An Assessment of the 'Crédit d'Impôt pour la Compétitivité et l'Emploi' & the 'Pacte de Responsabilité et Solidarité'

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An Assessment of the 'Crédit d'Impôt pour la Compétitivité et l'Emploi' and the 'Pacte de Responsabilité et Solidarité'

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Summary

A broad-based deterioration in competitiveness led French exports to lose a considerable part of their market share between 2003 and 2013. High and increasing labour costs weighed on the profitability of firms, which in turn hampered their ability to invest and innovate. It is against this background that two flagship measures were adopted in France, the *crédit d'impôt pour la compétitivité et l'emploi* (CICE) and the *pacte de responsabilité et solidarité* (PRS). Their aim is to create employment and improve competitiveness by reducing the cost of labour by EUR 30 billion (1.5 % of GDP) by 2018.

In this Economic Brief we assess the effects of the CICE and the reduction in social security contributions contained in the PRS using the European Commission's QUEST III model. The results of our simulations suggest that, if financed ex-ante, the CICE and the social security exemptions of the PRS could deliver up to 150 000 additional jobs and would have a moderate positive impact on GDP over five years. At horizon 2030, the reforms would increase employment approximately by 380 000 jobs and add 1% to GDP. Furthermore, the measures improve the profitability of firms and the external balance. They were a first step towards restoring the competitiveness of France. Relaxing the assumption of ex ante financing of the reform leads to stronger GDP effects and up to 180 000 additional jobs, but also entails a rise in debt levels. With the recently approved labour market reforms, the impact of the CICE and PRS would be stronger. In a final scenario, we mimic a better performing labour market by using a higher labour supply elasticity. This would increase the number of jobs created by the labour cost reductions to 260 000 over five years.

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Introduction

A broad based lack of competitiveness, related to cost and non-cost factors, resulted in an erosion of the export market share of French firms between 2003 and 2013, stabilised after 2014 (European Commission, 2015).

In 2016, the hourly labour cost in the private sector in France was the fifth highest in the EU, the third highest in the euro area. This was mainly due to a high non-wage cost of labour, while wages seemed in line with other peer countries (see Graph 1). Since 2008 unit labour costs in real terms have risen more rapidly than in other euro area Member States (see Graph 2). Lower inflation and higher unemployment have only partially been taken into account in the wage setting process, while productivity declined sharply in 2008. Following an average growth rate of 1.0% over the period 2000-2008, labour productivity decelerated, growing at 0.3% per year from 2008 to 2015 (European Commission, 2017).

Graph 1: **Hourly labour cost in the EU in 2016**
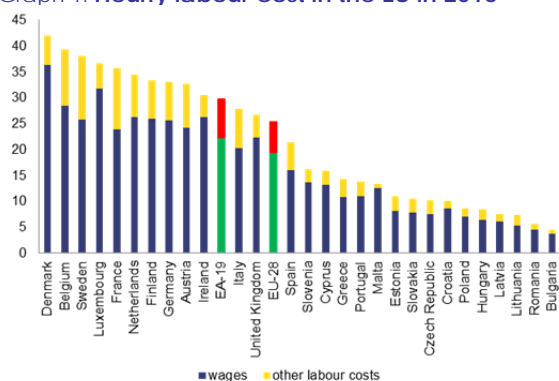
Source: Eurostat

In response to the drop in productivity and in order to improve competitiveness and enhance employment prospects, two flagship measures have been adopted in France since 2012. The first is the *crédit d'impôt pour la compétitivité et l'emploi* (CICE), amounting to EUR 20 billion.[1] It is a tax credit that can be subtracted from the total tax bill owed by a company. Its value is calculated as a percentage of the total payroll paid by a firm in the previous year, excluding salaries above 2.5 times the minimum wage. In 2014, the first year in which firms could claim reimbursements, the credit rate

was equal to 4 % of the total payroll paid by a firm in 2013. Since 2015 the credit rate increased to 6 % of the total payroll paid a firm the previous year and since 2017 it rose to 7%. For large firms, the tax credit can be deferred by up to 3 years if the tax bill is negative or lower than the CICE claim. Small firms can claim the tax credit even if their tax bill is negative and can also set-up a 1-year pre-financing scheme based on the CICE via the public investment bank Bpifrance. The second measure is part of the *pacte de responsabilité et solidarité* (PRS) announced in 2014.[2] This package of measures contains a reduction in social security contributions paid by employers for a total amount of EUR 10 billion, along with measures to decrease corporate and personal income taxes. This reduction in employers' social security contributions is implemented in two stages. First, starting from 2015, employers' social security contributions are reduced by 1.8 points for salaries up to 1.6 times the minimum wage. Second, starting from 2016, social security contributions have been reduced by 1.8 points for salaries between 1.6 times and 3.5 times the minimum wage.

Graph 2: **Evolution of real unit labour cost: total economy**
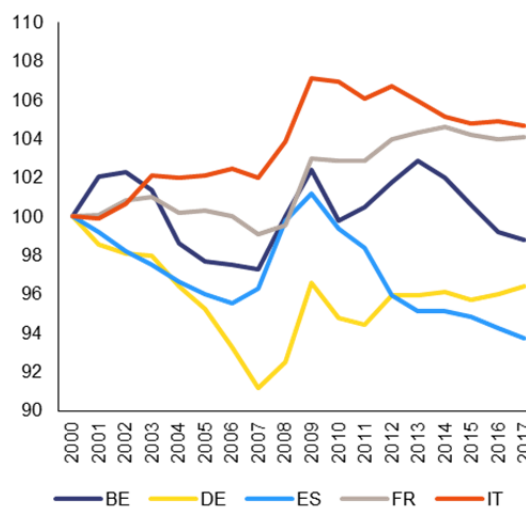
Source: AMECO

The CICE and the reduction in employers' social security contributions provided by the PRS are the latest of a long series of policies tackling the cost of labour, which started at the beginning of the 1990s (see Graph 3).

Analytical studies assessing French policies adopted in the past to reduce social security contributions do

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[1] EUR 20 billion is the estimated cost of the measure at horizon 2017 (France, 2015). Table 1 provides an overview of the gradual build-up of the CICE and PRS. The full objective of the CICE as stated in French legislation is the improvement of the competitiveness of firms in terms of investment, research, innovation, training and recruitment, prospection of new markets, energy transition and the reconstitution of their working capital.

[2] The overall objective of the PRS is not only to restore the competitiveness of companies and to create employment, but also to increase the purchasing power of households.

not provide clear-cut evidence on the effects of such policies. Ourliac and Nouveau (2012) provide a synthesis of these studies focusing on reforms to social security contributions in France starting in the 1990s. According to their assessment, all the decreases in social security contributions undertaken between 1993 and 2012 would have created or preserved between 400 000 and 800 000 jobs (1.5 % of total employment in 2012), at a budgetary cost of EUR 22 billion (1.1 % of the French GDP in 2012). In particular, it was calculated that the first wave of reductions in social security contributions (from 1993 to 1997) led to create or preserve 300 000 jobs, the second wave (from 1998 to 2002) 350 000 jobs, while the third wave (from 2003 to 2005) had no impact on employment (France Stratégie, 2017). Moreover, with regards to the strong variation in figures different authors find, two important factors are pointed out, *i.e.* the elasticity of labour demand with respect to its cost and the elasticity of substitution between different production factors (labour and capital, but also un-skilled labour with respect to skilled labour and capital).

Graph 3: **Employer social security contribution exemptions in function of the salary, expressed as a multiple of the minimum wage**
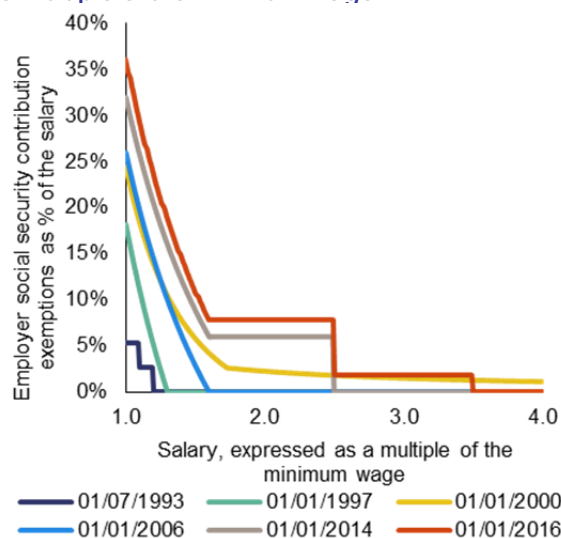
Source: Nouveau and Ourliac (2012), updated by Ourliac

While the novelty of the reductions in employers' social security contributions contained in the RSP does not allow yet conducting an evaluation of such reforms based on firm-level data (*i.e.* an ex-post evaluation), the first evaluations of the CICE estimated its effect on employment between 50 000 and 100 000 jobs created or preserved (France Stratégie, 2016). This Economic Brief provides an assessment of the two reforms, i.e. the

CICE and the reductions in employers' social security contributions contained in the RSP, based on simulations (*i.e.* an ex-ante analysis). We perform this assessment on the basis of the ramp-up of the two subsidies detailed in the *Projet de loi de finances de la sécurité sociale 2015,* which is the first year of implementation for both subsidies. We hence disregard the last increase in the rate of the CICE (from 6% to 7%) decided in June 2016. Also, this paper does not look at the effects of the announced transformation of the CICE into a permanent reduction in social security contributions. In the *Projet de Loi de Finances* 2018, the government has announced that it will transform the CICE into a permanent decrease in social security contributions as of 2019 coupled with a further decrease in the cost of labour.

We use a version of the European Commission's QUEST model which distinguishes between different labour force skill categories. In addition, information from the micro-simulation model EUROMOD allows to determine the skill-specific social security contribution burden and by this to precisely target the reform to different income categories, while accounting for the potential substitution between the different production factors.

The results of the central scenario presented below take into account the need to finance ex-ante the policies under discussion. The results of our simulations suggest that the CICE and the social security exemptions of the PRS would deliver up to 150 000 additional jobs (+ 0.6 %), especially for the low income earners, and would have a moderate positive impact on GDP over 5 years. Furthermore, the measures improve the profitability of firms and the external balance and can therefore be considered as a first step to restore the competitiveness of France. Relaxing the ex-ante financing assumption and allowing for a persistent fiscal stimulus of up to 1.5 % of GDP via a reduction in social security reductions significantly increases GDP in the short-term, but leads to strong increases in debt levels. As regards employment, 180 000 additional jobs are created in the unfunded scenario, which is 30 000 more than in the funded scenario.

This Economic Brief is organised as follows. The next section describes our model based assessment of the reform to social security contributions, presenting four scenarios covering aspects like the financing of the reform, the formation of economic agents' expectations and the robustness of the labour supply elasticity. We then compare our results to those of other studies and conclude.

Table 1: **Financial flows (CICE and reductions of social security contributions of PRS)**
Reductions in social security contributions across income groups

as % of 2013 GDP	2014	2015	2016	2017	2018
low-income earners	0.07	0.18	0.23	0.28	0.32
medium-income earners	0.16	0.38	0.52	0.65	0.73
high-income earners	0.08	0.19	0.29	0.36	0.40
Total	**0.32**	**0.75**	**1.03**	**1.29**	**1.45**

Financing

as % of 2013 GDP	2014	2015	2016	2017	2018
Increase in VAT rates and ecological taxes (increase)	0.26	0.41	0.44	0.46	0.48
Public expenditures (reduction)	0.26	0.67	0.92	0.95	0.97
Final consumption	0.12	0.26	0.48	0.49	0.44
Investment	0.02	0.06	0.09	0.09	0.09
Transfers other than in kind	0.12	0.34	0.36	0.36	0.45
Total	**0.52**	**1.07**	**1.36**	**1.41**	**1.45**

Source: EUROMOD, EU-SILC, Comité de suivi du CICE (2014), and Projet de loi de finances de la sécurité sociale 2015.
Note: Financing figures are all expressed in cash terms.

Model-based assessment of the measures to reduce the labour cost in France

For the model-based assessment of the reforms we use the European Commission's QUEST III model.[3] QUEST III is a global macroeconomic model developed for policy analysis and research. The model distinguishes between workers of different education levels exhibiting different degrees of productivity and different propensities to work. Evidence from the micro simulation model EUROMOD allows us to link the education level to the income category. We distinguish between low-, median- and high-income earners. This permits a consistent modelling of the reform being particularly targeted to the lower income categories.

Both reform packages, the CICE and the PRS, are modelled to have an effect on employers' social security contributions (SSC-ER), differently affecting the three income categories (low-, medium- and high). The budgetary impact of announced reductions in social security contributions on the employers' side amounts to 1.45 % of 2013 baseline GDP in 2018 (see Table 1). The largest share of budgetary change is allotted to medium-income

earners, as this group represents 47 % of all households.[4]

In cash terms, the reform is financed ex-ante by a VAT increase (1/3) and by cuts in public expenditures (2/3), where expenditure cuts are, to a major extent, on final consumption and transfers (other than in kind) and, to a minor extent, on public investment. This mimics the government's financing mix (see France, 2015) planned to finance the PRS with part of the expenditure containment package of EUR 50 billion and the CICE with expenditure cuts (50%) and new revenue measures (50%), of which two thirds VAT increase and one third environmental taxes. In fact, the scenario implies a mild overall positive impact on the budget in cash terms over the period 2014-17 of up to 0.3 % of GDP due to a time lag between the moment in which a claim arises and the one in which the tax credit is reimbursed. After 2018 the reform is exactly financed ex ante.[5] Finally, it should be noted that the budget rule ensuring a stable debt-to-GDP ratio in the model via adjustments in the personal income tax rate is muted for the simulation horizon to gauge second-round effects of the reform on the budget and on the debt-to-GDP ratio.

In our central scenario, we assume that households and firms learn only gradually about the functioning of the reform and update regularly their beliefs about

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[3] More information on QUEST-based analysis can be found here: http://ec.europa.eu/economy_finance/research/macroeconomic_models_en.htm. For an estimated version of the model see Ratto, M., Roeger, W., and in 't Veld, J. (2009).

[4] 18 % and 35% of households are considered to be low- and high-income earners, respectively.

[5] Effectively, on an accrual basis, there is no positive effect on the ESA-2010 deficit, as the expenditure of the CICE is accounted in the year that the claim arises rather than in the year that the tax credit is reimbursed. Based on the current experience, there has been a gap between the claims and the reimbursement of the CICE in the initial years. One obvious reason is that companies that do not make profit cannot ask for reimbursement immediately.

the pattern of the reform. More precisely, households and firms learn at the beginning of each of the first five years (2014 through 2018) about the new level of the fiscal variables (SSC-ER rates, VAT rate, public expenditures, and transfers). Only at the beginning of year 2019 agents consider the new fiscal variables to be permanent. The benefits of the growth friendly future budgetary position on private consumption materialise only once these changes are perceived to be permanent.[6] This stepwise learning hypothesis of the reform is supported by the conclusions of the first monitoring report of the CICE (*Comité de suivi du CICE*, 2013). This report explicitly refers to the gradual discovery of the functioning of the new system of corporate taxation in place by beneficiary companies, administrations and third party experts like accountants or banks. More generally, the stepwise learning hypothesis translates well the wait-and-see attitude which could be observed with French firms and households during the first years of functioning of the CICE. This has resulted in a slower than expected recovery despite the labour tax cuts.

The stepwise learning scenario is then compared with a second scenario in which agents fully anticipate the future path of all fiscal variables already at the onset of the reform.

Central Scenario – Learning

Graph 4 displays the effects under the learning hypothesis, which we consider our central scenario. For firms, the reform induced cost reductions have multiple effects. Real unit labour costs go down following the reduction in social security contributions. The profitability of firms increases, in turn increasing firms' investment. Furthermore, firms' competitiveness improves, reflected in a decrease of the terms of trade. Nonetheless, the measures cannot increase profitability to bring it back to the levels observed before the crisis. Also, in terms of competitiveness, the improvement remains relatively minor compared to the losses in export market shares observed in recent years.[7] Finally, the labour cost reduction leads to a delayed increase in employment. Employment starts gradually rising from 2017 onwards and leads to an overall maximum effect of 0.6 % in 2020, which represents up to 150 000 additional jobs. At the same time,

increased labour demand from firms leads to an increase in aggregate real wages of above 2 %, with a particularly strong wage increase for low-income earners of up to 4.5 %.[8] The strong rise in wages is actually the driving factor for the steady increase in real unit labour costs after 2018.

Graph 4: **Simulation of CICE and PRS – Learning scenario - funded**

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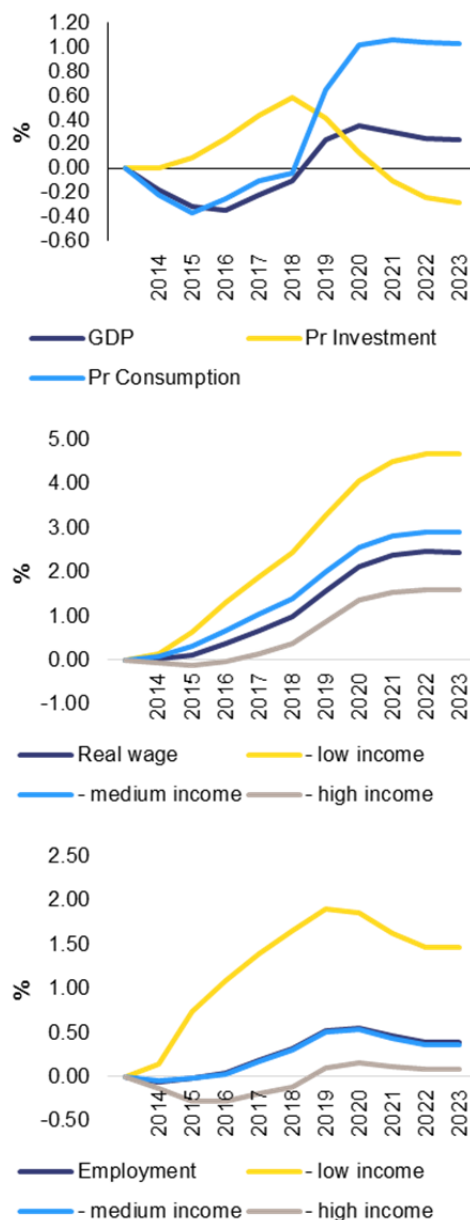
[6] More information on the expectation formation under the stepwise learning hypothesis can be found in in 't Veld (2013).

[7] The CICE and PRS would increase profitability by 2.5 % and exports by 0.4 % after 5 years. However, the gross operating surplus as a percentage of gross value added of non-financial corporations declined by 10 % from 2008 to 2013 to reach 29,7 % while export market shares declined by 13%.

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[8] Given that the labour supply elasticity is crucial for this result we provide sensitivity at the end of this section.
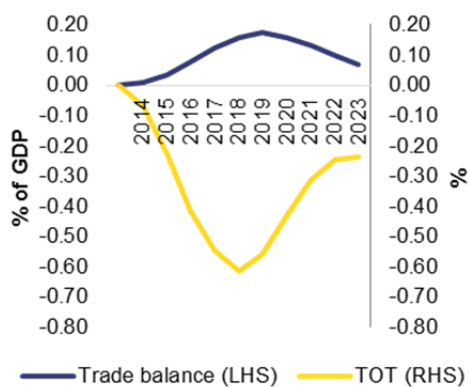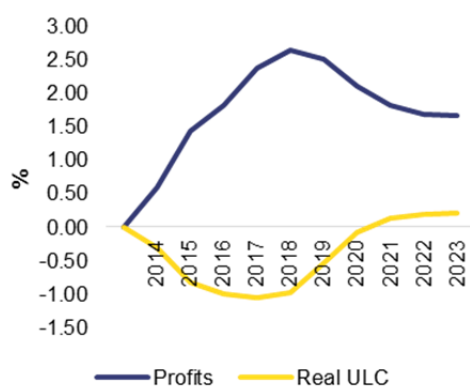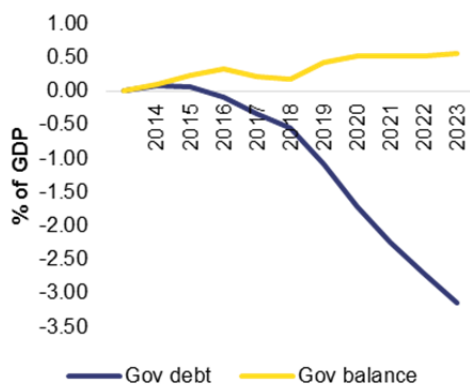
Source: Commission services

GDP and private consumption exhibit similar behaviours over the first five years. Private

consumption is depressed by the increase in the VAT and expenditure cuts, including transfer reductions that mainly affect the consumption expenditures of households. Households can then gradually compensate the transfer-induced slump in disposable income thanks to a higher labour income due to higher wages and better employment opportunities. From 2019 onwards, instead, once households have obtained certainty over their future income streams, private consumption increases strongly. The government balance in cash terms improves. However, because of the adverse GDP effects in the first years, the debt-to-GDP ratio only starts significantly improving once the reform becomes perceived as permanent by households and firms.

Table 2: **Long-run effects – Learning scenario**

	2030	2035
GDP	0.96	0.90
Private investment	0.58	0.58
Private consumption	1.88	1.79
Real wage	1.54	1.68
- low income	3.09	3.31
- medium income	1.97	2.12
- high income	0.95	1.07
Employment	1.48	1.37
- low income	3.53	3.34
- medium income	1.50	1.38
- high income	0.79	0.72
Government debt (% GDP)	-2.91	-1.64
Government balance (% GDP)	-0.16	-0.15
Profits	2.11	1.93
Real ULC	-0.34	-0.32
Exports	0.63	0.69
Imports	0.07	0.15

Source: Commission services
Note: Long-run effects based on the assumption that the debt-to-GDP ratio is to reach its baseline value in the long-run. This target is only due to be reached entirely after the presented horizon.

In the long run the debt-to-GDP ratio is supposed to reach the pre-reform level, contrarily to the short run where the debt-to-GDP ratio can freely adjust to the endogenous revenue and expenditure responses. Additional adjustments to the labour tax assure that pre-reform debt-to-GDP ratio is reached. Table 2 displays results for 2030 and 2035. Macroeconomic aggregates like GDP, private consumption and investment, as well as labour market variables, now benefit more clearly from the growth friendly shift

in the expenditure-revenue structure of the government budget.

To compare our results to studies that do not assume ex ante budgetary neutrality of the reform, we simulate an unfunded scenario (Graph 5). In contrast to the ex-ante budgetary neutral funded scenario, the unfunded scenario is a fiscal stimulus amounting to 1.5 % of GDP after 5 years. This is reflected in a persistently negative government balance and a rise in the debt-to-GDP ratio. In the absence of the adverse cuts in expenditures and increases in consumption tax needed to finance the reduction in the labour cost, GDP, private investment and private consumption start rising from 2014 onwards. In particular, GDP increases by 0.7 % by 2019, outperforming the results in the funded scenario. Equally, in the absence of a cut in government consumption and investment, domestic demand can increase more strongly than in the funded scenario, in turn leading to higher employment effects and a stronger upward pressure on wages. Real wages indeed increase by more than 2.5 % after 2019 and employment by 0.7 %, implying the creation of approximately 180 000 jobs, i.e. the creation of 30 000 jobs more than in the funded scenario.
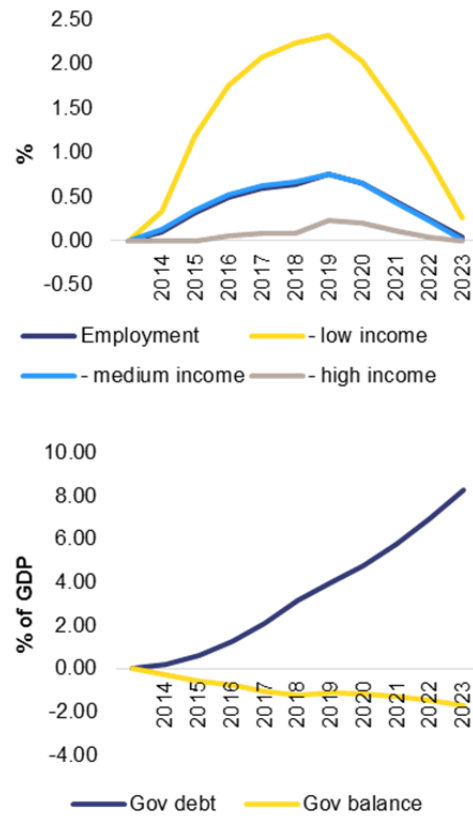
Graph 5: **Simulation of CICE and PRS – Learning scenario - unfunded**

Source: Commission services
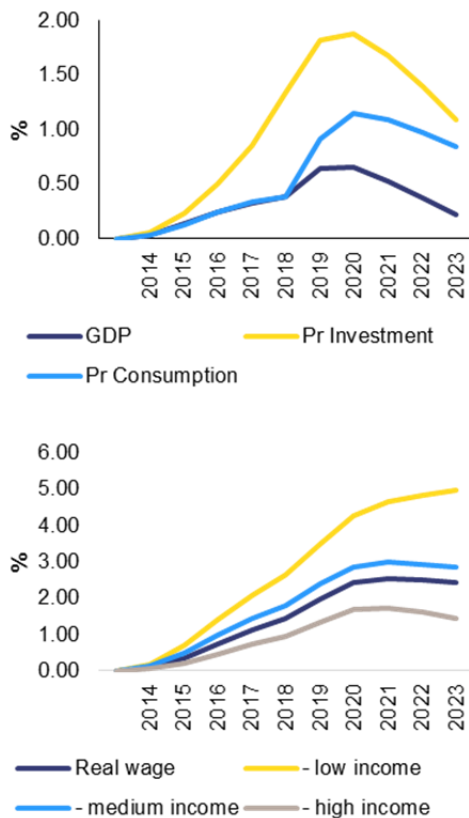
Counterbalancing the more favourable short-run effects on economic activity, wages and employment in the unfunded scenario, the level of public debt rises by up to 8 % of GDP by 2023. In the logic of the model, such debt level needs to be eventually reduced by generating tax or revenue financed budgetary surpluses that can be damaging for economic growth.

Alternative Scenario – Full Anticipation

In the alternative scenario, economic agents fully anticipate the future path of fiscal variables from the onset of the reform. As a consequence, favourable and adverse long-run effects of the reform materialise more quickly. On the one hand, the favourable effects on private consumption and GDP, which are due to the more growth friendly expenditure-revenue structure of the government budget, materialise at the beginning of the simulation horizon. On the other hand, adverse effects on private investment (due to the substitution from capital to labour following the reduction of the relative price of labour) also materialise more swiftly. As a result, the overall increase in GDP remains modest, while wage developments are similar to the central scenario. By contrast, employment increases are more modest. Indeed, as private consumption levels are not declining under

the full anticipation scenario, households increase their labour supply less than in the central scenario.

Beyond 2019, the results presented in the full anticipation and the learning scenarios converge. As a result, the long-run effects in the alternative scenario are identical to those presented in Table 2.

Labour supply and demand elasticities

The extent to which the labour cost reduction translates into a change in wages and employment depends upon assumptions on labour supply and demand elasticities. As a general principle, the effect on employment is larger the more elastic the supply of labour and the demand for labour are, while the effect on wages is larger the more elastic the labour demand is and the more inelastic the labour supply is.

Graph 6: **Simulation of CICE and PRS – Full Anticipation**
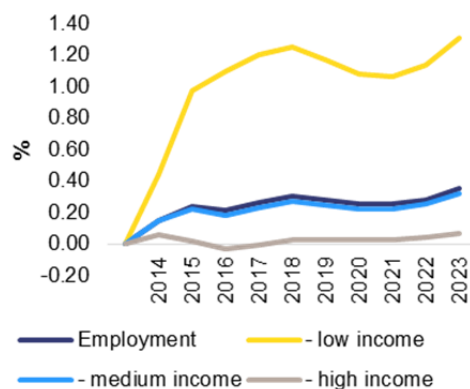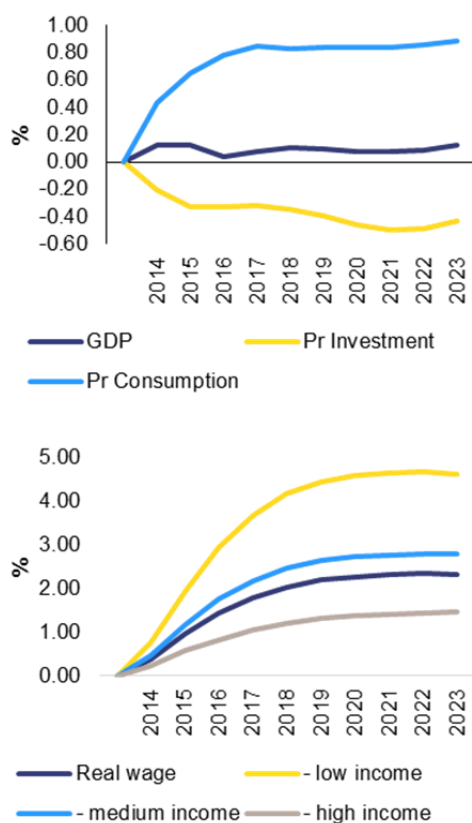
Source: Commission services

In our simulations, we use long-run labour demand elasticities specific for the low-, medium- and high-earners which range from -1.2 to -1.6.[9] Compared with the studies discussed below, our demand elasticities seem at the high end. Early studies on the impact of social security contribution reductions focus on the elasticity around the minimum wage. Assumptions differ widely, with elasticities varying between -0.7 and -2.5 (see Ourliac and Nouveau, 2012). For example, the estimations presented in the National Reform Programme (France, 2015) assume an elasticity of -0.9 at the minimum wage and lower elasticities for higher wages with an average labour elasticity of -0.5 (see Bock et al, 2015). The intuition given for the higher elasticity at the minimum wage is that the minimum wage excludes workers with lower productivity from the labour market, who could instead enter the labour market if the labour cost at the minimum wage declines, and that low skilled labour is more easily substitutable by capital than high-skilled labour. While, the elasticity at the minimum wage seems indeed in line with the one found in the empirical literature, there seems to be more divergence on the average labour demand elasticity, with Heyer and Plane (2012) and Espinoza and Perez Ruiz (2014) using respectively -0.3 and -0.15. Espinoza and Perez Ruiz (2014) show that, with a labour demand elasticity of -0.15, -0.4 and -0.75 respectively, 200 000, 350 000 and 400 000 jobs would be created in the short run with the CICE and the labour cost reductions of the PRS, suggesting that additional job creation is smaller for values of the labour demand elasticity higher than -0.4.

While there is an active debate on the elasticity of labour demand to its cost, a debate on which labour supply elasticity to use is largely absent in the literature on the impact of social security

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[9] Skill-specific labour demand elasticities are based on estimates provided by Acemoglu and Autor (2011).

contribution reductions in France. The notable exception is Espinoza and Perez Ruiz (2014) where labour supply elasticities are discussed as an important factor in the analysis of CICE and PRS. For high-skilled employees, Espinoza and Perez Ruiz (2014) assume an elasticity of 0.67 for high skilled and a higher order polynomial for the labour supply elasticity of the low-skilled implying that for small changes in unskilled employment (in the short run), the wage is unchanged, whereas for large changes in unskilled unemployment (in the longer run), there is a wage response. In the central scenario, for 400 000 jobs created, half of the tax cut is passed through to higher wages. The latter assumption is justified by the authors by noting that the employment rates for low-wage earners are lower and that unskilled workers tend to work in sectors that face a high elasticity of demand with respect to prices, where therefore employees can appropriate less of the labour cost reductions in terms of higher wages. In contrast, the lower unemployment rate and the higher likelihood to be employed on a permanent contract would result in higher bargaining power for high-skilled workers, resulting in a steeper labour supply curve. The authors conduct a sensitivity analysis of the long-run labour supply elasticity for unskilled workers, with a pass through of 35 % and 0 %. A lower pass through in wages would create a higher amount of jobs, respectively 720 000 and 1 020 000 jobs, compared to the baseline of 620 thousand jobs for the unfinanced reform.

While it seems straightforward to assume that the labour supply elasticity is higher for low-wage earners, the short run elasticities in the central scenario of Espinoza and Perez Ruiz (2014) seem to be on the high side for France. The wage development for low-wage earners is driven by the minimum wage. This does not depend on the bargaining power of low wage earners, but on discretionary increases by the authorities and the indexation of the minimum wage on inflation and the wage level of lowest paid workers and clerks. In this context, it should be noted that the minimum wage in France has risen faster than in other OECD countries in the last 30 years, suggesting a steeper labour supply curve around the minimum wage in France than in other countries. Also, the argument that low-wage earners are in sectors with a high elasticity of demand to prices seems not fully consistent. In relative terms, most low wage earners are working in the services sector, which is relatively sheltered from competition, suggesting that it has a lower elasticity of demand to prices. Therefore, it may be justified to use a lower labour

supply elasticity independent of the income level, notably at 0.3 in our central scenario.[10]

Graph 7: **Simulation of CICE and PRS – Sensitivity Labour Supply Elasticity**

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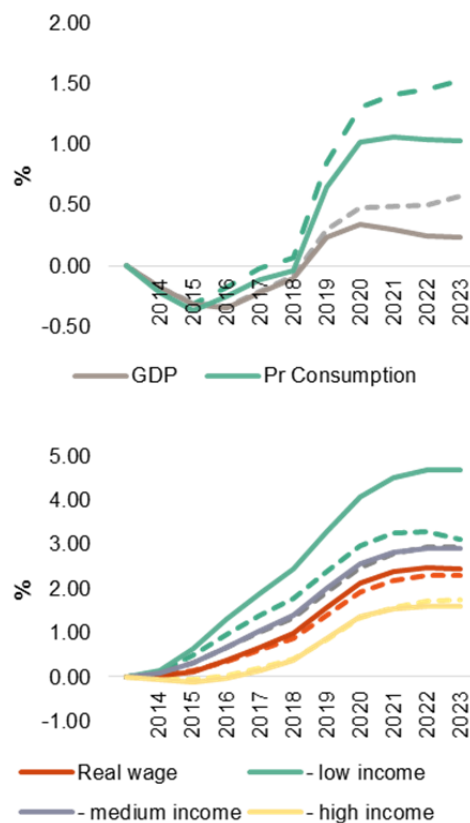
[10] Accounting for the participation rates within income groups the effective long-run labour supply elasticities can however vary substantially. Effective long-run labour supply elasticities vary from 0.05 to 0.24 for high- and low- income earners. These labour supply elasticities are well in line with the literature in micro-simulation studies. Bargain et al (2012) report total labour supply elasticities for a set of advanced economies distinguishing gender and marital status. Wage elasticities of total hours for France are consistently at or below 0.2 across the different characteristics. Bosch et al. (2013) provide labour supply elasticities from a micro-simulation study for the Netherlands distinguishing between high- and low-skilled labour also distinguishing between different characteristics (gender, marital status, number of children). While for singles the discrepancy for low and high skill levels is quite significant and labour supply elasticities can be above 0.4 for both skill groups, they are consistently below 0.2 for all other groups of characteristics.
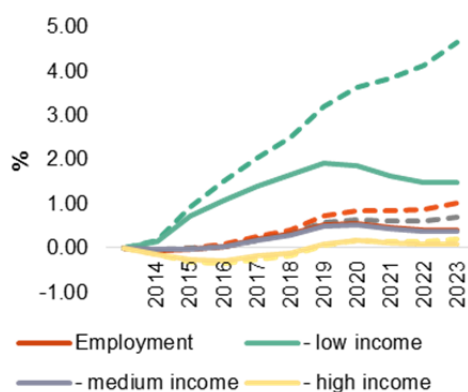
Source: Commission services
Note: Solid lines: standard labour supply elasticities (as in Graph 4), dashed lines: higher labour supply elasticity for all income levels

Given that the labour demand elasticities used in the baseline scenario are at the high end of the range of values used in the literature, we restrict the sensitivity analysis to the labour supply elasticity and we increase it from 0.3 to 0.5.[11] The increase in the labour supply elasticity could follow from a reform of the wage formation process or a reduction in the segmentation of the labour market. The Labour Act of 8 August 2016 as well as the on-going reform of the labour law, started with the Enabling Act of 15 September 2017, are two examples of reforms that could increase the elasticity of the labour supply. Indeed, both aim at reforming the social dialogue, including the wage formation process, and reducing the segmentation of the French labour market.

In Graph 7 we compare such a scenario to the central scenario. Not surprisingly, employment effects across all income groups are larger with a higher labour supply elasticity, especially for the low income earners. At the same time wage developments are contained compared to the central scenario. In this sensitivity analysis, aggregate employment increases by 0.7 % after 5 years and by 1 % after 10 years (compared to 0.6 % in the central scenario), representing up to 260 000 additional jobs. After 2020, aggregate real wages are around 2.2 % above baseline (compared to 2.4 % in the central scenario). Given that the labour supply elasticities for the low-income earners are changed most significantly, the discrepancy between the sensitivity analysis scenario and the central scenario are highest for this group of income earners.

With regards to private consumption and GDP, differences compared to the central scenario in the

first 5 years are minor. Only after the reform is perceived to be permanent, agents incorporate the effects of higher lifetime income into their consumption decision.

Comparison with other studies

In the 2015 French National Reform Programme, it is estimated that the CICE and the PRS would create 500 000 jobs and increase GDP by 1.7 % by 2020 if not financed ex-ante. These figures were confirmed in the 2016 and 2017 French National Reform Programmes. Our results are much lower even if we relax the financing assumption and increase labour supply elasticities. Part of this difference is due to the fact that the authorities simulations also comprise measures to decrease corporate taxation by EUR 10 billion (0.5% of GDP) on top of the reduction in labour taxes. The results of the Commission do not take into account the decrease in corporate taxation, all else equal, leading to a smaller impact of the reforms than those reported in the French National Reform Programmes.

Among the macroeconomic studies that simulate the effects of the CICE and the PRS and that take into account the need to finance a reduction in social security contributions, Heyer and Plane (2012) estimate that the social security contribution reductions in place before 2012 (the Fillon reductions) have created or preserved 250 000 if financed ex-post by a proportional reduction in all expenditure categories and 324 000 jobs if financed ex-post by a proportional increase of all tax revenues. Therefore, Heyer and Plane (2012) find a higher employment creation than the one in our simulations. One factor that could explain part of the difference is the targeting of the measures, because social security exemptions focused on lower wages tend to create more employment. Indeed, the CICE and the PRS are relatively less targeted towards low-wage earners, as they are linear reductions with eligibility thresholds at respectively 2.5 and 3.5 times the minimum wage, whereas the social security exemptions already in place were mostly targeted at the minimum wage, with a progressive phasing out between 1 and 1.6 times the minimum wage.

Also the *Haut conseil de financement de la protection sociale* (2014) has run several scenarios under different assumptions using three different models (Mesange, e-mod.fr and Nemesis). Two scenarios are particularly relevant to compare with our simulations at a 5 year horizon. If financed by a VAT increase, a linear tax cut of 2 percentage point

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[11] Long-run labour supply elasticities within income groups in the sensitivity analysis range from 0.4 to 0.83 across income groups.

representing an exemption of EUR 10 billion would create between 31 000 jobs in the Nemesis model, which takes into account the rest of the world, and 60 000 jobs in the Mesange model, which does not take into account the rest of the world. If instead financed by a linear reduction in all expenditures, the same tax cut would create between 43 000 jobs in the Nemesis model and 81 000 jobs in the e-mod.fr model.[12] Combining the two scenarios, a EUR 30 billion package of linear social security exemptions, financed by a VAT increase (1/3) and by a linear expenditure cut (2/3), would create between 117 000 jobs in the Nemesis model and 215 000 jobs in the e-mod.fr model. Our simulations are in the middle end of this range with up to 150 000 jobs. In terms of additional economic activity created, our model is at the lower end of the range of the comparable models of the *Haut Conseil de financement de la protection sociale* pointing to an increase in GDP ranging between 0 and 0.6 %.

Espinoza and Pérez Ruiz (2014) estimate that if the social security contribution reductions of the PRS, with an order of magnitude of EUR 10 billion, are financed ex-ante by spending cuts on public goods, the tax shifts would create only 28 100 additional jobs and would result in a fall in output of 0.55 % in the short run (2 to 3 years), but would not weigh on employment or economic activity in the long run, creating more than 300 000 jobs and an increase in GDP by 0.55 %. While the results of Espinoza and Pérez Ruiz (2014) are not linear and cannot be scaled up easily, our results are more positive in the short run - due to a less negative impact of fiscal consolidation[13] - but more negative in the medium run with part of the differences being explained by the different assumptions on labour supply elasticities (see above).

More recently, the Committee in charge of drafting a yearly report on the functioning of the CICE (*Comité de suivi du CICE*, France Stratégie 2016) has summarised the results of three studies using firm-level data for the period 2013-2014. These studies have been realised by the *Observatoire français des conjonctures économiques* (OFCE), the Laboratory for Interdisciplinary Evaluation of Public Policies (LIEPP) and the *Fédération de Recherche CNRS Travail Emploi et Politiques Publiques*

(TEPP).[14] The studies find a positive effect on firms' profit margins and on employment, while no effect was found on the exports, R&D activities and investment decisions of firms given the short time horizon (2013-2014) covered by the firm-level data available for these studies. In particular, in terms of employment, the study made by TEPP concludes that the CICE could lead to the creation or preservation of between 45 000 and 115 000 jobs, corresponding to a net effect of between 50 000 and 100 000 jobs once the effects of the CICE on the bankruptcy rates of firms are taken into account. Also, this study finds no additional effect on employment in 2013-2014 corresponding to the increase in the CICE rate from 4% to 6%. The results of the TEPP study, which do not take into account the financing cost of the measures, hence, reveal an immediate and strong effect of the CICE on employment. By contrast, our simulations assume a more gradual build-up of the effects of this policy with almost no impact on employment over the first two years and a cumulated effect of 150 000 jobs after five years, when taking into account the financing cost of the policy, and 180 000 jobs after 5 years, when no financing cost is considered.

Annex I summarises the characteristics of the different scenarios considered in the simulations realised in this Economic Brief and the impact in terms of employment. This table includes also the comparisons with the other studies we discussed, considering the most comparable scenarios.

Conclusion

We simulate the CICE and the labour cost reductions of the PRS using the European Commission's QUEST model. The central scenario developed in this work shows that these two measures could deliver 150 000 additional jobs after 5 years, especially for the low-income earners, and could have a moderate positive impact on GDP in the medium run. These measures could also improve the profitability of firms and the external balance of France. They were therefore a first step to restore the competitiveness of France. There is scope to

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[12] Comparison done at a horizon of 5 years. The assumption used is that prices adjust with 50 pct in the first year.
[13] At horizon 2020, in our scenario GDP would be 0.1% higher and 30000 additional jobs would be created if we did not impose ex-ante financing. Compared to their financed scenario, the unfinanced scenario of Espinoza and Pérez Ruiz (2014) has 0.7% of GDP higher growth and 40000 additional jobs in the short run.

[14] Gilles, F., Bunel, M., L'Horty, Y., Mihoubi, F. and X. Yang (2016), "Les effets du CICE sur l'emploi, les salaires et la R&D: une évaluation ex post," TEPP Rapport de Recherche, No 2016-09, September 2016. Carbonnier, C., Malgouyres, C. and G. Rot (2016), "Evaluer les impacts du crédit d'impôt pour la compétitivité et l'emploi," LIEPP Policy Brief No 27, September 2016. Guillou, S., Sampognaro, R., Treibich, T. and L. Nesta (2016), "L'impact du CICE sur la marge intensive des exportateurs," Rapport d'évaluation pour France Stratégie, OFCE, 26 Septembre 2016.

consolidate the different mechanisms actually used in France to lower the cost of labour, with a view to maximising their efficiency in a budget-neutral manner and scaling up their effects on employment and investment as suggested by the 2017 Country-specific recommendations addressed to France (Council of the European Union, 2017) and as envisaged by the conversion of the CICE into a social security contribution reduction as of 2019.

Besides the central scenario, we find that relaxing the assumption of ex ante financing of the reform leads to stronger GDP effects and to 180 000 additional jobs, but also entails a strong rise in the level of debt.

Moreover, the larger impact on low-income earners is due to the higher elasticity of the demand for and supply of labour assumed for this group of workers. Indeed, the assumptions made on the elasticity of the demand for and of the supply of labour are key for the results of our simulations.

Finally, with the recently adopted labour market reforms (i.e. the Labour Act of 8 August 2016 and the on-going reform of the labour law, started with the Enabling Act of 15 September 2017) the impact of the CICE and PRS would be stronger. We mimic a better performing labour market by using a higher labour supply elasticity. This would increase the number of jobs created up to 260 000.

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Annex I: Comparison with other studies

Study	Scenario	Impulse (EUR bn)	Horizon (years)	GDP (%)	Employment	Main differences with central scenario
QUEST simulations, European Commission	**CICE and social security contribution reductions of PRS (learning, funded)**	**31**	**6**	**0.4**	**150 000**	**Central Scenario**
QUEST simulations, European Commission	CICE and social security contribution reductions of PRS (learning, unfunded)	31	6	0.7	180 000	Unfunded (see p 7-8)
QUEST simulations, European Commission	CICE and social security contribution reductions of PRS (full anticipation, funded)	31	6	0.1	90 000	Full anticipation (see p 8)
QUEST simulations, European Commission	CICE and social security contribution reductions of PRS (higher labour supply elasticity, learning, funded)	31	6	0.6	260 000	Higher labour supply elasticity (see p 9-10)
Heyer and Plane (2012)	Employers' social security reductions adopted in the 1990s (financed ex-post)	20	5	-	250 000 – 324 000	Past reductions were more focused on low wages earners (see p 11)
French National Reform Programme (2015, 2016, 2017)	CICE and PRS (unfunded)	41	5	1.7	500 000	Unfunded, also takes into account corporate tax reform of EUR 10 bn. (see p 11 of NRP 2015)
Haut conseil de financement de la protection sociale (2014)	Package of linear social security exemptions, financed by a VAT increase (1/3) and by a linear expenditure cut (2/3)	30	5	0 – 0.6	117 000 – 215 000	
Espinoza and Pérez Ruiz (2014)	Employers' social security reductions of the PRS financed by spending cuts on public goods	10	2-3	-0.55	28 000	Shorter horizon with an assumed stronger impact of consolidation (see footnote 14 on p 11)
Espinoza and Pérez Ruiz (2014)	Employers' social security reductions of the PRS financed by spending cuts on public goods	10	10-15	0.6	300 000	Higher labour supply elasticity (see p 10)
France Stratégie (2016)	Firm-level data covering the period 2013-2014	17	2	-	50 000 – 100 000	Microeconomic ex-post evaluation based on firm level data, does not take into account financing need

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