Temporary Work

France has a relatively high share of workers on fixed-term contracts. In 2019, 16.4% of dependent work was in fixed-term contracts, compared to an OECD average of 11.8% (OECD, 2020b). The use of temporary contracts increased in France over the last decades, especially for less qualified, young people (OECD, 2019b). At the same time, the average duration of fixed-term contracts decreased drastically, with the share of contracts with a term of one month or less now being much higher than in most European countries (OECD, 2019b).

Temporary employment is typically not a stepping stone to permanent employment. France has one of the lowest shares of employees with temporary contracts transitioning to permanent employment (OECD, 2019b). Only one in three temporary workers obtains a permanent contract within three years (OECD, 2019b). Workers on temporary contracts are more likely to work in occupations with more routine tasks and are less likely to receive training (OECD, 2019b). Training rates for temporary contracts are low in international comparison and the difference in the probability of accessing training compared to employees on permanent contracts is very high (OECD, 2019b).

Figure 4 – Transitions from temporary to permanent employment
Percentage of employees with temporary contracts, 15-64 years old, 2017



* Euro area member countries that are also members of the OECD, excluding Lithuania (16 countries).

Source: OECD (2019b)

The protection of temporary employment is strong in international comparison. Countries with stringent regulation of the dismissals of regular workers, such as France, typically also use stricter regulation of temporary contracts to prevent their overuse (OECD, 2020a). In France, sector-level bargaining prevails over national labor law for setting the framework for fixed-term and temporary contracts (France Stratégie, 2020a). Sectoral agreements may determine the maximum cumulative duration of fixed-term contracts and the maximum number of renewals but may not exceed 18 months and 3 renewals respectively (ILO, 2020). Companies may use temporary contracts through temporary work agencies only for specific and short-term tasks, referred to as “missions” (OECD, 2019b). A new assignment for a position may start only after the expiry of a delay equivalent to one third of the duration of the initial contract and may not be used for a position that has been subject to redundancy on economic grounds in the previous six months (France Stratégie, 2020a). Derogatory temporary contracts (*CDD d’usage*) are used primarily in tertiary industries. These contracts do not have a limitation on their renewal and account for most of the recent increase in short-term temporary contracts (OECD, 2019b). France has the 6th most stringent regulation of fixed-term contracts and the 9th most stringent regulation of temporary work agency contracts among OECD countries (OECD, 2020a).

Recent labor market reforms, making costs of ending permanent contracts more predictable and penalizing the excessive use of temporary contracts, are expected to shift hiring from temporary to more long-term contracts. As described in the previous section, the uncertainty surrounding dismissals was significantly reduced, by,

among other things, specifying reasons that give sufficient grounds for dismissals for economic reasons and a mandatory scale for compensations in the event of unfair dismissals. The OECD (2019b) expects these changes to encourage permanent employment and finds supportive evidence in the diminished use of labor courts and the declining incidence of temporary employment since the start of 2018 (OECD, 2020b). The French government also implemented measures to make the excessive use of temporary contracts costlier to companies. First, it introduced a bonus-malus system for companies with more than 11 employees in 7 sectors. The system adjusts employers' unemployment insurance contributions depending on the number of contract terminations and temporary assignments (ministère du Travail, 2020). Second, the government initially also imposed a flat-rate tax of €10 for each derogatory temporary contract (*CDD d'usage*) to be paid by the employer. Introduced on January 1, 2020, this measure was suspended on July 30, 2020, however, in response to Covid-19 (ministère du Travail, 2020).

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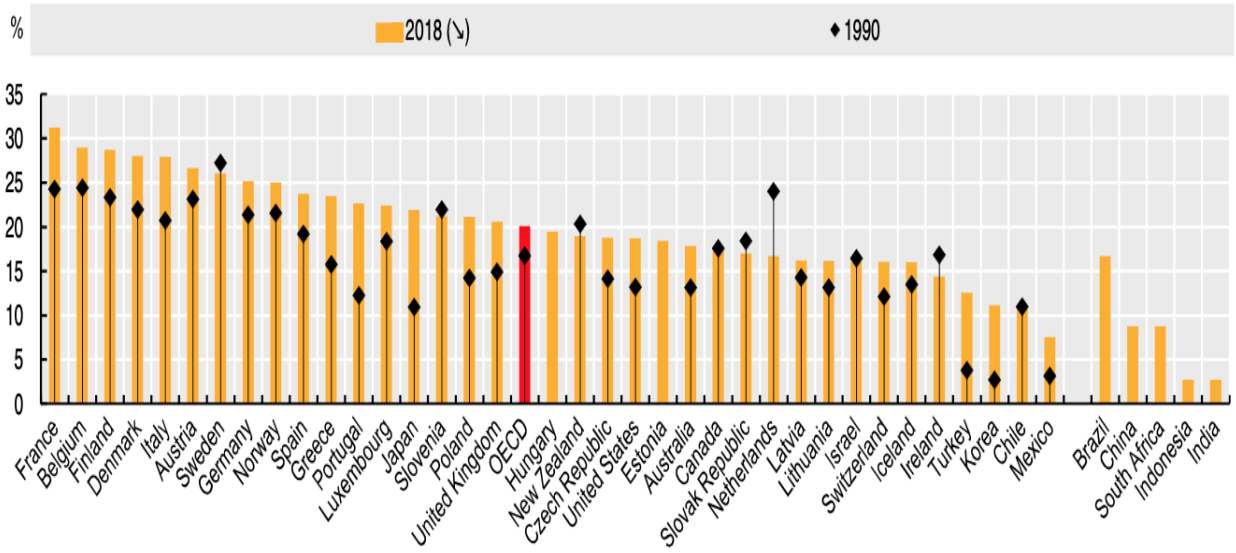
APPENDIX 7

SOCIAL PROTECTION SYSTEM

This appendix provides an overview of the social protection system in France and how it compares to other OECD countries, with a particular focus on unemployment insurance, in-work benefits, minimum income schemes, and housing benefits.

The level of public social spending in France, measured as a share of GDP, is one of the highest in the OECD. In 2018, the public social spending France amounted to 31% of GDP, compared to an OECD average of 20% (OECD, 2019f). Pensions contributed the largest part (13.9% of GDP), followed by health (8.8%), income support to the working-age population (5.4%), and remaining social services (2.8%).

Figure 1 – Public social expenditure in percentage of GDP in OECD countries, 1990 and 2018



Source: OECD (2019f)

In 2019, France had ten different minimum social benefits for four million recipients (OECD, 2019b). The diversity and complexity of the regulations and interactions between different schemes have raised concerns regarding the efficiency of the overall system (OECD, 2019b). Previous recommendations included unifying the minimum income benefit, long-term unemployment benefit, in-work benefit, and housing benefit (OECD, 2019b; Bozio et al., 2015).

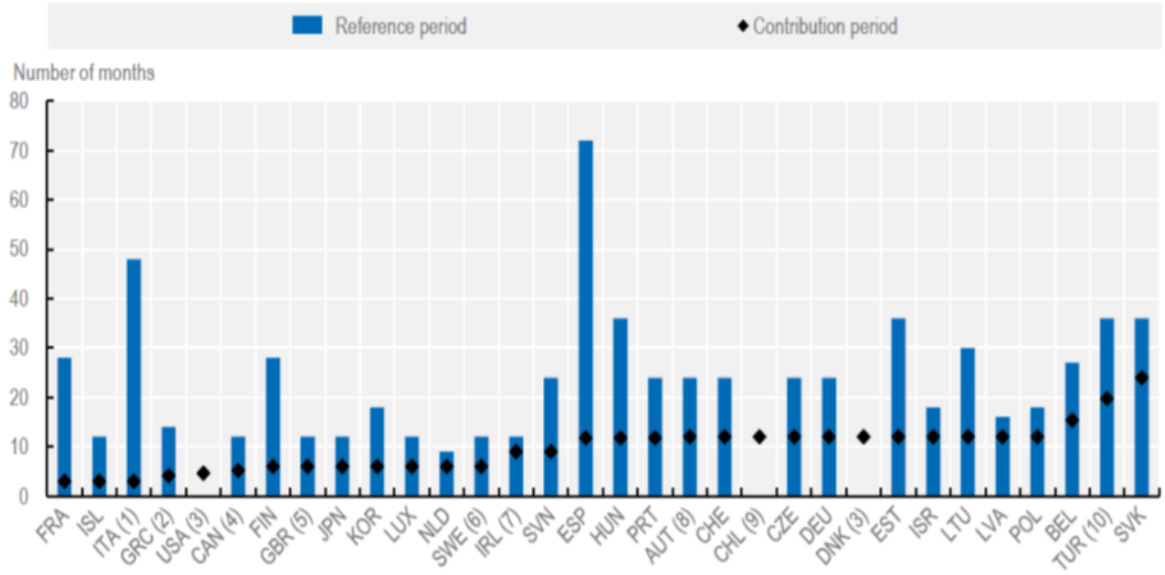
1. Unemployment

Job seekers in France are covered by the unemployment insurance scheme *allocation d'aide au retour à l'emploi* (ARE) and an additional follow-up scheme for the long-term unemployed *allocation de solidarité spécifique* (ASS). ARE is financed through contributions paid by employers. As from January 1, 2019, employee contributions have been ended (with some exceptions) (Cleiss, 2020b; OECD, 2020b). All private-sector employees must be affiliated with the unemployment insurance scheme through their employer (France Stratégie, 2020b). ASS is a means-tested benefit and may be awarded to job seekers having exhausted their ARE right under certain conditions, such as having been employed for at least five years in the last ten years (European Commission, 2020b; OECD, 2020b).

Employment requirements for unemployment benefits were recently tightened but are still low in international comparison. To be eligible for ARE, job seekers need to have worked at least 130 days or 910 hours (approximately 6 months) over the previous 24 months (or the previous 36 months for employees of at least 53 years old) (European Commission, 2020b). The employment requirement was increased from 4 months to 6 months on November 1, 2019. In response to the Covid-19 pandemic, however, the employment requirement was lowered back to its previous level of 4 months for jobseekers whose contract ended between August 1, 2020 and December 31, 2020. The required employment periods are generally among the lowest among all OECD countries (OECD, 2019c). Another temporary Covid-19-related measure was to extend the reference period by three months (to 27 or 39 months respectively) (Cleiss, 2020b). Other eligibility criteria for ARE include being involuntarily unemployed, physically capable of carrying out a job, registered as a job seeker with the Pôle emploi, actively job seeking, and accepting reasonable job offers (European Commission, 2020b). A review of eligibility criteria in 2017, including demands on occupation and geographic mobility, job search monitoring, and sanctions, found that France ranks in the midfield in terms of strictness of benefits eligibility criteria (Immervoll and Knotz, 2018).

Figure 2 – Employment requirement for unemployment benefits

Note that on November 1, 2019, the employment requirement in France was increased to 6 months.



Note: (1) And at least 30 days of employment in the 12 months prior to the start of the unemployment spell; (2) Or 200 days in last two years; (3) Earnings condition also; (4) Assuming 40 hour work week; (5) 6 months in any one of the past two years plus minimum-earnings requirement. (6) Must also have been a member of the insurance fund for at least 12 months; (7) Or 26 weekly contributions in each of the previous two years. Must also have made 104 weekly contributions in whole career; (8) 28 weeks for repeated employment; (9) Must have 12 months of contributions since a previous unemployment spell; (10) Must also have been continuously in work for last 120 days.

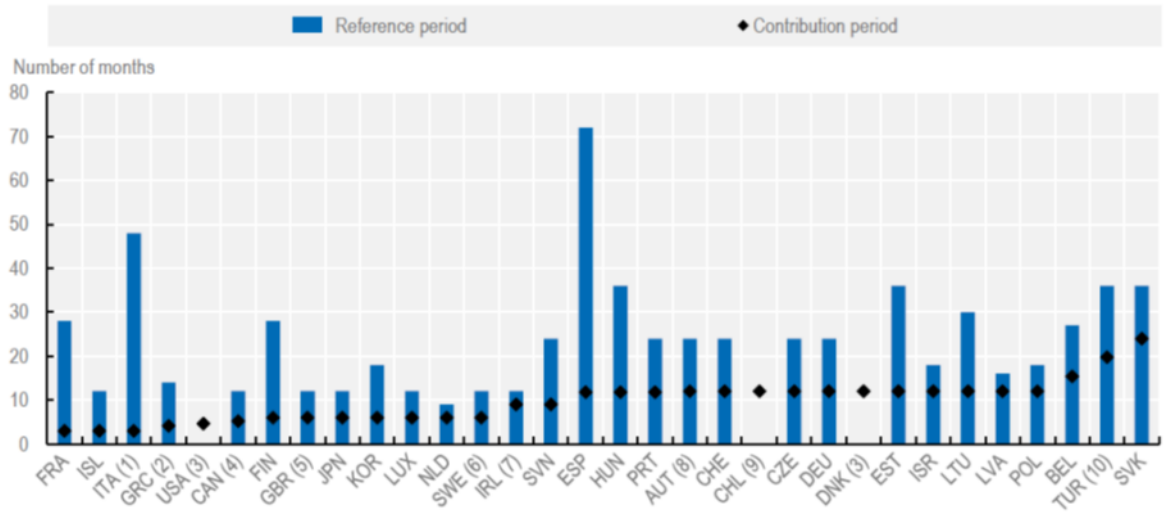
Source: OECD (2019c)

Compared to other OECD countries, a relatively large share of job seekers is receiving unemployment benefits. In 2016, 39% of jobseekers received unemployment benefits in France, compared to 26% in Spain, 22% in the United Kingdom, and 17% in Sweden (OECD, 2019c).

The net replacement rate and allowance period of unemployment benefits are above the OECD average. In 2015, an average income earner could expect to receive on average 68% of their previous income over the first year and 45% of their previous income over the first five years, compared to an OECD average of 53% and 24% respectively (OECD 2018). Starting November 1, 2019, unemployment benefits for jobseekers with previous gross incomes of more than €4,500 gross per month were to be reduced by 30% starting from the 7th month of payment, but the rate reductions were suspended until 2021 due to Covid-19 (Cleiss, 2020b). Current reforms also seek to change the "reference wage" so that unemployment benefits are calculated using monthly wages over a 12-month period rather than using daily wages on working days which disadvantaged part-time workers (OECD, 2020b). ARE is paid for 24 months (or 36 months, if the job seeker is 53 years old

or more) (European Commission, 2020b). The OECD (2019b) considers the "level of unemployment benefits and their maximum duration […] high for the more skilled workers who can find employment rapidly". In 2017, public unemployment spending in France, as a share of GDP, was the fourth highest in the OECD (OECD, 2020d).

Figure 3 – Only a minority of jobseekers receive unemployment benefits
Coverage among unemployed and discouraged workers, 2016

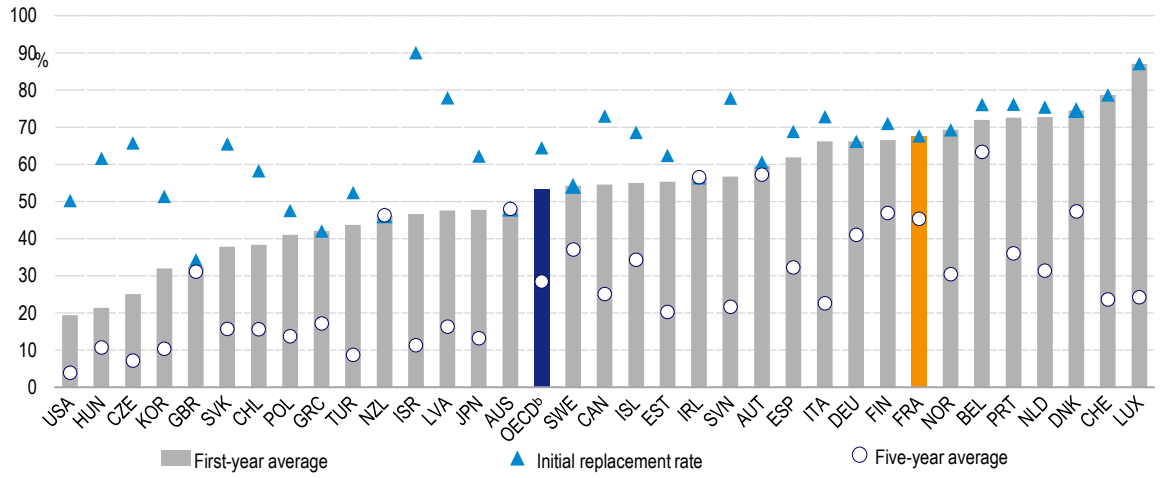


Note: In some countries, unemployment benefits can be received by people who have some work attachment (part-time unemployed) or who are not available for work (labour market inactive). The number of unemployment-benefit recipients can then be much higher than suggested by these coverage rates. "Discouraged" refers to people without employment who are available for work but are not actively looking for a job. "ILO unemployed" (based on the definition of the International Labour Organization) refers to out-of-work individuals who want a job, have actively sought work in the previous four weeks, and can start working within the next fortnight. Those who have made arrangements to take up paid employment or self-employment in the near future are also included in the definition of ILO unemployment. OECD-24 corresponds to the unweighted average of the countries shown.

Source: OECD (2019c)

Reforms in 2019 extended the unemployment insurance to self-employed workers and those who quit their job to carry out a professional project. Since 2019, ARE covers self-employed workers. However, the OECD (2019b) expects that coverage will remain fragmented as the conditions are relatively strict. For instance, only the self-employed who went bankrupt are entitled to unemployment benefits, excluding those who dissolved their company before bankruptcy and voluntarily terminated their activity (OECD, 2019b). To encourage entrepreneurship and job flexibility, the 2019 reforms also gave employees with at job tenure of at least 5 years the right to unemployment benefits if they submit a career change plan (Cleiss, 2020b). The career change plan must entail either creating or taking over a business or completing a training program and must be approved by a regional committee (Cleiss, 2020b).

Figure 4 – Net replacement rates for an average-income earner in % of previous income, 2015



Note: The net replacement rate is the ratio of net income out-of-work to net income while in work. Unemployment benefits include unemployment insurance, unemployment assistance as well as family benefits. Social assistance and housing-related benefits are not included. Calculations consider cash income as well as income taxes and mandatory social security contributions paid by employees. They are averages over four different stylised family types (single parents and one-earner couples, with and without children) and two earnings levels on the lost job (67% and 100% of average full-time wages). OECDE is the unweighted average of the countries shown.

Source: OECD (2018)

Since the 2019 reform, jobseekers have to work at least six months instead of one month to renew their entitlement to unemployment benefits. This reform was intended to reduce so-called carousel effects, where workers on short-term contracts repeatedly move in and out of employment to "recharge" their unemployment benefits (OECD, 2020b). However, the reform also penalized instability, as jobseekers with part-time or unstable employment trajectories now face greater obstacles to obtaining unemployment benefits and have a greater risk of falling into poverty (OECD, 2020c).

In France, jobseekers can accumulate old and new entitlements to unemployment benefits if they first exhaust the old entitlement before claiming the new one (OECD, 2020b). Alternatively, they can choose to start receiving the new entitlement immediately, which will discard the old entitlement (OECD, 2020b). While some other OECD countries also allow for the accumulation of unused benefits, the rules in France seem particularly lenient in comparison (OECD, 2020b). The OECD (2020b) argues that the accumulation of unemployment encourages frequent periods of unstable employment.

Financial incentives encourage jobseekers to take up work while drawing unemployment benefits. In France, as in Australia, Canada, Finland, and the Netherlands, benefits apply "withdrawal rates", which reduce the unemployment benefit at

a slower rate than wages (OECD, 2020b). In France, 70% of the gross monthly salary earned from the new employment is subtracted from the ARE benefits that would be due without employment (however, the total amount cannot be greater than the previous gross salary) (Cleiss, 2020b). The maximum possible sum of earnings and unemployment benefits is 55% of the average wage in France, compared with 9% of the country's average wage in the UK, 61% in the Netherlands, and 70% in Canada (OECD, 2020b). SSA recipients can work for up to three months, after which the benefit is terminated if employment continues (OECD, 2020b).

2. In-Work Benefit

The activity allowance (*prime d'activité*) is a State-funded financial aid designed to support workers with low incomes and to encourage re-entry into the workforce (European Commission, 2020b). It was created in 2015, merging the *prime pour l'emploi* (PPE) and the *revenu de solidarité active* (RSA). Eligibility criteria are broad: claimants need to be over 18 years, employed, and be residing in France on a stable basis (Cleiss, 2020a). Uptake of the *prime d'activité* was 70% in 2016, which is high, especially compared to the 32% uptake of it its predecessor, the RSA (OECD, 2019b).

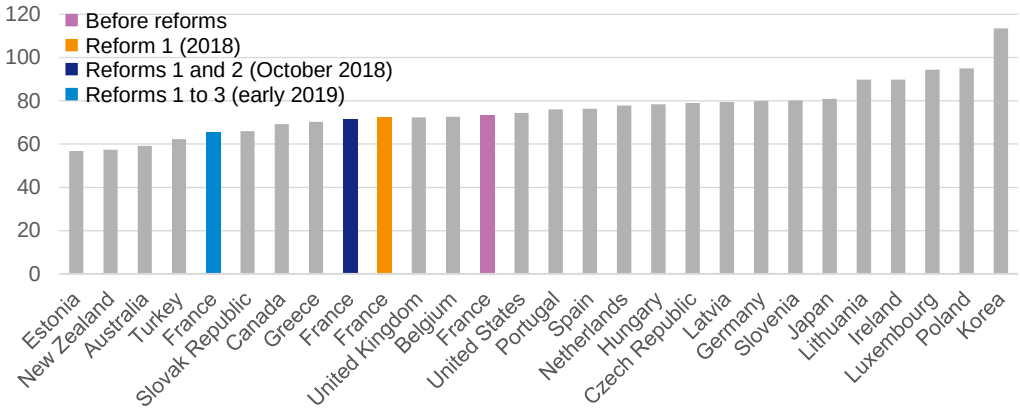
Reforms in 2018 and 2019 increased the *prime d'activité* in-work benefit. The benefit consists of a "lump-sum amount that depends on family composition and a work bonus based on individual earnings" (OECD, 2019b). The allowance amount remains constant for 3 months, even if the recipient's circumstances change during that period (Cleiss, 2020a). In 2018 and 2019, the monthly lump-sum amount was increased by €20 for a single-person household (OECD, 2019b) and the individual work bonus, partly in response to the *Gilets jaunes* (Yellow Vests) movement, was increased by €90 at the full-time wage level for a single-person household (OECD, 2019b). The OECD (2019b) estimates that the 2018-19 tax benefit reforms, of which strengthening the *prime d'activité* was a key feature, resulted in an 8.6% increase in net income of a single-person household at the minimum wage level in 2019.

The participation tax rate when moving from unemployment to a full-time job at the minimum wage is lower in France than in most other European countries. In 2019, accounting for the reform of the in-work benefits and social security contributions, the percent of additional income lost due to higher taxes and lower benefits was 66%, compared to 72% in Belgium, 76% in Spain, 78% in the Netherlands, and 80% in Germany (OECD, 2019b). The OECD (2019b) expects that increasing the *prime d'activité*, while also reducing labor costs by reducing social security contributions, especially for low-wage incomes, will stimulate employment. The participation tax rate for moving from half-time to full-time employment is close to the OECD median.

Figure 5 – The simulated effects of the 2018 and 2019 tax and benefit reforms

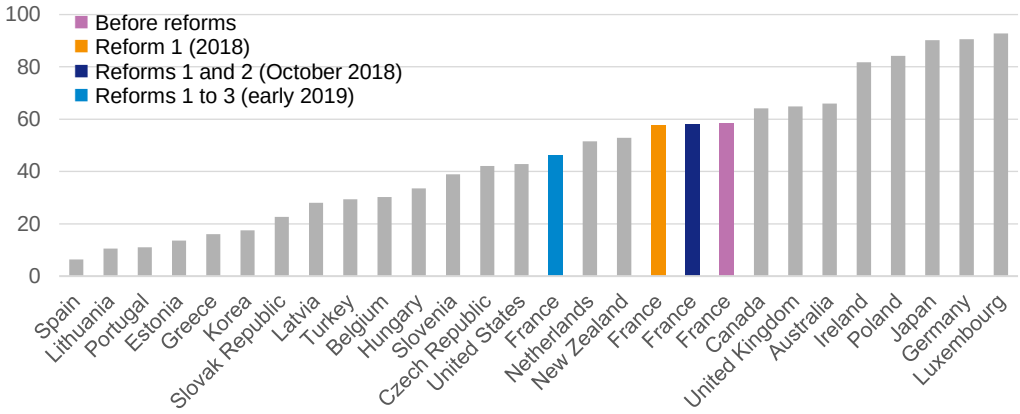
A. Participation tax rate when moving from unemployment to a full-time job at the minimum wage

% of additional income lost due to higher taxes or lower benefits



B. Participation tax rate when moving from 17.5 to 35 hours worked at the minimum wage

% of additional income lost due to higher taxes or lower benefits



Note: Reform 1 includes the reforms (implemented and announced between 2018 and 2019) aimed at reducing employee social security contributions. Reform 2 concerns the first phase of the reform of the *prime d'activité*, completed in October 2018 (€20 increase in the monthly flat). Reform 3 covers the new measures which came into force on 1 January 2019 (further improvements to the *prime d'activité* in order to increase net household income by €90 to the level of the minimum wage).

Source: OECD (2019b)

3. Minimum Income Scheme

The income support (*revenu de solidarité active*, RSA) is a non-contributory, means-tested benefit intended to guarantee jobseekers or low-wage workers a minimum level of income (European Commission, 2020b; France Stratégie, 2020a). Claimants are eligible for income support if they are at least 25 years old (or are parents or were employed for certain duration), have an average monthly household income below a certain level, and have claimed all their other social security benefits (unemployment benefit, pensions, etc.)

(European Commission, 2020b). The RSA allowance can be received for an infinite duration but is recalculated every three months (France Stratégie, 2020a).

The minimum income allowance, as a share of median disposable income, is slightly above the OECD average. In 2019, a single person without children received 39% of the median disposable income, compared to an OECD average of 34% (OECD, 2020a). Similarly, the European Commission (2020h) finds that France ranks in the middle when analyzing the adequacy of minimum income schemes across member states as a share the national poverty threshold (defined as 60% of the national median equivalized disposable income): the minimum income allowance was roughly three-fourth of the national poverty threshold in France in 2017 (European Commission, 2020a). The Netherlands and Ireland were the only countries in 2017 where the level of benefits of single-person households exceeded the national income poverty threshold level (European Commission, 2020a).

Table 1 – Minimum income as a share of median disposable income, 2019

	Germany	France	Italy	Netherlands	Poland	Sweden	OECD
Single person without children	44	39	12	60	27	47	34
Single person with 2 children	51	46	14	49	52	39	40
Couple without children (partner out of work)	47	38	13	55	26	41	35
Couple with 2 children (partner out of work)	52	38	15	47	54	39	38

Source: OECD (2020a)

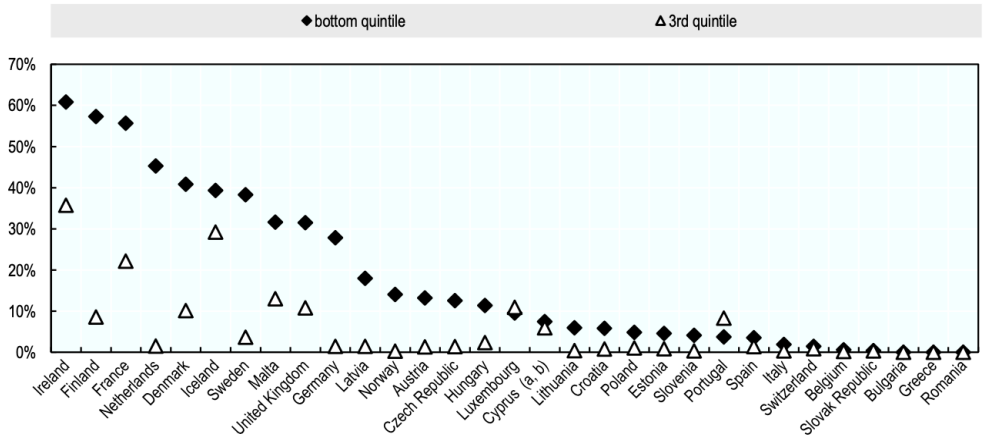
4. Housing Benefits

France supports households with their housing costs with three measures: a personalized housing subsidy (*aide personnalisée au logement*, APL), a family housing subsidy (*allocation de logement familiale*, AFL), and a social housing subsidy (*allocation de logement sociale*, ALS). The personalized housing subsidy is "available to tenants renting a new or existing home that is under a contract between the owner and the State […], and to owner-occupiers under a loan agreement with the State" (OECD, 2019a). The family housing subsidy is "available to any household who is not eligible for APL [and] who has a "family responsibility" (e.g., dependent children or elderly people in their care)" (OECD, 2019a). The social housing subsidy is "available to any household having to pay a rent or a mortgage and not eligible for APL or AFL. It is mainly aimed at supporting young people, students, couples without kids, elderly people and

persons with disabilities" (OECD, 2019a). Benefits are available to homeowners, tenants in social and private rental housing, and residents in care homes or shelters (OECD, 2019a). Housing benefits are non-contributory and means-tested, taking into account household income, household composition, and housing costs (France Stratégie, 2020a).

The share of households receiving housing allowance is high in international comparison. In 2017, more than half of the households in the bottom quintile distribution received housing allowance (OECD, 2019e). In the Netherlands and Denmark, this share was above 40%, in Sweden and the United Kingdom above 30%, and Germany above 20%. Notably, even in the middle quintile of the income distribution, more than 20% of households received housing benefits – only in Iceland and Ireland this share was higher. In France, more than 90% of households in the bottom quintile of the net income distribution receiving household allowances are tenants, out of which almost two-thirds rent at private rates and more than one-third rents at subsidized rates (OECD, 2019e).

Figure 6 – Share of households receiving housing allowances, 2017



1. No information available for Australia, Canada, Chile, Japan, Korea, Mexico, New Zealand, Turkey and the United States due to data limitations. Only estimates for 30 or more data points shown.

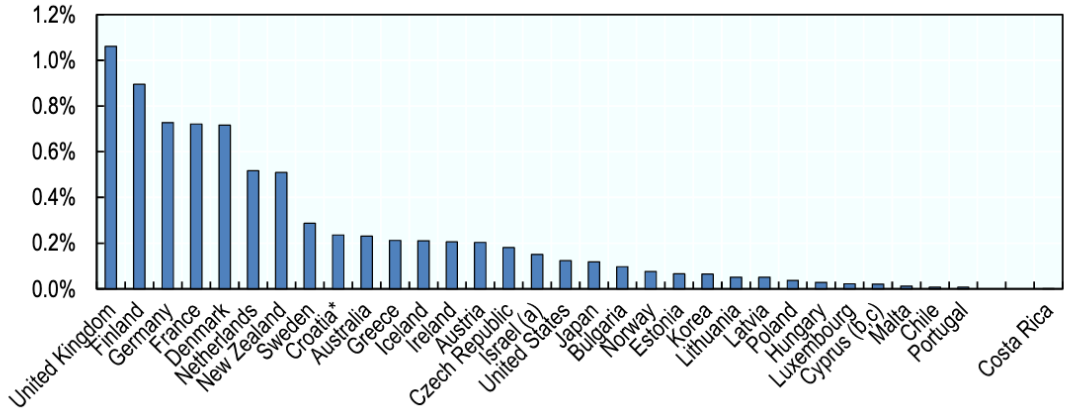
2. Quintiles based on the equivalised disposable income distribution. Low-income households are households in the bottom quintile of the net income distribution.

Source: OECD calculations based on European Survey on Income and Living Conditions (EU SILC).

Source: OECD (2019e)

Public spending on housing allowances is high in international comparison. In 2018, France's government spending on housing allowances, measured as a share of GDP, was the fourth-highest among OECD countries, on a level comparable to Germany and Denmark (OECD, 2019d). The average rent allowance as a share of gross wage at 10th percentile is around 5%, which is below the OECD median (OECD, 2019e).

Figure 7 – Public spending on housing allowances in OECD countries

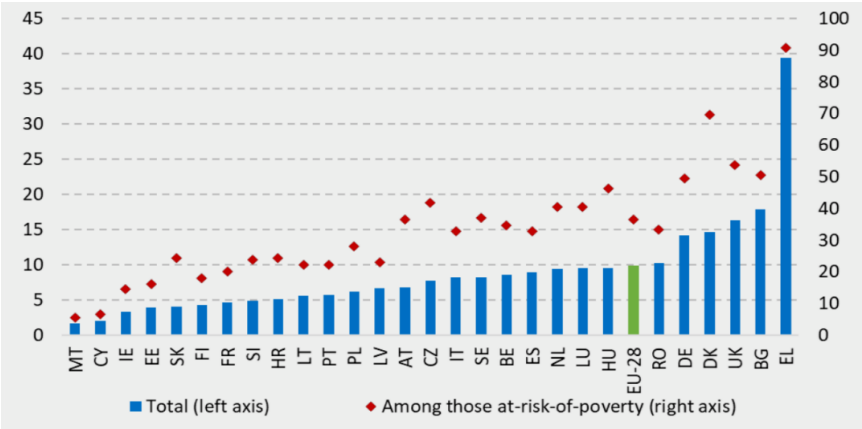


Note: Governement spending as % of GDP, 2018 or last year available

Source: OECD (2019e)

Housing costs, as a share of disposable income, are relatively low in France compared to other European countries. In 2018, France was one of the few European countries where the share of the population living in a household where housing costs represented more than 40% was below 5% (European Commission, 2020a).

Figure 8 – Share of the population linving in a household where housing costs represent more than 40% of the dusposable household income, 2018



Source: European Commission (2020a), Eurostat, SILC

Nevertheless, the OECD (2019b) notes that "numerous shortcomings in the housing market act as barriers to occupational and geographic mobility, especially for the less skilled and young people". First, despite recent reforms, such as introducing more flexible "mobility" leases, according to the OECD (2019b) the rental market remains relatively restricted. It recommends introducing more flexible lease periods and a default end of lease period to create a larger short-term rental markets (OECD, 2019b). The OECD

(2019b) also recommends that social housing better accommodates for young people and short-term contracts, for example, by making rights to social housing transferable from one municipality to another.

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APPENDIX 8

DEPLOYING THE EUROPEAN GREEN DEAL TOWARDS A GOOD JOBS AGENDA

1. Background – European Green Deal and the Just Transition Mechanism

On December 11, 2019, the European Commission presented the European Green Deal, a new growth strategy with the goal of reducing net greenhouse gas emissions to zero in the European Union by 2050 and decoupling economic growth from resource use.[1] It addresses a wide range of policy areas, including energy, climate, agriculture, industry, construction, mobility, biodiversity, food systems, and pollution.[2] The European Green Deal is supported by several policy proposals and initiatives, such as the European Green Deal Investment Plan, the European Industrial Strategy, and the Just Transition Mechanism.[3]

The Just Transition Mechanism is intended to mobilize at least €150 billion over the period 2021-2027 to alleviate the socio-economic impact of the decarbonization policies in the most affected regions.[4] It consists of three pillars: (1) a dedicated scheme under InvestEU (an investment plan combining different EU financial instruments),[5] (2) a public sector loan facility with the European Investment Bank, and (3) a Just Transition Fund (European Commission, 2020b). The latter "will be a key tool to support the territories most affected" and will focus "on the economic diversification of the territories most affected by the climate transition and the reskilling and active inclusion of their workers and jobseekers" (European Commission, 2020b).

[1] European Commission (2019), Press release, December 11.

[2] European Commission, "A European Green Deal".

[3] *Idem*.

[4] European Commission, "The Just Transition Mechanism: Making sure no one is left behind".

[5] European Commission, "What's next? The InvestEU Programme (2021-2027)".

2. Following an Old Welfare State Model vs. a Good Jobs Agenda

With the separation of growth and employment policies, the European Green Deal and Just Transition Mechanism risk following an old welfare state model, in which the productivity and equity agendas are separate tracks rather than merged. While the declared goal of the European Green Deal is to "leave no one behind", employment objectives are relegated to the Just Transition Mechanism, rather than made an integral part of economic, innovation, and climate policies. Notably, apart from a reference to the job potential of the circular economy, the European Industrial Strategy gives little explicit consideration to the employment effects of the proposed policies.

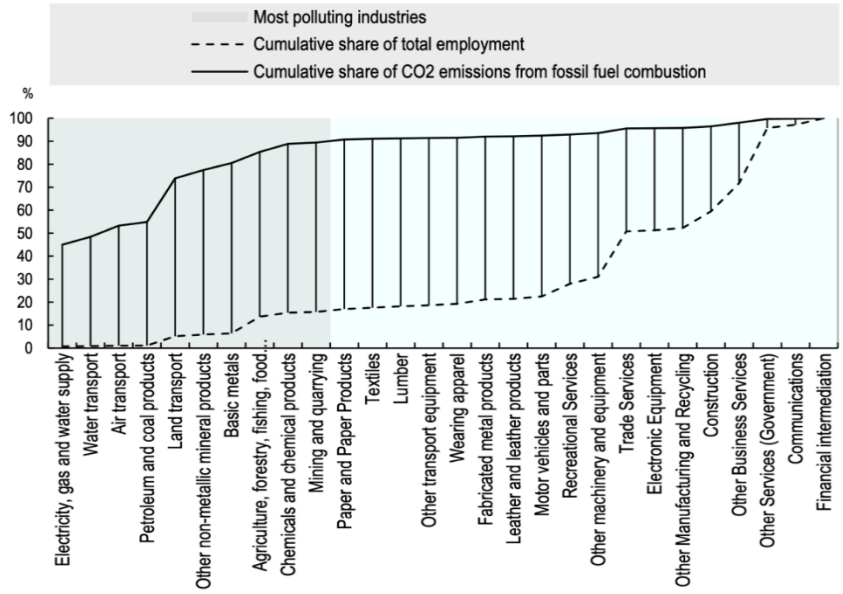
Instead, there have been ideas proposed to deploy the European Green Deal towards a Good Jobs agenda by strategically promoting green technologies and sectors that are employment friendly. Different green technologies have different levels of labor intensity, skill requirements, and task profiles, and thus different implications for the level and composition of labor demand. The European Green Deal may promote good jobs if new green technologies are labor-intensive and complement rather than substitute low- and middle-skilled workers. However, if decarbonization policies induce a shift to capital-intensive technologies, the Green New Deal may be detrimental to good jobs for all. Different green technologies should be evaluated and prioritized both based on their potential to reduce greenhouse gas emissions and their potential to create good jobs. Employment needs to be an integral part of economic, innovation, and climate policies rather than treated as an afterthought.

3. Good Jobs Potential of Green Technologies

Rigorous empirical evidence on the relative employment potential of different green technologies is still lacking. Few green technologies have been adopted at scale, thus limiting the opportunities to study their effects. At the same time, green technology adoption will likely have economy-wide effects as value chains adopt, which are hard to predict (Fankhauser et al., 2008, Hafstead and Williams, 2020). Further, many existing studies on green technologies focus on productivity rather than employment effects (e.g., Albrizio et al., 2016). The literature on the employment effects of different renewable energy options is relatively well developed (see Cameron and Zwaan, 2015 and Wei et al., 2010, for reviews). However, research on the employment effects of green technologies within other sectors is still thin. Further, more research is needed that rigorously compares the good jobs potential *across* different sectors and technologies.

Carbon-intensive industries account for only a small share of total employment. According to the OECD (2017), in 2005, "the ten most carbon-intensive industries in the EU-25 accounted for almost 90% of all CO_2 emissions, but for only 14% of total employment" (Figure 1). Therefore, direct employment losses from reducing economic activity in these sectors are likely modest. However, there may be larger job losses in sectors providing inputs to these carbon-intensive industries.

Figure 1 – CO_2 Emissions and employment by industry in the EU-25



Source: OECD (2017)

The OECD (2017), based on sectoral studies and case studies, finds that there are large job potentials in renewable energy production, energy efficiency (e.g., insulation of houses), public transport, circular economy (pollution management, waste collection and treatment, and recycling), and organic agriculture. This is largely consistent with an earlier study by the IEA (2009), which finds that the labor intensity of wind and solar energy, smart metering, and building refurbishment are high, the labor intensity of battery development, clean energy R&D, and switch to cleaner cars moderate, and the job intensity of carbon capture and storage low. Hepburn et al. (2020), surveying finance ministry officials, central bank officials, and other economists from 53 countries identify fiscal recovery policies with large long-run economic multipliers and strongly positive impact on climate: connectivity infrastructure, general and clean energy R&D spending, education investment, and clean energy infrastructure. Green spaces, natural infrastructure and, unexpectedly, energy efficient buildings upgrades including retrofits scored high on climate impact metrics but were not considered to have high economic multipliers.

4. Energy Production

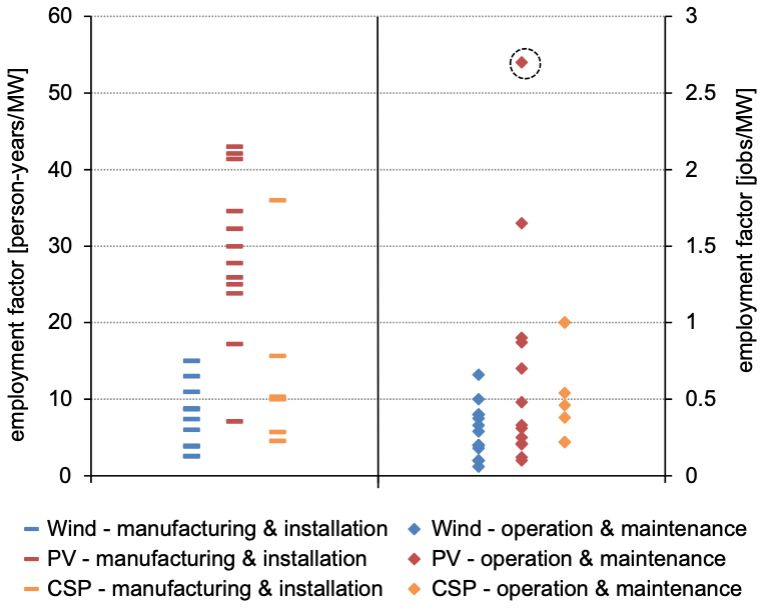
Renewable energies are more labor-intensive than conventional energy options. In a survey of the existing literature, Cameron and Zwaan (2015) find that the net employment effect of renewable energies, accounting for manufacturing, installation, operation, and maintenance activities, are positive compared to coal-, gas-, and nuclear-based power generation. This confirms the earlier result of Wei et al. (2009), who synthesize and normalize data from 15 job studies from the energy sector. However, Cameron and Zwaan (2015) also point out the need for more data on the employment factors of conventional power generation technologies as well as a common methodology for determining job impacts across different technologies. Higher job intensity of renewables might also be partly driven by the relative immaturity of renewable technologies, meaning they require more input for a certain level of electricity generation (Cameron and Zwaan, 2015). Energy efficiency measures might lead to a reduction of the overall required levels of energy production, resulting in a more labor-intensive, but also smaller energy sector (OECD, 2017). Hydrogen, which can be produced from renewable sources, may be another green job creator: Trinomics (2020) estimate that hydrogen demand from transport, manufacturing, and construction creates between 104,000 and 357,000 jobs in the European Union by 2030.

New "good jobs" in the renewable energy sector
The case of the wind power industry

"Wind power development opens up employment opportunities in a variety of fields. It requires meteorologists and surveyors to rate appropriate sites with the greatest wind potential; people trained in anemometry (measuring the force, speed, and direction of the wind); structural, electrical, and mechanical engineers to design turbines, generators, and other equipment and to supervise their assembly; workers to form advanced composite and metal parts; quality-control personnel to monitor machining, casting, and forging processes; computer operators and software specialists to monitor the system; and mechanics and technicians to keep it in good working order. Many of these are highly skilled positions with good pay. An analysis of an Ohio-based wind turbine manufacturing company found that the average annual earnings per employee were about $46,000, with a range of about $30,000 for the lowest-paid to $120,000 for the highest-paid. This average figure is slightly above the U.S. national average wage level of about $43,000 for 2006" (UNEP 2008).

Within renewable energies, photovoltaics (PV) technology generates more employment than onshore wind and concentrated solar power. Note that jobs created through the adoption of renewable technologies may differ in their duration. For example, the construction of solar parks leads to temporary jobs, while their operation and maintenance require permanent labor. In their systematic review, Cameron and Zwaan (2015) find that while the operation and maintenance employment requirements of PV, onshore wind, and concentrated solar polar are comparable, the manufacturing and installation job potential of PV technology is several times higher. Similarly, UNEP (2008) and Wei et al. (2009) find that solar PV generates most jobs compared to other green technology options.

Figure 2 – Comparison of direct employment factors for manufacturing and installation (in person-years/MW, left-half) and operation and maintenance (in jobs/MW, right half) for three renewable energy technologies



Source: "Employment Factors for Wind and Solar Energy Technologies: A Literature Review" (Cameron and Zwaan, 2015)

Carbon Capture and Storage (CCS) is typically considered to be more capital-intensive than renewables (e.g., IEA, 2009; Fankhauser et al., 2009). The systematic review by Wei at al. (2009) shows that, averaging across studies, solar-PV provides almost 5 times as many job-years per GWh than CCS. However, the Global CCS Institute (2020) emphasizes that CCS will also create construction and operation jobs and prevent the shutdown of individuals plants who are often large local employers.

5. Circular Economy

Industries related to the circular economy, such as waste collection, treatment, and recycling, are considered another potential source for good jobs. A circular economy is "an economic system that is based on business models which replace the 'end-of-life' concept with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes" (Kirchherr et al., 2017). The European Commission (2020a) estimates that "aplying circular economy principles in all sectors and industries has potential to create 700,000 new jobs across the EU by 2030" [sic]. According to the OECD (2017), increasing the recycling rate from 50% to 70% would create up to 322,000 direct and up to 228,000 indirect jobs in the EU27. Quantitative case studies from the United Kingdom, Netherlands, and Flanders in Belgium confirm the large job potential associated with the circular economy (OECD, 2017). ILO (2018) estimates that globally, 6 million new jobs in waste management as well as rental and repair services could be created.

How circular economy principles can create new jobs
The case of Michelin (adopted from OECD 2012)

The French tire producer, Michelin, was concerned about its future sales and profits as their tires become more efficient and long lasting. Michelin thus decided to change its business model: "Michelin does not sell its tires but rather is responsible for providing maintenance and service throughout the lifecycle of the tire, once installed. This implies that workers within Michelin are not just technicians producing tires, but have been transformed into customer's relations, maintenance technicians and driving advisors. The customers do not pay the tire in itself (product) but rather the amount of kilometers driven. This has led to an improvement in the quality of the tires, an extended life-cycle of the tires, and in a reduction of the amount of tires produced. Despite this adjustment to an environmental concern, Michelin has increased its income share in real value and its customers save up to 36%. Michelin has 300,000 vehicles using its tires in 24 countries." (OECD, 2012)

6. Agriculture

Organic farming has a larger employment potential than conventional farming. While the employment requirements vary by crop type and country, according to the OECD (2017), "organic farming tends to use more labor-intensive production activities (e.g., complex rotation systems, mixed farming), as well as more labor-intensive crops (fruit and

vegetables), less mechanization, more on-farm processing and trading, and higher requirements for information." In the United Kingdom, organic farming provides 32% more jobs per farm than equivalent non-organic farms (Green & Maynard, 2006). In the U.S., a study found that organic farms not only employed more workers per acre, but that hired workers stayed for a longer duration, suggesting potentially more secure employment (Finley et al., 2017). ILO (2018) finds that adopting organic agriculture in developed countries could lead to an increase in employment in agriculture in Europe.

7. Transportation

Public transport can be more labor-intensive than private transport. ILO (2020) analyzes the employment implications of different "green transport" scenarios for the member countries United Nations Economic Commission for Europe (ECE). It finds that the net job creation in the transportation sector is larger for investments in public transport than for investments in the electrification of vehicles. The estimated economy-wide effects are less certain, with adopting a target of 50% of all vehicles manufactured to be fully electric having similar employment effects as doubling investment in public transport or providing free public transport. The Faraday Institution (2020) estimates that by 2040, 78,000 new jobs could be created in UK battery gigafactories for electric vehicles and in their battery material supply chains. However, more evidence on the employment potential of different technologies in the green transportation sector is needed.

8. Energy Efficiency

Improving the energy efficiency of buildings is another employment-friendly way to reduce greenhouse gas emissions. Subsidies to retrofit existing buildings, making them more energy-efficient, have been associated with employment gains (OECD, 2012). Construction workers are needed to insulate houses, architects and engineers to design energy-efficient buildings such as so-called passive houses and zero energy buildings. Germany's Energy-Efficient Rehabilitation program providing low-cost loans and consultation service by certified contractors, is estimated to have created 342,000 jobs (New Climate Economy, 2018). ILO (2018) estimates that jobs in construction grow by 1.7% by 2030 in an environmentally sustainable scenario that limits global warming to 2°C compared to a business-as-usual scenario. In addition, retrofitting jobs are highly geographically dispersed and cannot be outsourced (Rewiring America, 2020).

9. Economy-Wide Effects

Industry-specific job gains in renewable energy production, recycling, organic agriculture, public transport, and energy efficiency could, in principle, be offset by negative economy-wide spillovers. As Hafstead and Williams (2020) emphasize, looking just at jobs directly created within an industry could be misleading if there are negative spillovers, with jobs being one-to-one reallocated from other industries (or potentially even with negative multiplier effects).

However, econometric models tend to find that jobs destroyed in carbon-intensive industries are offset (or more than offset) by new jobs in green industries. Barker et al. (2016), using the post-Keynesian E3MG model, find that a mix of policies including energy efficiency measures, closing the least-efficient coal-fired power plants, and the phase-out of subsidies to fossil-fuel consumption lead to 6 million net jobs created globally by 2020. Pollitt et al. (2015), using the same model, find "that a 40% reduction in GHG emissions (compared to 1990 levels) could lead to an increase in employment of up to 0.7 million jobs in Europe." Hafstead and Williams (2018), using a two-sector general-equilibrium model with job search frictions to study environmental policies in the United States, find that "that employment effects on the polluting sector of the economy are generally offset by opposite effects (of roughly similar magnitude) on the nonpolluting sector." Griffith and Calisch (2020) find that a "maximum feasible decarbonization" could create "up to 25 million good-paying American jobs over the next 15 years and 5 million sustained jobs by mid-century". The OECD (2018), using the global computable general equilibrium model ENV-Linkages, finds that the aggregate impact of climate and energy policies on total employment is very small.

Regardless of whether the net employment effect is zero or positive, promoting green technologies will lead to a reallocation of labor across sectors. For example, the OECD-ENV linkage model predicts that job losses occur in gas, coal, and fossil fuel-based electricity while jobs are created in transport services, hydro and geothermal electricity, nuclear power, combustibles renewables and waste electricity, and solar and wind electricity" (OECD, 2012).

While job gains in green industries may be diffused, job losses are likely concentrated in geographic regions with a large number of jobs in carbon-intensive sectors. For example, fossil-fuel industries are often geographically clustered close to fossil fuel reserves. Therefore, transitioning towards renewable energy sources can lead to a significant decline in regional employment (OECD 2017). Further, geographically concentrated job losses can have substantial local multiplier effects. For instance, if a coal mine closes, not only the jobs of the coal miners are lost, but potentially also other jobs that depended on the coal miners' purchasing power (Hafstead and Williams, 2020).

10. Skill Requirements

The evidence on skill bias of the transition to a green economy is mixed. The OECD (2017) finds that destroyed jobs and new jobs tend to involve largely similar categories of skills. While reallocation of jobs across sectors will require retraining in vocational skills, the share of low, middle, and highly skilled jobs stays largely the same. In contrast, Marin and Vona (2019), studying for 14 European countries and 15 industrial sectors from 1995 to 2011, find that "climate policies have been skill biased against manual workers and have favored technicians and professionals". However, ILO (2018), using Exiobase, a multiregional input-output table (MRIO), finds that reallocation is "likely to benefit sectors that employ fewer highly skilled workers, which means that employment opportunities will favour low-and middle-skilled workers".

11. More Jobs vs. Good Jobs

Shifting economic activity to labor-intensive green technologies alone does not guarantee the creation of "good" jobs. Sectors targeted by climate and environmental policies are sometimes perceived to provide "good jobs" – stable blue-collar jobs that pay relatively well, for example in mining or manufacturing (Hafstead and Williams, 2020). Further, not all green jobs are also good jobs. Thus, simply creating more jobs, by selectively targeting labor-intensive technologies and sectors, may not be sufficient for advancing the good jobs agenda. For example, UNEP (2008) distinguishes between green and decent jobs (e.g., unionized wind and solar power jobs and well-paid public transit employees) and green, but not decent jobs (e.g., low-wage installers of solar panels and exploited biofuels plantation day laborers). Similarly, while the retrofitting of buildings creates employment in construction, construction jobs are also often among the most hazardous in terms of occupational diseases and work accidents (GAIN, 2017).

12. Deploying the European Green Deal and Just Transition Mechanism towards a Good Jobs Agenda

Invest more in research on the employment effects of green technologies

To successfully target employment-friendly technologies, more research is needed that evaluates the comparative good jobs potential of green technologies. This includes both micro-level evidence (e.g., firm-level employment data and case studies) and macro-level evidence (e.g., in addition to ongoing modeling and simulation work, researchers could exploit natural experiments stemming from policy changes). Research in these areas could be funded by Horizon 2020, which supports Green Deal related research with close to

€1 billion, and Horizon Europe, the EU's next research and innovation program, which includes a "mission area" dedicated to climate change adoption and social transformation.[1]

Direct R&D towards employment-friendly, green technologies

Available research, as summarized in this appendix, suggests that green technologies vary drastically in their employment impact. Thus, steering innovation towards green technologies that are employment-friendly can help ensure decarbonization is beneficial to the generation of good jobs. This applies both to choosing between different green technologies (e.g., CSS vs. solar PV) as well as the particular forms green technologies take (automation processes in PV manufacturing that complement rather than substitute workers). Horizon Europe, whose four out of five agreed mission areas support the European Green Deal, should apply a "prospective employment test" when allocating R&D funding, prioritizing innovation projects with likely positive employment effects. Further, member countries can incorporate employment considerations in tax incentives for R&D, taking into account the externality provided by good jobs.

Directly support employment-friendly technologies with activities part of Just Transition plans

Territorial Just Transition plans, which member countries need to submit to the European Commission to access to funding from the Just Transition Fund, should prioritize projects in employment-friendly technologies. They should also include the set-up of regional business bureaus as outlined in the main part of the report (see Chapter Two) that offer a portfolio of services to local firms and prospective investors, with the goal of increasing productivity while creating good jobs in green sectors. Similarly, the dedicated just transition scheme under InvestEU and the public sector loan facility with the European Investment Bank should favor projects in employment-friendly sectors and technologies. Finally, member countries should complement carbon pricing by the EU Emissions Trading System with increased taxation of capital relative to labor, and thus incentivize a shift of economic activity from carbon-intensive sectors to green, labor-intensive sectors (OECD, 2017).

Support sectoral training programs in green sectors in close cooperation with employers

While the evidence on the general skill bias of decarbonization is mixed, the transition to green sectors will, at least for some workers, require retraining in vocational skills. As the

[1] European Commission, "Research and innovation for the European Green Deal": https://ec.europa.eu/info/research-and-innovation/strategy/european-green-deal_en

main part of the report showed (Chapter Two), sectoral training programs, providing "soft" skills and "hard" skills tailored to the needs of local companies have a positive track record, especially if they are implemented in close collaboration with employers. Territorial Just Transition plans under the European Green Deal should incorporate these design principles for any programs aimed at re-skilling workers.

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APPENDICES
TO CHAPTER THREE

DEMOGRAPHIC CHANGE: AGING, HEALTH AND IMMIGRATION

APPENDIX 9

DEMOGRAPHIC BACKGROUND

Population aging in France is driven by three underlying long-term demographic forces. First, like most other industrialized countries, France had a baby boom with high birth rates between 1950 and 1970 (shaded area in Figure 1). The first-borns of these cohorts have reached the current earliest retirement age of 62 in 2012; the youngest baby boomers will reach that age in 2030. For this period, the increasing old-age dependency ratio is driven by the past decline in fertility from its exceptionally high level during the baby boom to a lower level from the late 1970's onwards. The baby boom-baby bust transition has long-tailed after effects and precipitated the previous pension reforms and the recent reform attempt by Delevoye.

Second, the lower fertility level from the late 1970's onwards does not contribute much to population aging since it is relatively high and close to replacement level, as will be pointed out in the next subsection.

Finally, after about 2035, the further increase of the old-age dependency ratio is mainly driven by the expected future increase in longevity. This is a genuinely positive development. Here, the main challenge is to have all persons participate in the positive development and to reduce the large existing disparities.

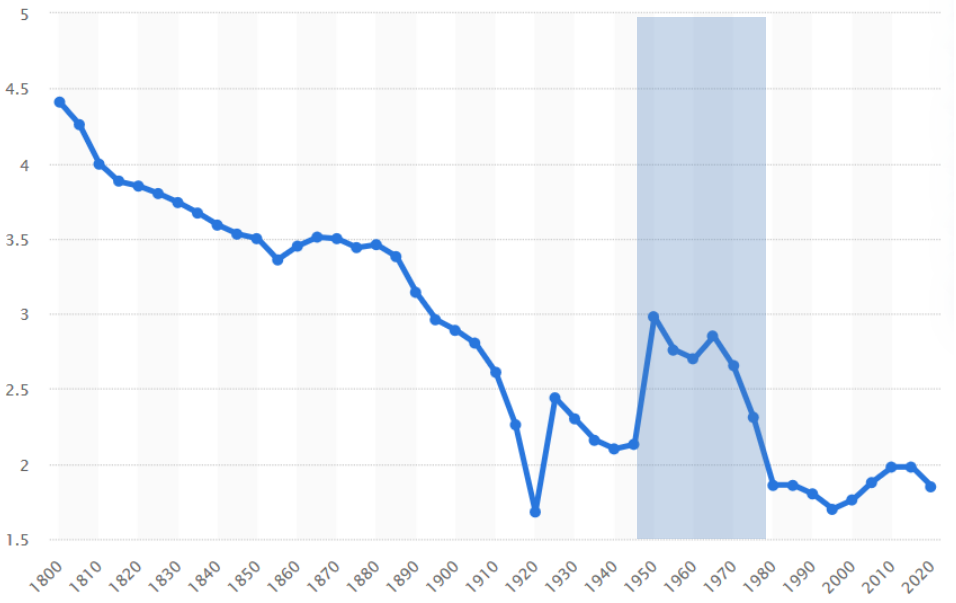
1. Fertility

France has the highest fertility in the European Union (Figure 2). Fertility has remained largely constant since 1980, although there has been a slight but much debated decrease since 2015 (Breton et al., 2019, p. 382). The current total fertility rate is 1.87 children per

woman in 2018[1] vs 2.02 per woman at its peak in 2010, while the European average is 1.59 children per woman in 2017[2]).

Since the value of almost 1.9 children per woman is not far from its replacement level of 2.1, fertility is not the main contributor to future population aging in France, although one should keep in mind that this requires continued efforts in support of maternity and to reconcile child raising with labor force participation. It is also important to realize that future changes in the fertility rate have no effect at all on financing the social security systems (pensions, healthcare, long-term care) during the next two decades since it takes about 20 years until children enter the labor market although it would affect the cost of education.

Figure 1 – Fertility: Development in France, 1800-2020

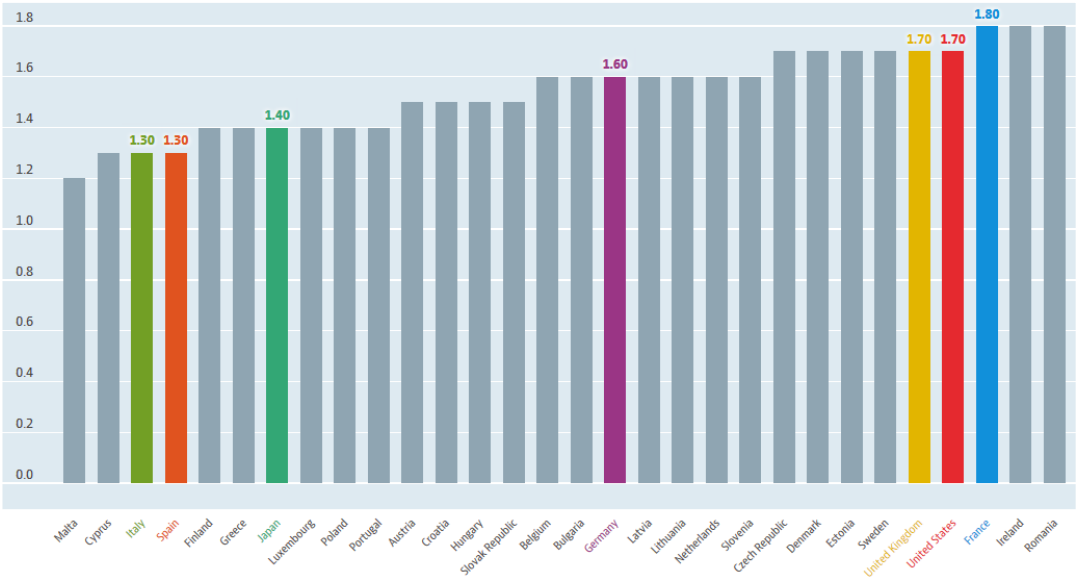


Sources: Statista.com, undisclosed source

[1] Insee (2021), "Indicateur conjoncturel de fécondité. Données annuelles de 1994 à 2020," January: https://www.insee.fr/fr/statistiques/2381388.

[2] Insee (2021), "Natalité et fécondité dans l'Union européenne. Données annuelles de 1999 à 2019," January: https://www.insee.fr/fr/statistiques/2381396.

Figure 2 – Fertility: International comparison (2018, 2019 if available)



Source: OECD Family Indicators, https://data.oecd.org/pop/fertility-rates.htm , downloaded 12.9.2020

2. Longevity

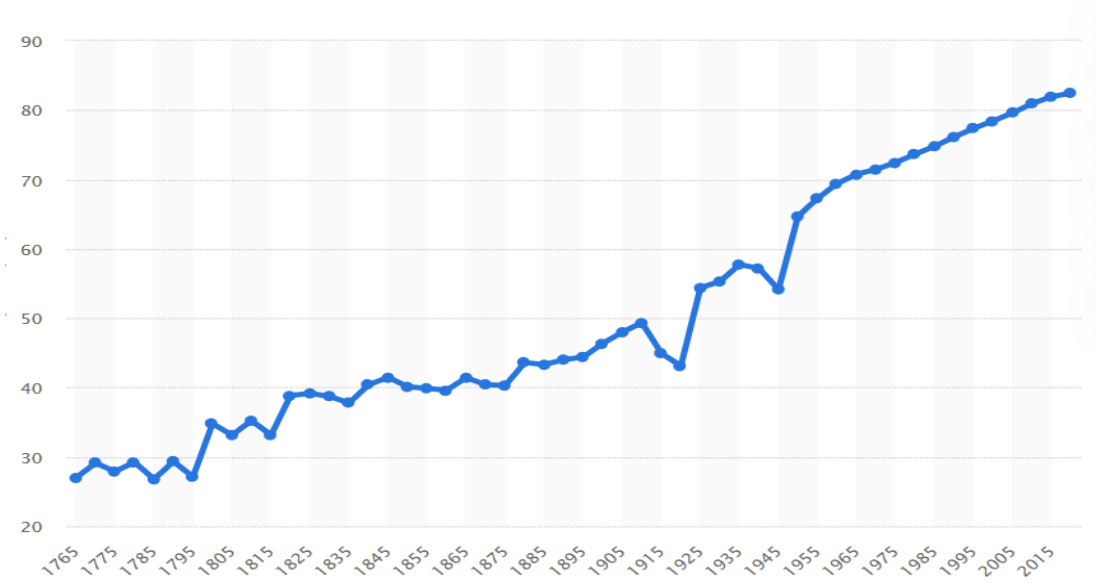
The main contributor to further population aging in France is increasing longevity. This is an important insight when we will get to concrete policy recommendations (see Chapter Three of the report, section 3, point 2 on the pension reform). Life expectancy has increased by about 16 years between 1960 and 2019, continuing a historical trend which is almost linear since the late 18th century (Figure 3). This translates into an increase of more than two-and-a-half months per year. The current generation lives almost 6 years longer than their parent's generation.

Average life expectancy in France is high. This is particularly the case for women and older age groups as shown by Figure 4. Average life expectancy at age 65 exceeds the European average by about 2 years for women and about 1.5 years for men.

If life expectancy progresses as shown in Figure 3, the oldest baby boomers will enjoy 22 years of retirement; of those, about 15 years will be in good health as described by the absence of disabilities, see the following subsection. The youngest baby boomers will live an additional 4 years; and they are expected to add three more years in good health.

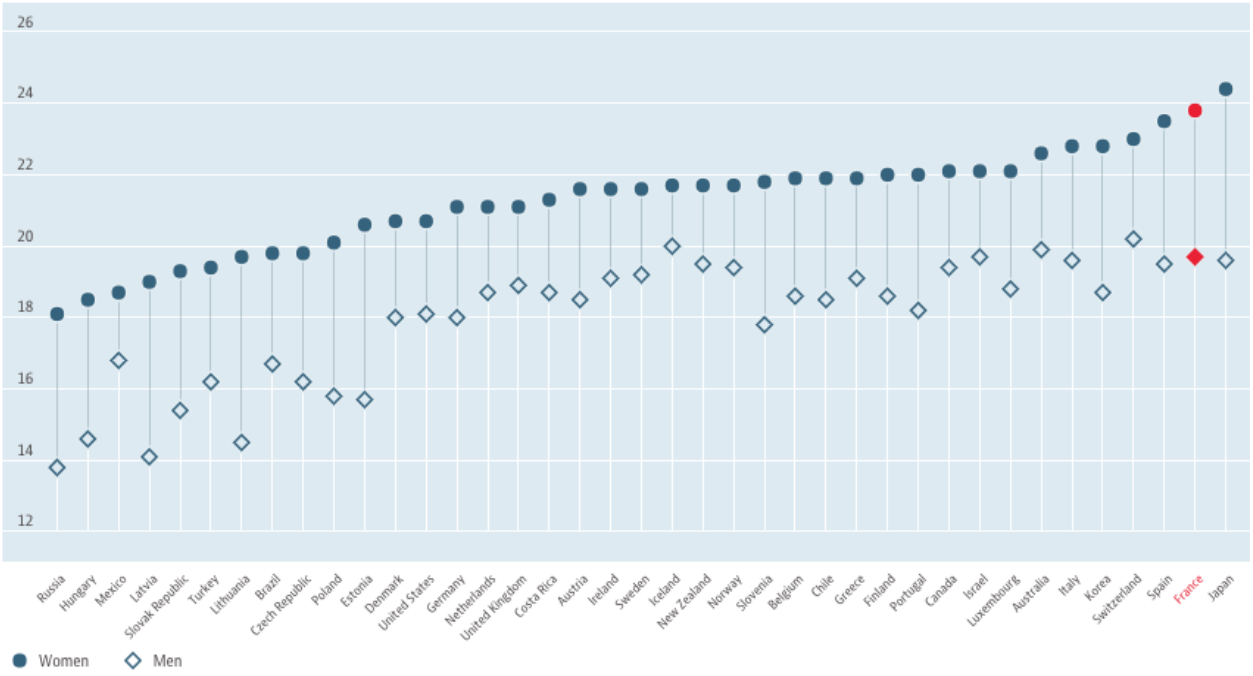
Finally, it should be noted that in spite of the scariness of the Covid-19 pandemic, its influence on overall mortality is very small and strongly age related. For individuals below age 50, INSEE reports under-mortality. Among individuals aged 85+, the excess mortality is 0.6% for women and 0.85% for men (COR October 2020a).

Figure 3 – Life expectancy: Development in France, 1765-2020



Sources: Statista.com, Human mortality data base

Figure 4 – Life expectancy at age 65: International comparison (2018, 2019 if available)



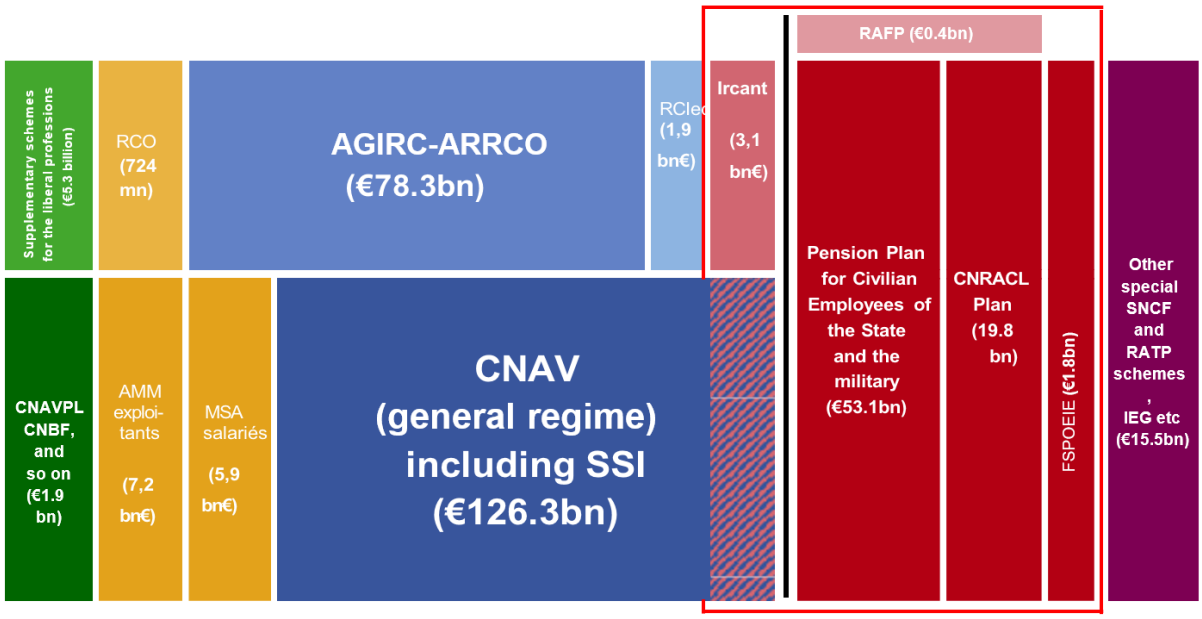
Source: OECD Family Indicators, downloaded 12.9.2020

APPENDIX 10

THE CURRENT FRENCH PENSION SYSTEM: FRAGMENTED, COMPLEX, INTRANSPARENT, UNFAIR AND COSTLY

Figure 1 shows the basic structure of the current French pension system. As of October 2020, it consists of 38 different subsystems (*régimes*); they all have different rules for benefits and retirement age. Most employees are in the private, non-agricultural regime (blue) and in government jobs (red). In addition, there are special regimes for self-employed (green), agricultural jobs (orange) and a large number of special regimes (purple) related to former state enterprises (e.g., railway).

Figure 1 – The French pension system



Source: Report on civil service pensions appended to the draft budget bill for 2020 (from the report to the Social Security Audit Committee, September 2019, restatements Budget Directorate)

This description focusses on the pension system for private, non-agricultural workers, which make up almost 70% of the French work force. Its volume represents about two-thirds of the French pension expenditures (€205 billion out of €320 billion in 2019). It consists of two pillars. The base pillar (CNAV) is a defined benefit system, while the mandatory supplemental pillar (AGIRC-ARRCO) is a point system. Both are financed pay-as-you-go.[1]

The earliest eligibility age is 62. Claiming a pension even earlier is only possible on the basis of disability, arduous work and a career starting at very young age. 21% of the new entrants in 2018 took these even earlier retirement routes.[2] Rules related to the "very early career" individuals changed for the more recent cohorts. For cohort 1960, individuals who started working before age 16 and contributed 175 quarters can leave at age 58. Those who started working before 20 years old and contributed 167 quarters can leave at age 60. For later born cohorts, the rules are gradually changed until the cohort born in 1973. For this cohort, 5 quarters contributed before age 16 and 180 quarters accumulated until at age 58 result in an early retirement at age 58 with full replacement rate. Alternatively, 5 quarters contributed before age 20 and 172 quarters accumulated at age 60 make workers eligible for retirement at age 60 with full replacement rate.

1. The Quarter System and the Age of Full Rate

Quarters have an important role in the French pension system since they do not only determine eligibility but also define the "age of full rate". While quarters do not directly translate into years of service, the number of quarters is nevertheless called "insurance duration". In fact, the number of quarters are determined in each year by the earnings of that year.[3] For annual earnings exceeding €6,100 in 2020, four quarters are credited, independent of the actual duration of work.[4] For annual earnings below €1,525, no quarters are given at all, in spite of contributions paid in proportion to earnings. In between, the number of quarters increases at every multiple of €1,525 by one quarter. Quarters are also credited for unemployment, maternity, sickness, rehabilitation, work accidents and professional training. However, since the number of quarters per year is limited at four, they will not contribute to the total sum of quarters if earnings exceed the €6,100 threshold.

[1] Other sectors of the French economy also have a two-pillar system with a PAYG-financed base pillar and a supplemental pillar. However, not all supplementary pension schemes are PAYG but some are funded.

[2] Cnav (2020), "Nouveaux retraités par année de départ à la retraite", June.

[3] There are 19 ways to get a quarter. This interesting number is a good example for the complexity of the French pension system.

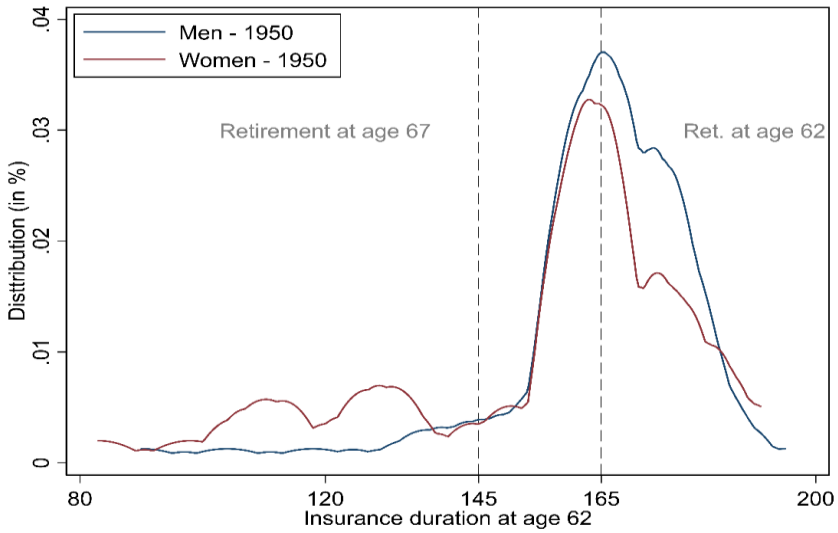
[4] Hence, as extreme case, working only one day for €6,100 will be credited as one full year of service.

In turn, working a single day for €6,100 and not at all during the rest of the year will be credited as four quarters.

The "age of full rate" is reached after 166 quarters (41.5 years) of service for the 1955-1957 cohort, increasing to 172 quarters (43 years) for those born after 1972. At age 67, all entrants will get a full-rate pension, independent of the actual number of contributed quarters, if they have contributed at least once.

The quarter system results in a claiming behavior that is very much concentrated on the age of full rate which is determined by the number of quarters. In turn, this age is the earliest eligibility age for all workers who have started sufficiently early with their careers, even when earning relatively little. This interaction is depicted in Figure 2 which shows the distribution of service quarters for the 1950 cohort at age 62.

Figure 2 – Distribution of accumulated quarters at age 62 for cohort born in 1950



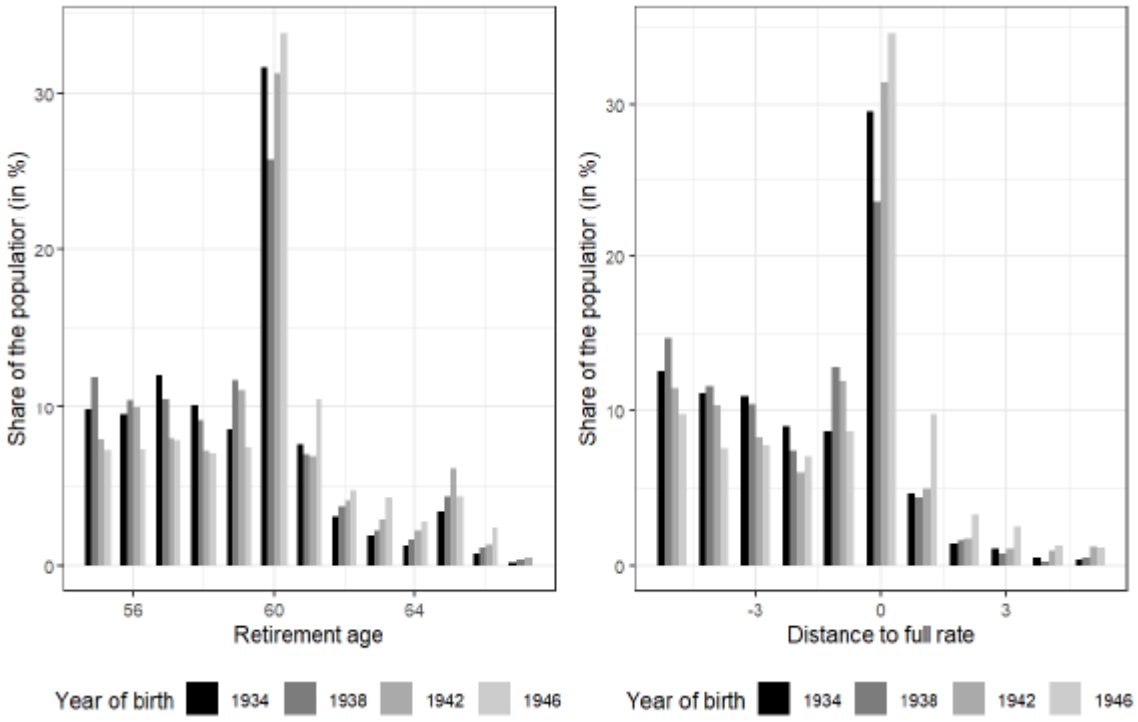
Source: Own computations based on EIR 2012 data, individuals who contribute at least once in the private sector (CNAV pension scheme) and do not benefit from a disability pension

Figure 12-2 has three areas, separated by dashed lines. The right line at 165 quarters represents employees who reached the age of full-rate at age 62 and exhibits a sharp spike in the distribution. Workers to the right of that line (32.6%) could have claimed their pension at age 62 but decided to work beyond the age of full rate. The left line at 145 quarters defines a second threshold since employees with less than 145 quarters need to work until age 67 to obtain a full-rate pension. These are 35.4%. In between the two dashed lines, workers need to accumulate further quarters to be eligible for the full rate and thus claim between 62 and 67 (31.8%).

The resulting claiming behavior is shown in Figure 3-8 for the 1946 cohort who still faced an earliest retirement age of 60 (Bozio, Rabaté, Tô and Tréguier, 2020). About 65% of retirees claimed their pension exactly at the age of full rate and almost 60% could do this at age 60.

The actual retirement shows a similar spike, although many workers leave the labor force even before claiming a pension (Figure 3). This is described in the report (see Chapter Three, Section 2).

Figure 3 – Labor force exits between 1994 and 2014



Source: "Reforming French housing benefits: Why not merging benefits?" (Bozio et al. 2020), NBER ISS10 p. 20, based on EIR-EIC

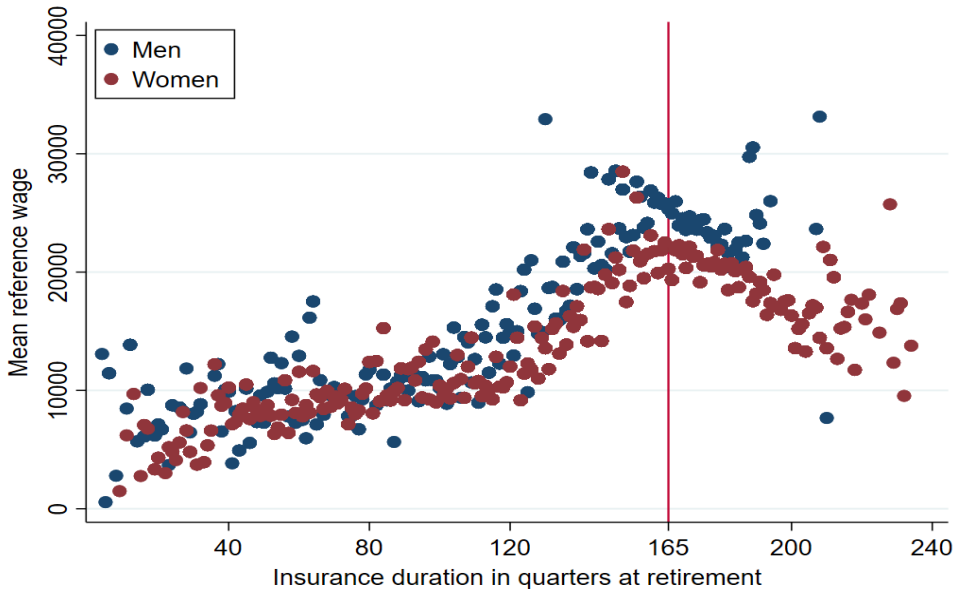
2. Reference Wage and Benefit Computation

Figure 4 shows the relation between quarters and a measure of life-course earnings. Life-course earnings are defined as the "mean reference wage" which is the average of annual earnings during the 25 best years in the entire career, uprated by price inflation.[1]

[1] The computation of reference wage includes 25 of best years of earnings only for those with 25 years of earnings and more. For those with less years of earnings, there is no "zero" put in the average. The computation is the average of all the years of earnings. The reason why individuals with short career are

This mean reference wage is a crucial ingredient for the benefit calculation in the base pillar (CNAV), see below. A low mean reference wage can have three reasons: a relatively short service duration, part-time or a relatively low hourly wage. The left branch of the inverted U is determined by the first two reasons, while the right branch is generated by relatively low hourly wages, especially for women.

Figure 4 – Quarters at age of retirement by mean reference wage for cohort born in 1950



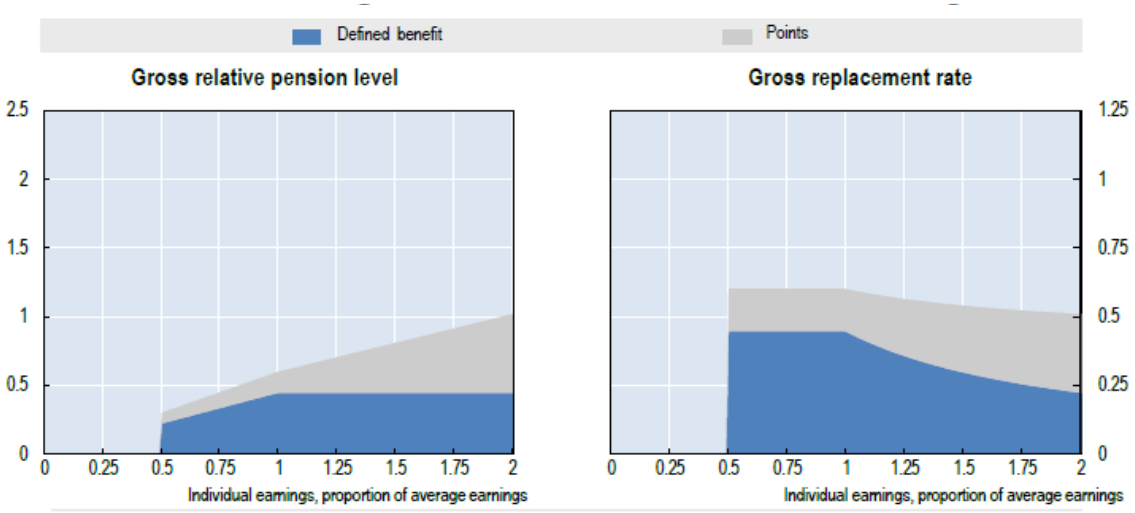
Source: Own computations based on EIR 2012 data, individuals who contribute at least once in the private sector (CNAV pension scheme) and do not benefit from a disability pension

Full-rate benefits in the base pillar (CNAV) are defined as 50% of the mean reference wage as defined above but capped at 50% of the social insurance ceiling (€1,714 in 2020). Retirement before the full-rate age is possible after age 62 with deductions that depend on the missing time towards the 43 years of service defining a full career. In turn, working longer than the full-rate age is rewarded by a supplement. Benefits are defined at retirement and then price indexed.

The defined benefits of the base pillar (CNAV) thus increase as share of the mean reference wage until they reach the 50% plateau (blue in the left panel of Figure 5). Due to this ceiling, the replacement rate is falling for higher than average earners (right panel).

also those with low reference wage is due to the correlation between low-wage jobs and precarious work (short-term contract, temporary workers, etc.).

Figure 5 – Benefits



Source: OECD "Pensions at a Glance 2019: Country profile France"

On top of this base pillar comes the mandatory supplemental pillar (AGIRC-ARRCO). This is a point system in which all years count. Contributions are converted to points (the rate is defined by the "purchase value" of a point which is €17.39 in 2020) and then converted into benefits at the time of retirement (the rate is defined by the "service value" of a point which is €1.27 in 2020). The two conversion rates are the essential parameters of the point system. Since the benefits from CNAV are capped, only the second pillar contributes to higher pension benefits (grey in Figure 5) for above average earners.

3. Indexation

In both pillars benefits and past earnings are indexed to prices. Deviating from wage indexation was one (intransparent) action to reduce the costs of the system after 1993. Price indexing produces distributional effects on the individual level. Indexing accrued earnings by prices rather than wages disadvantages those who started early and had steep careers. Indexing benefits by prices rather than wages yields a declining replacement rate as retirees age and rather low benefits relative to contemporary wages for those in very old age.

The intended cost savings via price indexation depend on the future development of GDP per worker. The higher this growth rate, the larger is the difference between revenue growth (increasing with GDP per worker) and expenditures growth (increasing only with inflation). This has worked well in the past but has created considerable additional uncertainty into actuarial projections of the system's financial sustainability, as has been pointed out in the report (see Chapter Three, section 1). It also creates a temptation to overestimate future GDP growth per worker which appears to have taken place in the past.

The other regimes – covering the self-employed, public employees and employees in former State-owned enterprises – have a host of different rules. Some of them have very early retirement options. Similar to CNAV and AGIRC-ARRCO, they are almost completely financed pay-as-you-go. In most cases, workers' contributions in any given year finance pensioners' benefits in that same year, although some regimes are financed by general taxes rather than workers' contributions.

4. Fragmentation

This complexity and fragmentation make the system very intransparent. Contributions paid in different regimes and at different phases in the life-course correspond to different benefits, creating a sense of unfairness (Delevoye, 2019). It is noteworthy that only 3% of French workers obtain their benefits from only one pension scheme where CNAV and AGIRC-ARRCO are counted separately since they have very different rules for benefit calculations. 36% of workers are in exactly two schemes, such as CNAV and AGIRC-ARRCO. In turn, more than 60% of retirees obtain their benefits from at least three pension schemes, and more than a third from four or more schemes.[1] While careers in different professions would count pro rata to the overall pension in theory, many frictions exist which are said to hinder labor mobility. The merging of pension claims from different regimes has created unfair treatment since the total benefits vary by the order of contributions and the share of life spent in each scheme, in spite of the same amount of contributions, and applies for the third of workers that contributes to several regimes.[2] This disadvantages workers with frequently interrupted careers, particularly women, whose prevalence is likely to increase in the future.

Moreover, there is no transparent link between contributions and benefits and, behaviorally speaking, between effort to pay into the system and the reward in terms of pension benefits. This mainly stems from the complex interaction between years of service and statutory eligibility ages in determining the age at which employees can receive a full-rate pension. Many people are not able to approximately predict their retirement income. Arrondel, Masson and Soulat (2019) show that only 60% of the French have a relative good knowledge of the pension system before the 2010 reform. There is a strong age gradient: While only 20% of the young had good knowledge of their pension claims, this number increases with age and reaches 50% among individuals aged 50+. Information letters are distributed since 2018. They contain information on expected benefits from all schemes to which one has been affiliated, plus a summary sheet regrouping the main

[1] *Étude d'impact – projet de loi organique relatif au système universel de retraite – projet de loi instituant un système universel de retraite (2020).*

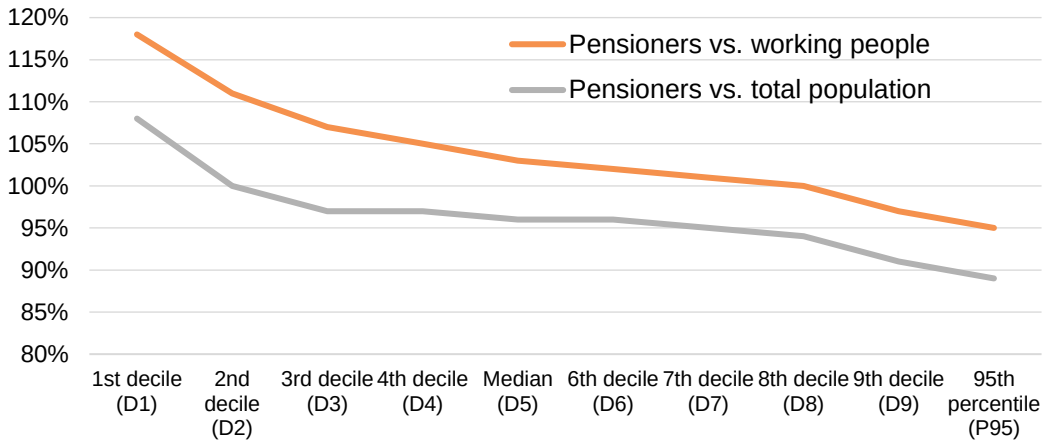
[2] DREES (2012), "Les polypensionnés," *Dossiers Solidarité et Santé*, No. 32, August.

information and showing how one can increase his or her pension level through postponement.[1]

5. Intergenerational Balance and Intragenerational Redistribution

The system depicted in Figure 1 results in relatively high benefits at relatively early retirement ages, with considerable variation across regimes and income levels, and both relative to the younger generation and in international comparison. Figure 6 shows that the equivalized disposable household income of retirees is higher than that of the general population and among the highest in the EU.[2] This holds for all deciles except the upper decile. This figure shows that the French system as a whole is redistributive in favor of the lowest two deciles of pension income. This is mainly the effect of a minimum pension in the base pillar and a means-tested minimum benefit (ASPA) in addition to the regimes shown in Figure 1.

Figure 6 – Relative equivalized disposable household income of pensioners



Scope: persons living in metropolitan France in an ordinary household, classified according to their employment status: inactive pensioners in the ILO sense (excluding cumulated employment-retirement); active persons in the ILO sense (employed or unemployed); total population (retired persons, active or inactive persons not retired).

Sources: COR annual report 2020, based on INSEE-DGFiP-CNAF-CNAV-CCMSA, Tax and Social Income 2018 survey

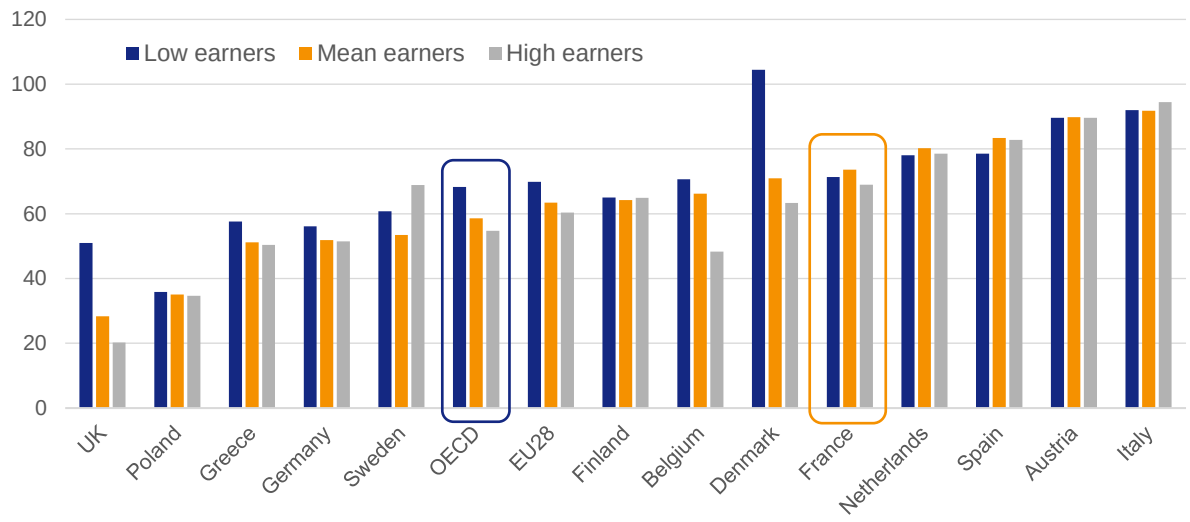
[1] The first letter is distributed at age 35. Thereafter, every 5 years. From age 55 onwards, this letter also contains information on the predicted amount of pension benefits as a function of the claiming age.

[2] Disposable income corresponds to all income (earned income, pensions, income from assets, social benefits, maintenance payments, net of taxes and social security contributions). In addition, the consumption unit system usually used has a share for the first adult in the household, 0.5 share for each other person aged 14 and over, and 0.3 share for each child under 14.

About a quarter of the system's expenditure serves redistribution (Delevoye, 2019, p. 7). The system thereby successfully prevents old-age poverty. In international comparison across the OECD countries, France has one of the lowest old-age poverty rates, which is considerably lower than poverty in the general population as we have shown in Figure 7 of the report (vertical axis, see Chapter Three, section 1)).

The system is generous also for average and high earners in international comparison. This holds firstly for the net replacement rate which is high relative to the EU and OECD averages (Figure 7). The OECD replacement rates are synthetic constructs based on employees who receive a constant wage across their careers. The replacement rate is then defined as an employee's net pension benefit at retirement divided by that employee's earnings net of taxes and contributions. The OECD does this computation for an average earner and earners with 0.5 and 1.5 times the average earnings.

Figure 7 – Net replacement rates for low, average and high earners



Source: OECD "Pensions at a Glance 2019". Low/high earners have 0.5/1.5 times average earnings

6. Costs

As stressed in the report (Chapter Three, section 1) , France – with the exception of Italy – has the highest public pension expenditures measured in relation to GDP, about 3 times as much as the United States and about 50% higher than Germany. In spite of the French demographic advantage, the EU Commission's projections forecast that this will remain so at least until 2040 (Table 1).

The current contribution rate at average earnings is 27.5%, which is shared between employees (about 40%) and employers (about 60%). Since the system is in deficit, the

government adds funds of about 0.5% of GDP. If these government funds would be levied as contributions, the contribution rate would be about 28.5%. This is the highest contribution rate among OECD countries except Italy (33%) and is likely to exert negative work incentives. As a comparison, it is 18.6% in Germany (25.6% if all government subsidies were levied as contributions) with a considerably older population.

The key driver for the high pension expenditures is not a relatively high replacement rate (see Figure 6) but the time spent in retirement, measured as the life expectancy at the average age of labor market exit in each country, based on gender-specific period life tables. It is the highest in the OECD and about 4.5 (3.8) years longer than for EU average men (women) as we have shown in the report (see Figure 10 in Chapter Three, section 1).

APPENDIX 11

THE DELEVOYE REFORM PROPOSAL AND THE PROPOSED LAW OF JANUARY 2020

In July 2019, Jean-Paul Delevoye as High Commissioner for Pension Reform submitted a reform proposal (Delevoye, 2019) that recommended introducing a universal point system. Most elements were then submitted as a reform law (Projets de loi SSAX1936435L/SSAX1936438L) to the Assemblée nationale on January 24, 2020, although some detailed proposals of the Delevoye plan were left out of the submitted legislative proposal to become government regulations.

The essence of the proposal was to establish an AGIRC-ARRCO type of system into which all the other schemes would be merged in a 15-year gradual transition. Specifically, the first defined benefit pillar in the private industry (CNAV) would be transferred in this point system as well as the government employees' and all profession-specific schemes.

Contributed quarters would lose their dominant role in determining pension rights. The "system of quarters" would be turned into a "system of points" since points would become the main "currency" of the new system. Rather than only counting the 25 best years, the point system would honor the entire career.

The proposal would keep the AGIRC-ARRCO construction of a "purchase value" of points (now €10 per point) and a "service value" of points (at retirement, each point is converted into an annual pension of €0.55). For men with 22.7 years of remaining life expectancy after retirement (Figure 3-2) this corresponds to €12.48 pension benefits for each €10 contributions, higher for women. It is claimed that this corresponds to a net replacement rate of 70% for an employee with a standard career (Delevoye, 2019, p. 19 and pp. 122-130).

The contribution rate would also change only marginally to 28.12%, shared 40%/60% between employees and employers (Delevoye, 2019, p. 32).

An important point of the proposal is a gradual change of indexation of past earnings from inflation to wages. This would reduce the dependency of expenditure projections on productivity assumptions and thus make balancing the system easier. The Delevoye plan does not propose to index benefits in payment to wages.

Although a motto of the proposal was "every euro earns the same pension", the proposal claims that it will be more redistributive and would reduce the Gini coefficient among pensioners born in 1980 from 36% to 33% (*Étude d'impact*, 2020, op. cit. p. 132). The key element of redistribution would remain a minimum pension. The Delevoye plan proposes a universal minimum pension with benefits at 85% of the minimum wage which will be pro-rated according to service life. Second, as currently, the plan proposes to give points during periods of unemployment, illness, maternity, child care and other long-term care but more generously than in the current system. A third element of redistribution is a two-part contribution rate which creates a progressive schedule. This is similar to the current system, but the parameters make it slightly more progressive for very high earners. The first part of the contribution rate (25.31%) is capped at about three times the average wage and is the basis for the point calculation. The second part (2.81%, currently 2.65%) has no ceiling, does not relate to a claim on pension benefits and thus corresponds to a pure tax to finance the redistribution.

The politically most controversial element of the proposal is the age of full rate as the main balancing mechanism for financial sustainability. The proposal maintains the minimum eligibility age of 62 to claim benefits, although it foresees, as currently, exceptions for workers "who had long, difficult careers or who are no longer able to work." The key point, however, is to recommend a universal "age of full rate" that applies to all insured, and which serves as the main lever to balance the system. The proposal states:

> "This full pension age is the age at which the financing of pensions can be balanced, the system's soundness can be ensured, and a satisfactory retirement can be guaranteed for individuals. In concrete terms, the age of the full rate is that which makes it possible to guarantee and keep constant the equilibrium yield of the pension system between generations, i.e. the ratio of the service value and the acquisition value of the points. Thus, the 5.5% return [projected by Delevoye] is obtained when the insured reaches the age of the full rate of his or her generation. If the insured employee decides to leave before that age, the return will be lower and if he decides to leave after that age, the return will be higher. For the purpose of setting this full rate age at the start of the reform, it is proposed to reproduce the currently projected average full rate starting ages in 2025, i.e. 64 years."

The Delevoye plan does not create an automatic balancing mechanism in a strict sense, such as a mechanical indexation of the age of full rate to life expectancy. Rather, such indexing would only be a default: "In the absence of a decision by the social partners, taking into account the evolution of life expectancy will result in an average increase in the age of

the full rate so that the gains in life expectancy will be shared 2/3 in working life and 1/3 in retirement." It should be noted that the proposed default balancing mechanism takes care of changes in life expectancy, but not of changes in the system dependency ratio (pensioners per workers) as a consequence of business cycles, economic crises or a change in fertility.

Other elements of the Delevoye proposal include partial retirement and detail the child benefits and benefits in case of divorce and widowhood, all in terms of additional points. The new system is supposed to smooth short-term imbalances with the help of a reserve fund, improve the current digitalized information and accounting system with up-to-date pension information and create a more transparent and inclusive governance. Finally, the proposal contains pro-rata rules for the transition which guarantee that "current retirees will not see their situation changed". Hence, the system proposed by Delevoye would not be able to significantly reduce the high financial burden during the 15-year transition period.

APPENDIX 12

TRANSITION FROM DB TO POINT SYSTEM

By Peter Diamond

Many countries have modified their pension systems over the last few decades. Most modifications have adjusted the parameters in existing plans in light of costs. But a few countries have made structural changes. Such large redesigns need transition rules for fairness and political acceptability. In considering transition, the Delevoye proposal uses a single division between those to stay in the old plans and those to go into the new plan. While older cohorts remain in the existing system,[1] all of the younger cohorts go into the new system while receiving a number of points to reflect their past experience. Key issues are the normative evaluations and the worker perceptions of the fairness of the number of points to be received by the younger group.[2] Also, a transition period of up to 15 years is to be allowed for adjusting to the new plan.

The Delevoye plan states its transition goal as "A system that will guarantee the rights acquired in the old system." "These accrued rights relate to the points or quarters earned in respect of activities carried out as well as those obtained in respect of periods of

[1] It is not clear whether the adjustment of benefits in payment would be subject to the old rules if the new rules were to adopt a different adjustment rule.

[2] Although the switch from a defined benefit plan to a defined contribution plan is more complex than changing the nature of a defined benefit plan, still, an indication of the difficulty in providing satisfactory claims in the new system comes from the experience in Chile in its switch to a defined contribution plan starting in 1981. Civilian workers were left free to switch to the new system, because constitutional protection of their property right to an entitlement in the old system prevented the government from forcing them. Those switching were given "recognition bonds," which were supposed to represent the contributions made in the old system. The amount of this bond at the individual level was calculated on the basis of the average taxable income reported in the months for which contributions were paid, the number of months of contribution since affiliation to the old system, and actuarial factors that distinguished by sex and age. Arrau (1992) has argued that substantial redistributions occurred with this procedure, some of which were regressive and others progressive. It is estimated that over 10,000 affiliates switched to the new system even though it was financially costly for them. During the 1980's, the authorities passed several laws allowing affiliates that had been in the old system to return to the old system (Diamond P. and Valdes-Prieto S. [1994], "Social security reform," In: B. Bosworth, R. Dornbusch and R. Laban [eds.], *The Chilean Economy*, Washington, D. C.: Brookings Institution).

business interruption suffered." "In order to take these rights into account, a photograph of the rights relating to the insured careers will be taken on December 31, 2024. For the sake of clarity, these rights from the past career will be transformed into points in the new system and will be notified as such to the insured persons concerned." However, it is inherently complex to define the value of the "rights" in the old system, since benefits are determined by future developments of the economy as well as future developments in individual earnings. Moreover, a plan that weights all earnings has a different pattern across worker histories than one that considers only the highest 25 earnings (as is CNAV).

Thus, it may be worthwhile to also consider an alternative approach that makes use of both old and new benefit calculations. For example, in its pension reform, Sweden used two birth years to divide the population into three sets of cohorts, with the middle set receiving benefits based on a weighted average of old and new plans, while the youngest were completely in the new plan and the oldest completely in the old plan. Thus, rather than relying only on the fairness achieved by providing points in the new plan to recognize previous acquired rights, a weighted average of old and new plans provides some adjustment that recognizes that plan benefits adjust to overall economic conditions and to individual future earnings. A weighted average provides some recognition for later realizations, while, at the same time, workers share in the process of adaptation.

Sweden's transition was from a plan with benefits based on the best 15 years of earnings to a Notional Defined Contribution (NDC) plan with benefits based on all years of contributions. In 1994 the Swedish Parliament decided on such a change. The legislation for this change was decided four years later in 1998. The current French circumstances are more complicated as the contribution rate is to be changed and the current and previous contribution rates were not uniform across the plans being combined. Neither of these were issues in Sweden.

For the oldest group,[1] Sweden kept the calculation of initial benefits under the old plan, but, going forward, this group would receive adjustment of benefits in payment under the same rules as those under the new plan. This is in keeping with common practice when parameters in a plan are changed. For example, when Germany adjusted the increase in the value of a point for the dependency ratio, as well as average wage growth, this altered the time path of benefits for the already retired as well as for new retirees.

For those in the youngest[2] and middle groups who had earnings covered by the old plan, the Swedish transition included credits in their new NDC accounts in recognition of past covered earnings that were subject to mandatory contributions. The notional account of

[1] Based on a 20-year transition only those born in 1934 and earlier were to stay completely in the old plan initially, but, as the legislation became delayed, birth cohorts 1935, 1936 and 1937 also stayed fully in the old plan.

[2] Those born in 1954 and later were completely in the new plan.

each contributor was created based on a calculated contribution rate of 18.5% applied to annual reported earnings, although not all past earnings were subject to this contribution rate.[1] And (notional) interest-rates were credited to these accounts, using the annual change in average income in Sweden for persons aged 16-64. This was the basic transition from the old DB ("defined benefit") to the new NDC.[2]

The middle group included those between the birth years 1937 and 1954, who received a benefit based on calculations using both the old and new benefit formulas.[3] This started with the 1938 cohort using weights of 80% from the old DB-plan and 20% from the NDC. The DB calculation used all of earnings from each year worked, but multiplied the calculated benefit by 80%. The NDC calculation gave credit for only 20% of annual contributions, including the calculation for covered earnings earlier in their careers. For younger members of the middle group, the weights shifted by 5% each year until the eligible middle group was completely covered. A further step was made available for the middle group. If the DB pension as earned up until the year of the parliamentary decision in 1994 was larger than the sum of the DB and NDC pension according to transition rules, this higher amount would be paid.

A further element of the reform affected all retirees, current and prospective. Under the old DB plan, pensions under payment were indexed by the change in consumer prices. This changed to the same indexation that was decided for the NDC pensions, equal to average income minus 1,6%. Moreover, if, in light of the financial position of the plan, the "brake" was invoked affecting increases in benefits in payment, that would also apply to all retirees.

To start discussion of transition, it is useful to ignore adjustments for length of career and age of claiming, as the new plan will have related rules, which can be adapted as appropriate.[4] Similarly, the adjustment of benefits in payment after reform will have its rules, which can be adapted as appropriate.[5] Focusing just on the underlying benefit formula used in determining initial benefits, CNAV provides an initial benefit that is proportional to the average of the best 25 years of price-adjusted covered earnings. In contrast, AGIRC-ARRCO is a point system. Purchases of points are based on

[1] The actual contribution rate had been 18.5% for some time but was much lower earlier. Going forward the rate would continue to be 18.5%.

[2] To match Swedish law, these "retroactively" created accounts should also have been credited survivor bonuses in the same way as the accounts were from 1998. However, to reduce the costs of the system, those "retroactive" survivor bonuses were never credited.

[3] Despite the delay in implementation, the initial 20-year transition rules were kept in place as if starting with the 1935 cohort.

[4] Such an adjustment would look to the history of quarters earned as part of the transition.

[5] Given the extensive set of plans in France to be replaced by a single national plan, a full discussion of transition is far beyond what this Commission could analyze. The discussion here is limited to how to shape a transition for workers covered only by CNAV and AGIRC-ARRCO.

contributions divided by the acquisition value of a point, with different acquisition values between AGIRC and ARRCO. Again ignoring the adjustments for the timing of claiming, accumulated points are converted to an initial benefit based on the service value of a point at retirement time. Pensions in payment are then adjusted for inflation.[1]

There are several dimensions to considering fairness in a transition between benefit plans. whether done with two groups or three. Each worker going into the new plan should receive points reflecting past participation. Moving from one point system to another point system is readily done by selecting a suitable relative price of the points in the two plans.

The issue is more complex when moving from a high 25 defined benefit plan to a points-based plan. As in Sweden, one could focus primarily on previous contributions, providing a hypothetical history of the price of a point to be used along with actual contributions. By backtracking how the new system is expected to work, this is akin to considering benefits as if the new system were in place earlier.

However, insofar as the new plan has been chosen to be less costly than the old one, it raises the issue of the sharing of that decreased cost across different cohorts. Moreover, the approach based on contributions as if in the new plan does not recognize the role in benefit determination of having only the high earnings in the definition of the reference wage. Indeed, the Delevoye approach is based on consideration of the benefit formula, adjusted for the incompleteness of the earnings record to date.[2] This may be particularly an issue insofar as the evolution of points prices is chosen to be different from the weighting scheme used in determining which were the highest earnings years. That is, with a micro-simulation model including actual histories and projected wage patterns, one could tell the difference in pattern between benefit patterns associated with point recognition for the past and the outcomes of the simulation model. That is, rather than focusing only on contributions, one might want to give some attention to anticipated benefits if the old benefit formula stayed in place. This can be done using a formula as suggested by the Delevoye plan. An advantage of the three-age group approach with a weighted mix of old and new plans is that it reflects directly, to some degree, the difference in outcomes between a high-25 plan and a points plan.

[1] The main regime covers private, non-agricultural workers, about 69% of the French work force. It makes up about two-thirds of the French pension expenditures (€205 billion out of €320 billion in 2019). It consists of two pillars. The base pillar (CNAV) is a defined benefit system, while the mandatory supplemental pillar (AGIRC-ARRCO) is a point system.

[2] The calculation of this reference salary will be adjusted on a generational basis to take account of the fact that the insured's career is not over on that date.

APPENDIX 13

POLICIES IN EUROPE THAT SUPPORT EMPLOYMENT OF OLDER WORKERS

France Stratégie (2018)[1] collected a number of policies that European countries currently have adopted. We quote from their exposition (in italics) and provide additional evidence.

1. Finland

Often cited as an example, Finland has defined a comprehensive strategy to support the employment of older people since the end of the 1990's, in parallel with a pension reform. This has been translated into various programmes, carried out with a variety of stakeholders (national and local public players and professional organisations) and along different lines: support for the unemployed, improvement of working conditions; development of specific training and education programmes and in particular an intensive communication campaign aimed at senior citizens and employers; research and development programme on understanding the consequences of ageing on the labour market and identifying the needs of older workers; programme on absences and causes of occupational illnesses and accidents; targeted actions on cooperation and interaction between teams and management to increase productivity and quality of life at work; system of employment subsidies specific to the over-54.

Isolating the impact of Finland's strategy from any other potential cofounders is a difficult challenge. However, Arnkil et al. (2011) find significant positive impact on increasing the average retirement age and participation levels of ageing workers within the workforce. The authors also provide evidence of a reduction in discrimination or stigma towards older workers.

[1] France Stratégie (2018), *Les seniors, l'emploi et la retraite*, by E. Prouet et J. Rousselon, report, October.

2. Germany

In Germany, the industrial sectors were the first to implement, through collective agreements (metal, steel, chemical, etc.) 3 measures to adapt working conditions to the ageing of the workforce, to promote employee health and to increase employability. Various evaluations are carried out on these collective agreements, particularly on measures relating to the attractiveness of jobs, especially in SMEs in rural areas. Another specific scheme: Perspective 50+, an individualised support programme for the unemployed over 50 years of age, based on individualization of support and mobilization of local networks through partnerships, with financial assistance for hiring. Evaluations have shown positive effects but mainly for the youngest seniors (around 54 years old). In addition, public authorities are publishing examples of good practice in recruitment strategies for older workers as well as in human resource management for all age groups.

Evidence suggests that the reforms of the early 2000's and the focus on rehabilitation lead to a fall in benefit recipiency rates (Burkhauser, Daly and Ziebarth, 2016[1]) but also to a marked decrease in the nominal benefit level for disabled persons (Sternberger-Frey, 2014[2]).

3. Denmark

Denmark is an example where the employers show positive involvement of employers in relation to adaption efforts. 42% of Danish companies employed at least one person with a long-standing health problem in 2012 and only 17% of Danish companies reported that they did not initiate individual arrangements with the relevant employees who faced long term sickness to facilitate their return to work (SFI 2012, NFA).

In the public sector, one of the main tools for keeping older people in employment is flexible working time. Collective agreements for municipal employees allow employers to reduce working time for those over 60 by granting them additional days off with salary maintenance. The number of days increases with age. Following the Danish Welfare Agreement of 2006, a specialized body called the Prevention Fund was established in 2007. The Fund grants financial assistance to companies and organisations interested in innovative measures to reduce wear and tear in the workplace with measures not targeted at specific ages. In order to improve working conditions, this Fund launched in

[1] Burkhauser, R. V., M. C. Daly, and N. R. Ziebarth (2016). "Protecting working-age people with disabilities: Experiences of four industrialized nations." *Journal for Labour Market Research* 49, No. 4, pp. 367-386, October.

[2] Sternberger-Frey, B. (2014). "Invalidität als Armutsrisiko-können private Berufsunfähigkeitsrenten die Versorgungslücken schließen? Analyseergebnisse einer unabhängigen Testorganisation." *Vierteljahrshefte zur Wirtschaftsforschung* 83, No. 3: 113–127.

2012 “preventive self-help kits” with financial assistance to enterprises. These kits provided detailed instructions to improve health and safety conditions and limit early exits and burnout. The kits were well received and widely used, with the OECD deploring the fact that they are no longer being distributed.

4. Sweden

The Commission on Retirement Age has identified an increase in working environment problems related to stress and psychosocial pressure. Considering that these problems contribute to premature exit from employment, the Commission recommended in 2013 to strengthen the ongoing development efforts to provide more resources for research and knowledge development, and to train occupational safety officers and representatives. In 2016, the Working Environment Authority has issued new regulations concerning the organizational and social working environment, developed in agreement with the social partners.

Financially, Sweden has “wage-subsidised employment” which tries to reduce the frictions in working life for people with reduced ability to work and increase incentives for companies to hire these individuals. The support is provided upon request from the Swedish Social Insurance Agency.

The current legal setup means that employers pay the wage for the first two weeks of sick leave and there legal obligations to facilitate the return to work. According to the SCB statistics, the majority of employers offer employees who experience worsening in their health status a new position and related training.

The recent changes weakened the social security net and increased the risk of poverty for persons with health impairments (Cravo Oliveira Hashiguchi, 2020[1]).

5. Netherlands

In the Netherlands, the Flexible Work Act allows employees to temporarily or permanently increase or decrease the agreed number of working hours and to organise their working hours differently. The possibilities for refusal by the employer are limited. This may constitute a modality of end-of-career adjustment.

[1] Cravo Oliveira Hashiguchi, T. (2020). “Bringing health care to the patient: An overview of the use of telemedicine in OECD countries.” OECD, *Health Working Paper* No. 116.

The Netherlands made a large package of financial reforms. Hullegie and Koning (2018)[1], evaluate their policies to reduce the burden on the Dutch disability programme. In the 1980's and 1990's the Dutch disability program was considered out of control, they spent 4.7% of GDP on it (over 3 times OECD average). A series of reforms were put into place which ensured employers play important role of reintegrating disabled workers. One component was to enhance employer incentives, which was done by making them responsible for paying sickness benefits and strengthening their sickness monitoring obligations – "Gatekeeper protocol". Also make it more difficult to terminate the contract of workers with health problems or disability. The aim was to stimulate preventative and reintegration activities. In 2014, 17% of working population said they receive 1 or more workplace accommodations including physical work adaptions or flexible working hours. The cost to an employer when an employee gets sick are however very large. The authors show that the reforms improve the labour market position of workers who experience a health shock (less likely to receive DI and more likely to remain employed). Although France does not have a particularly large burden of disability benefits, they can learn from these to reduce early retirement – an alternative exit to the labour market. The incentives to consider from the employer perspective however, is whether the employer will benefit from letting an older employee retire, if the employer is contributing heavily to their pension.

6. Ireland

Ireland has a number of financial policies. Ireland has introduced a "partial capacity scheme", which provides benefits to workers who have an illness but can work in some capacity. State support also exists for private sector employers to encourage the retention of people with chronic illnesses in jobs through the "employee retention grant".

[1] Hullegie, P., and P. Koning (2018). "How disability insurance reforms change the consequences of health shocks on income and employment." *Journal of Health Economics,* No 62, pp. 134-146.

APPENDIX 14

THE ROLE OF DISABILITY INSURANCE IN EUROPEAN LABOR MARKETS

Disability insurance systems have two potentially contradictory goals. On the one hand, they aim to ensure that workers with a disability do not face economic hardship and thus provide compensation for income losses due to reduced work capacity. On the other hand, disability insurance programmes also aim to avoid exclusion and encourage participation in employment.

As disability insurance uptake increases markedly with age up to the normal age of retirement, the design of disability insurance systems is likely to have profound implications for the employment rates of older people. There is large variation across OECD countries in their policies to achieve these goals, which results in vastly different outcomes in terms of both income protection and labour force participation of workers with disabilities.

Two important aspects of the disability system have been identified by OECD (2010).[1] The first is the extent of financial compensation available to workers. The second is the extent to which policies encourage the integration of workers with disabilities into the labour force. The compensation dimension includes aspects such as the coverage and level of disability benefits, the minimum degree of incapacity needed for benefit and full benefit entitlement, the type of medical and vocational assessment, as well as information on sickness benefits. The integration dimension considers, among other things, the complexity and consistency of benefits and support systems, the degree of employer obligations towards their employees, the timing and extent of vocational rehabilitation, and the existence of work incentives for beneficiaries. The OECD (2010) defines three sets of countries based on their use of these dimensions. Countries with the socio-democratic model have high compensation policies and substantial policies towards integration (Scandinavia, the Netherlands, Switzerland). Countries with the liberal model (such as Australia, Japan, the United Kingdom, and the United States), are characterised by less

[1] OECD (2010). "Maladie, invalidité et travail. Surmonter les obstacles." November.

generous and less accessible compensation and less well developed employment and rehabilitation measures. Countries with the corporatist model (largely comprising European countries such as France, Italy, Spain, and Poland) lies somewhere in between. In these, access to and levels of benefits are higher and closer to the socio-democratic model but support for employment and rehabilition is not as strongly developed. Over time, regardless of model, the direction of policy in the OECD has been to reduce the compensation dimension (OECD, 2010) and expand on integration (Böheim and Leoni, 2017).[1]

These different institutional arrangements make comparison of the effectiveness of disability policies different across countries but a recent study (Hemmings and Prinz, 2020)[2] identified the same basic challenges in all countries for sickness and disability benefit systems, these being:

- how to assess who should be entitled to what types of services and benefits, and how to prevent unnecessary benefit claims;
- how much to pay in order to find a balance between securing adequate incomes and providing sufficient incentives to seek work;
- how much employer co-payment is needed to seek to encourage sufficient preventive and return-to-work efforts.

Evaluation of disability reforms is hampered by the fact that they often introduced at the same time as pension reforms which increase the retirement age, and the institutional details of the system vary considerable across countries, even those within those that have the same model. In a recent comparison of reforms in four countries in the socio-democratic set (Switzerland, Sweden, Norway and The Netherlands) in a review for the OECD, Hemmings and Prinz (2020) drew the following lessons:

- The case of the Netherlands, which placed the burden for reduction of disability strongly on employers by making them liable for the insurance premiums for their workers, demonstrates that employer incentives are critical. Further, support for a reform that (substantially in the case of the Netherlands) increases employer costs for sickness and disability can be obtained when all parties agree that the outcomes are inacceptable and unsustainable. Hullegie and Koning (2018) also evaluate the Dutch reforms and conclude that the reforms improved the labour market position of workers who experience a health shock (they were less likely to receive DI and more likely to remain employed);

[1] Böheim, R. and T. Leoni (2017). "Sickness and disability policies: Reform paths in OECD countries between 1990 and 2014." *International Journal of Social Welfare* 27, No. 2, October.

[2] Hemmings, P. and C. Prinz (2020). "Sickness and disability systems: Comparing outcomes and policies in Norway with those in Sweden." Economic Department, *OECD Working Papers*, No 1601, February.

- The Swiss case (and others) shows that switching medical assessment of disability from general practitioners to a public authority controls case growth;
- The Swiss case shows that greater early identification of problems, matched with new early intervention services, is critical. Losing time is costly because a return to work is unlikely as soon as workers have shifted their mindset to inactivity. More recent reform in Switzerland targeted at disability beneficiaries shows that bringing long-term beneficiaries back into the labour market is much less promising than preventing;
- A key lesson from Sweden is that employee incentives and enforced regulations can work very effectively. When sick pay was reduced in the 1990's, in the course of a severe economic downturn, absence rates fell dramatically; even just a 10 percentage point decrease in the sick pay compensation rate had a large effect. When sick pay regulations were overhauled ten years ago, with new eligibility criteria that support a much swifter return to the labour market, sickness trends underwent further dramatic change;
- Another Swedish lesson is that a cultural shift is possible: the degree of change in sickness and disability in Sweden in the past decade is unparalleled.

While these lessons are drawn from a comparison across these relatively similar systems, they also appear generalisable to other settings. First, policies need the support of both employers and the government. Second, using financial incentives for employers appears to have an impact on disability claims, but it is also clear that putting all the risk upon employers imposes a heavy burden on employers, particularly those in small and medium-sized enterprises. In the Netherlands, in response to employer pressure, the share paid by employers for disability insurance has been reduced since the original reforms in the 1990s and 2000s. Third, administrative changes (such as having medical assessments made by third parties rather than family doctors) can reduce claims. Fourth, workers respond to the package of incentives. Fifth, whilst disability rolls have been falling, in several countries this has been associated with lower benefits and lower incomes for those on disability benefits. This has led some commentators to argue that the OECD-wide policy of decreasing the value of compensation provisions of policies to support workers with chronic illness should be pursued with caution (Hemmings and Prinz, 2020).

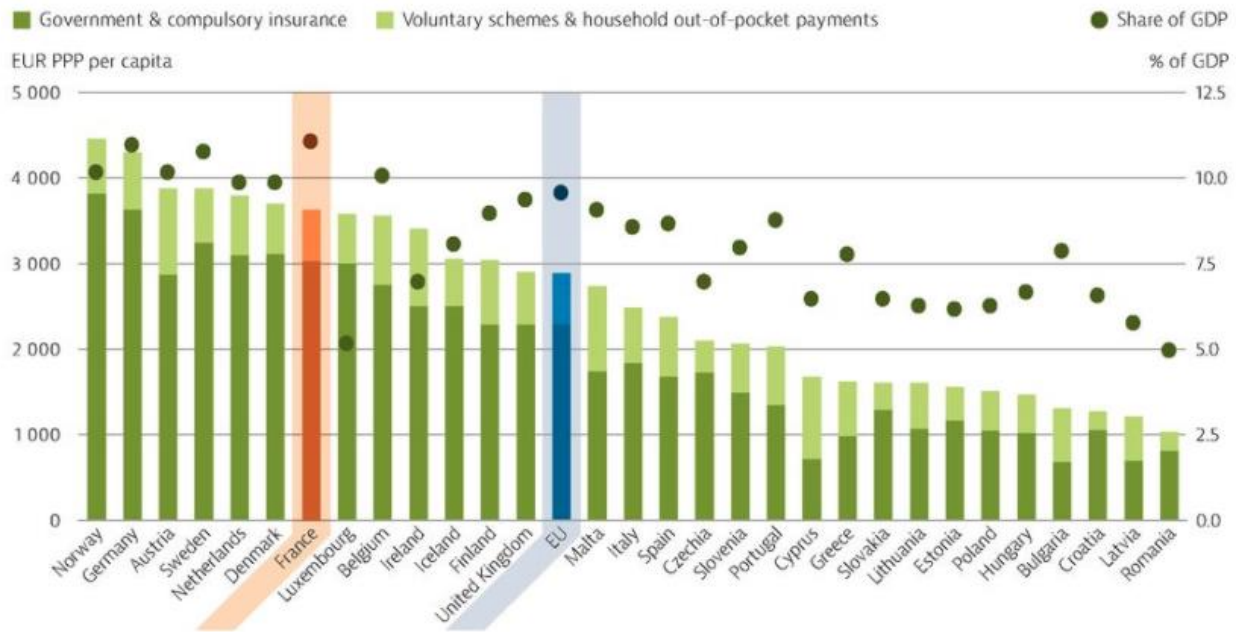
APPENDIX 15

THE FRENCH HEALTH CARE SYSTEM

1. Funding Issues

France has one of the highest expenditures on health care in the OECD, both as a share of GDP and per capita.

Figure 1 – Healthcare expenditures



Source: OECD Health Statistics 2019 (data refer to 2017)

In common with other European countries, coverage for healthcare costs are high. But despite many reforms, there remain issues in the way in which health care is funded. These include:

- Overlapping public and private insurance, resulting in duplication and complexity of negotiating the system;
- A small proportion of users pay very high out-of-pocket payments. The healthcare and insurance system involve patient co-payment at point of use. 95% of the population are covered by supplementary health insurance that covers these co-payments. Lack of health insurance primarily characterizes populations who are excluded from the labour market or are marginalized in society;
- There is high use of fee for service in primary care and hospital care in medicine, surgery and obstetrics. The other sectors are financed by budgets, often determined with respect to historic levels of activity bases. Current pricing does not in general reward quality of care or reward prevention;
- There is lack of transparency over costs for users.

2. Provision Issues

On the provision side key issues are:

- Public health and prevention policies have been neglected relative to curative care. This is not unique to the French system, but current incentives in the system maintain this;
- The distribution of services is uneven and access to doctors is an issue for around 8% of the population, mainly in rural and deprived areas (referred to as the issue of “medical deserts”). Despite many reforms that have sought to address this, this problems remains;
- There is a lack of co-ordination between public and private systems, GPs and specialists which hinders the treatment of longer-term (chronic) conditions.

In general, the lack of clarity over costs of treatment coupled with high insurance coverage for most of the population leads to (a) lack of competition between providers of health care (b) moral hazard, particularly in the use of specialist services and (c) possible “demand inducement”, whereby healthcare providers increase the usage of their services beyond what is medically necessary. These are long-standing issues that have been the focus on several reforms and in the longer term require more radical changes to the way healthcare is funded and doctor and hospitals are reimbursed (Dormont et al., 2014).

Various key reforms referred to in the main text are briefly outlined here.

Use of P4P in healthcare in France

A voluntary pay for performance scheme was introduced in 2009, consisting initially of voluntary contracts between SHI and GPs to improve individual practice (*Contrats d'amélioration des pratiques individuelles*). This has a focus on care for chronic illnesses (remuneration based on public health objectives – ROSP, *Rémunération sur objectifs de santé publique*). GPs agreed to meet specific goals including chronic disease management, and preventive health care. Following its success with GPs, the scheme was incorporated into the physicians' collective bargaining agreement in 2012. By 2013, nearly 60% of physicians participated in ROSP. In 2016 the system was overhauled, to reinforce its role as a lever for the evolution of practices with 17 new indicators; to do so, it was refocused on clinical practice alone, with an increased emphasis on prevention (with 5 new indicators) and reinforced monitoring of chronic patients, extended in particular to patients suffering from hypertension or with cardiovascular risk. Progress in meeting these has generally been positive, though relatively incremental and poor in terms of screening for cancer. In addition, the amount of expenditure on these schemes has been small relative to payments for fee for services for non-hospital services.

ALD scheme for full coverage of chronic and costly diseases

The *Affections de longue durée* (ALD) scheme covers more than 15% of the French population (representing about 65% of total health care expenditure) for 31 long and costly diseases. All of the severely chronic patients (for example, severe asthma) are under the ALD system which offers close to zero out-of-pocket payments for services in relation to that particular condition. Services for other conditions than the ALD (such as flu), for non-severe manifestations of the ALD (such as light asthma) or for preventative services (such as physical activity for primary prevention) fall outside the scope of the scheme. Shifting the scheme's focus from illness coverage to health maintenance/improvement has been recommended by the Door report (Door, 2016),[1] and the first step could be a basket of preventative services for patients with light chronic illnesses or well-identified risk-factors, whether individual (genetic or behavioural), environmental or occupational.

Article 51 and experimentation at local level in healthcare payments

Since the 2018 social security financing Law (LFSS), about 50 local and 10 national experiments have been developed to increase the P4P component in existing activity-based payment schemes. For instance, quality-based rewards and risk-adjusted payments were introduced for episodes of care (such as hip replacements) to enhance care continuity

[1] Door, J. P. (2016). *Rapport d'information n° 1271 en conclusion des travaux de la mission d'évaluation et de contrôle des lois de financement de la sécurité sociale sur les affections de longue durée*, Assemblée nationale.

through a better cooperation between hospitals and ambulatory care providers, prevention, and care appropriateness. These "article 51" experiments, as they are known, show the ability to empower local stakeholders with reform design, which is rather new in centralized France, and to request reliable evaluation for the larger experiments, in an attempt to measure impact and to document scaling up.[1]

Uneven distribution of provision of care

The term "medical deserts" describes territories where inhabitants have less access to healthcare providers. It is not a new expression to describe regions of France: evidence suggests that inequality in spatial distribution of medical resources has been an issue since the 18th century. Presently the density of healthcare as measured by doctors per capita in some regions is double that of others (Ministry of Solidarity and Health, 2016). This results mainly from self-employed doctors being able to reside wherever they want. The discrepancy in resources is particularly the case for ambulatory care (so called "city care" in France) (HCSP, 2017).[2] Silhol and Ventelou (2020)[3] highlight that GPs working in these areas have more patients than in other areas, that patients are offered shorter appointments, and that preventative care is significantly less common in low medical density areas and the subscription of opiods is significantly higher. In terms of geographical distribution, medical deserts are located in two types of area with rather different population profiles. The first is peri-urban areas around larger cities. These tend to have younger populations and strong population growth. The second is less favoured rural areas, characterised by older, poorer populations with high health needs (Dumontet and Chevillard, 2020).[4]

Recent attempts to deal with this problem have used a range of initiatives to increase the supply of care in these areas. In 2012 and 2015 the Ministry of Health created financial incentives for health workers to move to under-supplied areas. A public service commitment contract is offered to medical and dentistry students and residents who receive a monthly allowance during their studies in return for a commitment to work afterwards in an underserved area. There have been general expansions in the supply of new doctors: in 2017 an increase of 6% in entry into medical schools was announced, although this currently does not apply to nurses and pharmacists. There are also local level initiatives focusing on qualitative incentives, with the aim of improving the financial position

[1] https://solidarites-sante.gouv.fr/systeme-de-sante-et-medico-social/parcours-des-patients-et-des-usagers/article-51-lfss-2018-innovations-organisationnelles-pour-la-transformation-du/article/experimentations-en-cours

[2] Haut Conseil de la santé publique-HCSP (2017). *National Health Strategie*. Contribution of the High Council of public health.

[3] Silhol, J. and B. Ventelou (2020). "Les zones d'intervention prioritaire reflètent-elles des écarts de pratiques des médecins généralistes," Insee, coll. "Documents de travail", N0 G2020/01, February.

[4] Dumontet, M. and G. Chevillard (2020). *Remédier aux déserts médicaux*, Paris, Rue d'Ulm.

of doctors. These include providing practice structures so that doctors are not faced with the high start-up costs in establishing their practices; offering the opportunity to work in group practices connected with other health professionals; paying doctors fixed salaries in lieu of the traditional fee-for-service arrangement; and covering their liability risk.

Whilst it is still to be established how well these policies are working – a recent review suggests that many of them have not been properly evaluated and/or have not had the desired impact (Dumontet and Chevillard, 2020) – these efforts should be complemented by an extension of telemedicine. This allows expansion of supply without the need for physical relocation of infrastructure and medical personnel to areas that are not currently attractive or profitable for providers.

Use of telemedicine in France

The law of July 21, 2009 on hospital reform and patients, health and territories (HPST law) defined and regulated telemedicine in France for the first time. At that point, five acts including teleconsultation and medical monitoring were allowed to be performed. This has been slowly extended since. The French Social Security Financing Act (LFSS) in 2018 took telemedicine from the experimental phase to being a mainstream inclusion in health insurance law. Nevertheless, usage has been low. For example, the 257,814 procedures subsidized in 2015 as part of experiments represent the equivalent of only 0.3% of outpatient procedures and consultations carried out by healthcare institutions in one year. While some recent changes allowed telemedicine to be provided for more services, the allowed activities only cover narrow range of situations in which telemedicine could replace traditional methods of intervention or make up for their absence, and the extension of telemedicine is limited by the current payment arrangements (Cour des comptes, 2017).

Covid-19 has dramatically changed the use of telemedicine. Pre-lockdown there were less than 10,000 teleconsultations per week. This multiplied 8-fold by the first week of lockdown. 75% of GPs have used teleconsultation since the start of the Covid crisis, whereas only 5% were using it before. The majority of consultations were not Covid related: only 10% of GPs declared Covid as the main cause of appointment. Usage dropped significantly since the relaxation of lockdown in mid-2020, but remains at a much higher level. The beginning of June saw 521,000 teleconsultations and the final week saw 396,000. While an often-raised concern is that telemedicine will be underused by the poor and the old, the lockdown period also changed the profile of patients using teleconsultation. Those under 30 years of age used it less often while those over 70 years of age used in more. While usage is still heavier in densely populated areas (mainly the Île-de-France region), it has risen significantly in other regions since Covid-19.

APPENDIX 16

CHRONIC ILLNESSES AND WORK

The set of chronic diseases is extensive, but the most common include cancers, after-effects of strokes, cardiovascular diseases, heart failure, diabetes, high blood pressure, chronic respiratory diseases, osteoarticular diseases and psychiatric disorders. While all these pathologies have their specificities in terms of management, what they have in common is that (a) they affect the quality of life of patients, limiting their capacities, have repercussions on their social environment and represent a major burden for society (b) are accessible to preventive measures, either to limit their occurrence for some of them, or to limit their severity for others, or to control their consequences and (c) they are rapidly increasing in the French population.

Evidence from many countries show that employment rates are particularly poor for those with learning disabilities and mental health problems, whereas those with diabetes, skin conditions or breathing problems are better (Eurostat 2017). For France, the GAZEL cohort study on the impact of diabetes on work cessation found that patients with diabetes type-2 lost an estimated mean time of 1.1 year in the workforce between 35 and 60 years old (Herquelot et al., 2011).[1] They had significantly increased risks of transition from employment to disability and retirement. The impact of diabetes for a 50-year-old single man was estimated to account for 3% of career lost over the working life. Individuals with a mental disorder are mostly employed, but many are at greater risk of job loss and permanent labour market exclusion than individuals who are not suffering with a mental illness, both in France and in other EU countries (OECD, *Employment Outlook*, 2012). Beck et al. (2011)[2] show even minor levels of depression are associated with productivity losses. EU-OSHA (2014)[3]

[1] Herquelot, E., A. Guéguen, S. Bonenfant and R. Dray-Spira (2011). "Impact of diabetes on work cessation: data from the GAZEL cohort study: impact of diabetes on work cessation." *Diabetes Care*, American Diabetes Association 34, No. 6: 1344–49.

[2] Beck, A., A. L. Crain, L. I. Solberg, et al. (2011). "Severity of depression and magnitude of productivity loss." *Annals of Family Medicine* 9, No. 4, pp. 203-311, July.

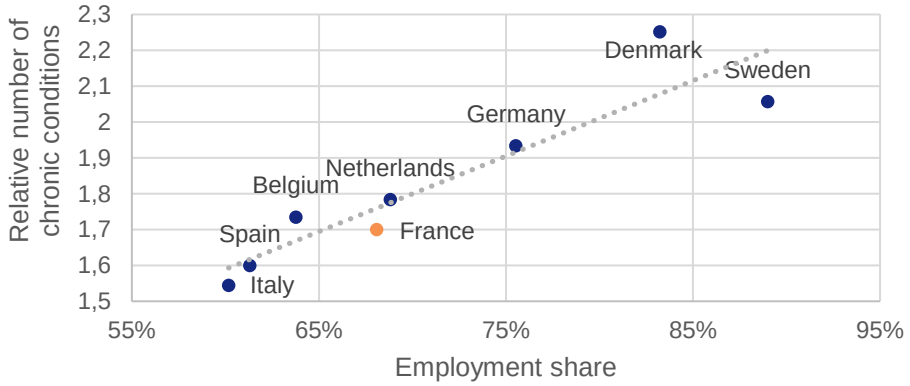
[3] EU-OSHA (2014). "Calculating the cost of work-related stress and psychosocial risks." European Risk Observatory, Literature Review, European Agency for Safety and Heath at Work (EU OSHA).

reports that the total cost of mental ill health in Europe is €240 billion per year, where €136 billion comes from reduced productivity including absenteeism and €104 billion comes from the direct costs such as medical treatment. Evidence suggests that this situation has worsened in Europe since the 2008-2009 recession (Evans-Lacko et al., 2013)[1] and may therefore worsen again due to the negative effects on Covid-19 on mental health and subsequent employment of those it affects (e.g. Banks et al., 2020; Banks and Xu, 2020).[2]

Despite this, the relationship between work and chronic health is not straightfoward. Whilst some individuals with chronic illness may be out of the labour market, many others are in the labour market. And labour market participation of those with chronic illnesses is affected by the precise details of government schemes are (including disability insurance, unemployment insurance, public support for employer actions to support workers).

Figure 1 plots the employment rate of individuals aged 55-59 in 8 European countries against the ratio of chronic conditions of non-employed individuals to chronic conditions of employed individuals. In France, with an employment rate of 68% as measured in the SHARE data, non-employed individuals have 1.7 times as many chronic conditions as employed individuals. The graph shows that in countries in which a higher proportion of those aged 55-59 are employed, the non-employed are relatively sicker, indicating that as employment in this age group expands so does the share of individuals with chronic conditions who are employed.

Figure 1 – Employment rate and relative number of chronic conditions in the employed and not employed for individuals aged 55-59, 2015-2020



Source: Own tabulations based on SHARE Waves 6,7 and 8

[1] Evans-Lacko, S., E. Brohan, R. Mojtabai, and G. Thornicroft (2013). "Association between public views of mental illness and self-stigma among individuals with mental illness in 14 European countries." *Psychological Medicine* 42, No. 8, pp. 1741-52, November.

[2] Banks, J., H. Karjalainen, and C. Propper (2020). "Recessions and health: The long-term health consequences of responses to the coronavirus." *Fiscal Studies* 41, No. 2, pp. 337-344, June; Banks, J., and X. Xu (2020). "The mental health effects of the first two months of lockdown and social distancing during the Covid-19 pandemic in the UK." *IFS Working Papers*, No. W20/16.

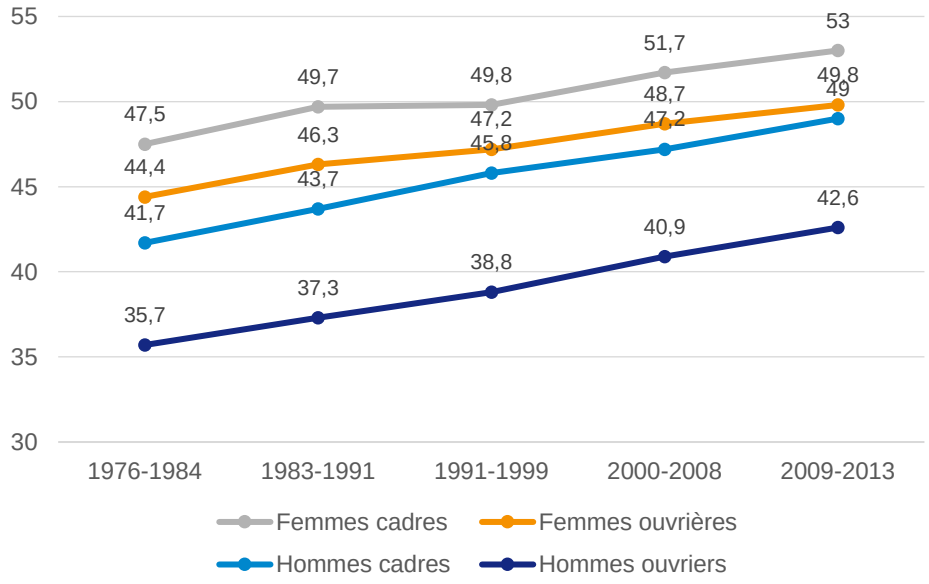
APPENDIX 17

ADDRESSING THE SOCIO-ECONOMIC GRADIENT

Compensation for individual differences in life expectancy at retirement is a very popular demand. It is especially salient for differences in life expectancy that are socially and economically graded, such as the gradient of life expectancy by income (see Figure 30 in the report, Chapter Three, section 1).

Health inequalities between occupational groups in France have remained constant between 1974 and 2013. The increase in life expectancy at age 35 follows parallel trends for blue and white collar.

Figure 1– Life expectancy at age 35 by occupation and sex

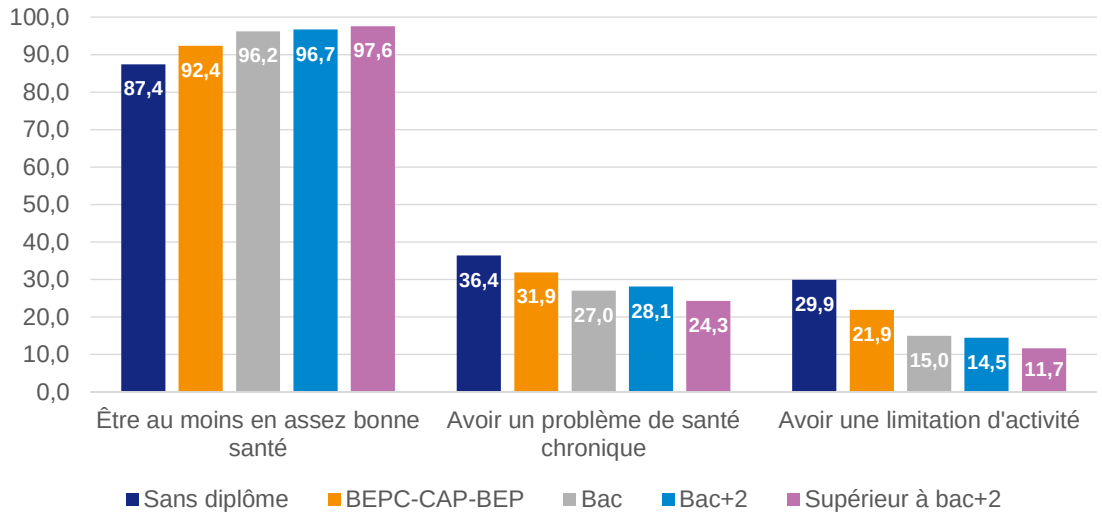


Source: "L'état de santé de la population en France" (DREES, 2017), Graph 3, p. 22

Life expectancy depends on many factors. Some factors are given and unchangeable (e.g., genetic makeup and parental living conditions); some factors are a large extent determined

by other persons (e.g., workplace and environmental conditions); and some factors are largely driven by own decisions (e.g., smoking and similar health behaviors). For some factors, the distinction is ambiguous. Environmental conditions depend on housing choices, health behavior from parental and societal influences. The main policy question is which elements of the gradient should be compensated for.

Figure 2 – Declared morbidity according to the level of education, in 2013



Source: "L'état de santé de la population en France" (DREES, 2017), Graph 3, p. 22

Adjustments for exogenous factors such as parents' income or bad working conditions have very similar social justice underpinnings as conventional income redistribution. But adjusting for exogenous random health shocks that affect life expectancy would undo some of the implicit insurance akin to rolling annuitization. However, the main question is close to unsolvable: how to define and in practice measure the "exogenous" part of the gradient? Part of the problem are simple measurement problems (e.g., workplace and environmental conditions over the life course), another more subtle part is reverse causality, i.e., the finding that bad health behaviors affect life-time income. Yet another related conundrum is whether society wants to compensate also those differences which are not directly related to income, e.g. gender, size and ethnicity, which have a well-documented association with life expectancy. The difficulty is indicated by the large confidence intervals around the socio-economic gradient that have been shown in Figure 31 (see the report, Chapter Three, section 1).

There are also practical challenges in targeting the right people. The German point system has experimented several times with upgrading a low number of points in a given year by introducing a minimum number of points. The main criticism of this approach was that it was conditioned solely on the labor income of the employee, independent of the actual household

income. The popular press quoted cases of part-time working spouses of rich partners who were heavily subsidized. These experiments thus remained temporary. A new version of this approach (called *Grundrente*, basic pension) was supposed to be introduced in January 2021. After much controversy about its targeting failures[1], it will upgrade low points in any given year only after means-testing by household income. However, the data requirements of this new system are formidable and yet unresolved.

[1] Börsch-Supan, A. and C. Coile (2020). *Social Security and Retirement Around the World: Reforms and Retirement Incentives*. Chicago: University of Chicago Press.

APPENDIX 18

MEASURING PRODUCTIVITY

The impression that human productivity rises quickly until it reaches a peak at a relatively young age and then declines is widespread and implicit in many discussions about aging. If the impression were true, population aging will have negative effects on overall productivity as the share of older workers is increasing. This is reflected in the macroeconomic literature, which often uses an increasing and then decreasing profile with a peak somewhere between age 30 and 45 (e.g., the seminal work by Altig et al., 2001).[1] Often regarded as an established fact, this impression has profound implications for personnel policies by employers and retirement choices made by employees. It is used as a motivation for early retirement policies in many countries.

However, recent microeconomic evidence differs from these "stylized facts" (Aubert, 2003; Aubert and Crépon, 2007; Malmberg et al., 2008; Göbel and Zwick, 2009; Börsch-Supan and Weiss, 2016; and Börsch-Supan, Hunkler and Weiss, 2019).[2] These studies find that there is an initial increase in productivity, probably a learning effect but then productivity remains flat until retirement.

[1] Altig, D., A. J. Auerbach, L. J. Kotlikoff, et al. (2001). "Simulating fundamental tax reform in the United States." *American Economic Review* 91, No. 3, pp. 574-595, June.

[2] Aubert, P. (2003). "Productivity, wage and demand for elder workers; an examination on French matched employer-employee data." *INSEE Working Paper*, Paris, September; Aubert, P., and B. Crépon (2007). *Are Older Workers Less Productive? Firm-Level Evidence on Age-Productivity and Age-Wage Profiles*. Mimeo; Malmberg, B., T. Lindh, and M. Halvarsson (2008). "Productivity consequences at the plant level of work-force ageing: Stagnation or a horndal effect?" *Population and Development Review* 34: 238–256; Göbel, C. and T. Zwick (2009). "Age and productivity – evidence from linked employer-employee data." *ZEW Discussion Paper* No. 09-020, Centre for European Economic Research; Börsch-Supan, A., and M. Weiss (2016). "Productivity and age: Evidence from work teams at the assembly line." *The Journal of the Economics of Ageing*, Vol. 7(C), pp. 30-42, April; Börsch-Supan, A., C. Hunkler, and M. Weiss (2019). "Big data at work: age and labor productivity in the service sector." Discussion Paper, Munich Center for the Economics of Aging (MEA), Max Planck Institute for Social Law and Social Policy.

Estimating age-productivity profiles has been on the agenda of labor economists for a long time (Skirbekk, 2004; Gelderblom, 2006).[1] It encounters fundamental methodological challenges, in particular measurement and selectivity. These methodological challenges have made it hard to distinguish fact from fiction, which has contributed to the popular misconception.

Productivity is hard to measure directly. Previous literature has used hourly wages as a proxy for productivity. However, hourly wages are not only determined by productivity but also union negotiation, company policy and seniority rules. Other studies have used superiors' assessments. However, these may suffer from exactly the prejudices that created the myth. While it is well documented by occupational medicine, cognitive psychology, and gerontology that muscle strength, sight, lung, kidney, and heart functioning, and many other biometric indicators deteriorate from early age onwards, experience and the ability to deal with human nature appear to increase with age. Since the latter characteristics are hard to measure, there is a bias towards direct measures that decline early in life. This may have contributed to the above-mentioned impression.

Studies which employ direct measures of individual productivity typically describe top performance jobs, e.g., the number and quality of publications in academic research, Nobel prizes, the value of artists' paintings, or performance in sports and chess. They often show the early peak in productivity which underlies the popular misconception. While these studies are able to measure productivity quite precisely, their relevance is small since in everyday work life the workflow is customized to average rather than to top performance.

The main problem with most studies is selectivity. Workers retiring later tend to be more productive than those retiring earlier since employers are more likely to hold on to productive than unproductive workers. Hence plant closures and early retirement tend to create a positive selection of productive workers, and a spurious positive correlation between age and productivity. A related selectivity problem exists for the age-structure on the company level. Since more productive firms are usually more profitable, they expand and increase their workforce. This leads to a rejuvenation of their workforce because new hires are more likely to be young. Relating productivity to the age of the workforce in this case results in a spurious negative correlation between productivity and age.

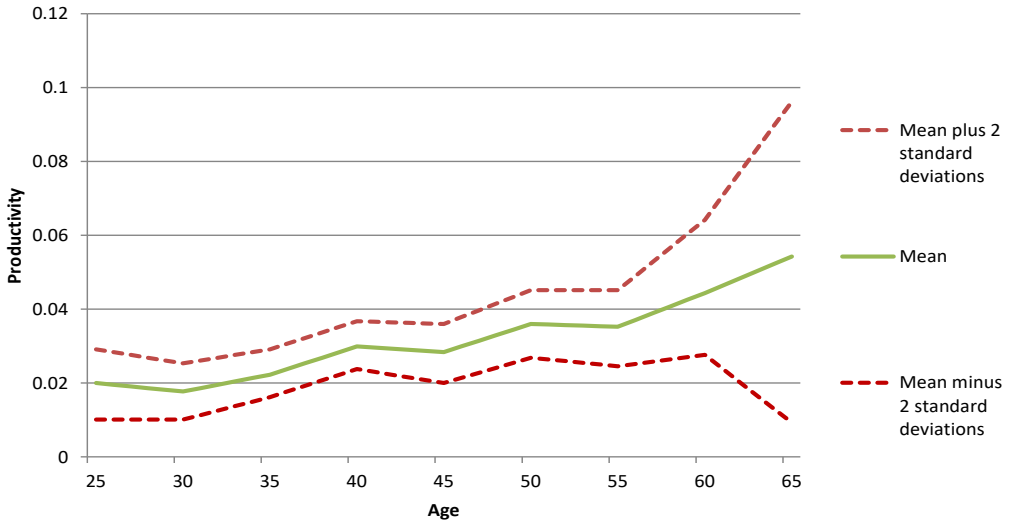
The methodologically convincing studies that have been quoted above use sophisticated econometric methods and are able to overcome these methodological problems. It is

[1] Skirbekk, V. (2004). "Age and individual productivity: A literature survey." In: *Vienna Yearbook of Population Research*, Verlag der Österreichischen Akademie der Wissenschaften, 133–153; Gelderblom, A. (2006). « The relationship of age with productivity and wages », *Ageing and Employment: Identification of Good Practice to Increase Job Opportunities and Maintain Older Workers*. Chapter 6, European Commission, Final report, Directorate-General Employment, Social Affairs and Inclusion (EMPL).

noteworthy that the relative productivity of older workers becomes higher when more sophisticated methodology are applied. Börsch-Supan and Weiss (2016) and Börsch-Supan, Hunkler and Weiss (2019) have observed productivity in taylorized production processes in the manufacturing and service industry. They use a very large number of daily observations to precisely estimate productivity. They find that productivity in manufacturing (automotive assembly) is flat over the entire relevant age range and can attribute this to the experience of older workers who avoid costly production errors (Figure 1). Average productivity is still increasing between age 60 and 65 but this cannot be measured precisely.

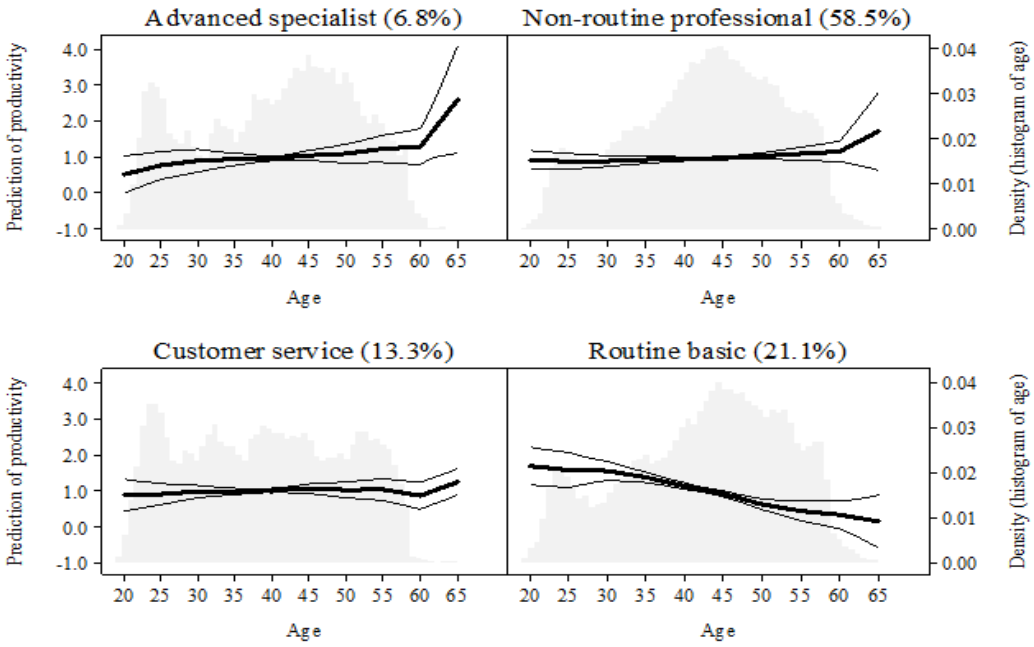
Figure 2 shows the corresponding figure for a large international company in the service industry (insurance). Work content strongly influences the age-productivity relation. When dealing with more demanding tasks, productivity increases with age, probably due to experience and high motivation. In turn, frustration and tiredness may explain the decreasing profile in those teams that deal with potentially boring routine work. The main lesson, however, is that on average and for most of employees, productivity does not decline until mandatory retirement at age 65. It should be stressed that this holds for standard jobs such as described in these two studies, not top-performance jobs. Moreover, the automotive study provides evidence that job changes at old age lead to a productivity decline due to lost experience. This can be measured in the panel data which allows separating age effects from experience effects. Finally, if a company pays seniority wages, then it is still more attractive to hire younger workers than keeping older ones.

Figure 1 – Age and productivity on the assembly line



Source: "Productivity and age: Evidence from work teams at the assembly line" (Börsch-Supan and Weiss, 2016)

Figure 2 – Age-specific productivity in the insurance industry



Source: "Big data at work: age and labor productivity in the service sector." (Börsch-Supan, Hunkler and Weiss, 2019)

Copy Editors

Olivier de Broca, Gladys Caré and Anaïs Teston, France Stratégie

Climate, inequality and ageing are three crucial issues for the future and prosperity of nations, beyond the ability to overcome the Covid-19 crisis. Accordingly, in early 2020 the French President, Emmanuel Macron, asked Olivier Blanchard and Jean Tirole to set up a commission of French and foreign experts to propose responses to these major challenges.

In collaboration with the members of the commission, dedicated teams prepared in-depth analyses of each of the three challenges: Mar Reguant and Christian Gollier on climate; Stefanie Stantcheva and Dani Rodrik on inequality; Axel Börsch-Supan, Claudia Diehl and Carol Propper on ageing.

The other members of the commission are Philippe Aghion, Richard Blundell, Laurence Boone, Valentina Bosetti, Daniel Cohen, Peter Diamond, Emmanuel Farhi, Nicola Fuchs-Schündeln, Michael Greenstone, Hilary Hoynes, Paul Krugman, Thomas Philippon, Jean Pisani-Ferry, Adam Posen, Nick Stern, Lawrence Summers and Laura Tyson.

In its report submitted to the French President, the commission proposes a global analytic framework. It draws recommendations for better economic policies and for France and Europe to respond more effectively to these three major challenges.

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