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On the design of self-financed *Prime d'Activité* reforms

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Earning subsidies or in-work benefit programs have become a defining feature of OECD countries' tax and transfer programs. This note presents novel results on the efficiency-enhancing potential of reforms involving earning subsidies with a focus on the *Prime d'Activité*. We show that a test function can be used to identify potential inefficiencies of a given tax and transfer system. These inefficiencies can be addressed by reforms using earning subsidies. This approach also makes it possible to evaluate whether an implemented reform was self-financing. We apply these results to the French tax and transfer system in 2018, taking the case of single people with one child as an illustration. This reform was part of a 10-billion-euro plan to improve the economic well-being of the working poor and the middle class, presented in December 2018 by President Macron in response to the Yellow Vests movement. We show two main results. First, some inefficiencies were present before the 2019 reform. Second, the 2019 reform was not self-financing: implementing a self-financed reform would have required focusing on a narrower income range than the one chosen in 2019, but the reform pursued other objectives. The methodology introduced in this policy brief could be applied to other situations, which could help assess whether there are still inefficiencies in the current tax and transfer system. This is notably the work that is underway in Germany, with a report presented to the Ministry of Labor at the end of 2023 as part of coalition agreements aimed at reforming subsidies for low-income households.

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- Earning subsidies or in-work benefit programs have become a defining feature of OECD countries' tax and transfer programs. The French in-work benefit program *Prime d'activité*, saw a drastic increase both in terms of the number of participants and benefits with the 2019 reform.
- A tax and transfer system has inefficiencies when there is room for self-financing tax reforms, i.e. reforms that harm no one and help at least one household.
- An application of this approach to the French tax and transfer system in 2018, focusing on the case of single people with one child, shows that some inefficiencies were present before the 2019 reform - between 23,000 and 28,000 euros per year of gross wage.
- The 2019 reform was not self-financing: implementing a self-financed reform would have required focusing on a narrower income range (between 22,000 and 30,000 euros) than the one chosen in 2019 (between 6,000 and 27,500 euros), but the reform pursued other objectives.
- The code applied here is *open source* and could be used to analyze similar past or future reforms.

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Introduction

On the 17th of November 2018, the Yellow Vests started a movement which quickly turned into a widespread protest against government policy. In response to this movement, President Macron presented a 10-billion-euro plan on December 10th. Within this plan, the 2019 reform of the French *Prime d'activité* – the French earning subsidies or in-work benefit program – attempted to improve the economic well-being of the working poor and the middle class, by increasing the benefits received by working households and by broadening the range of income eligible for the subsidies. This reform led to a 37% increase in the number of program participants (4,5 million households in December 2019, or 15% of total number of households). The average benefit for beneficiaries was 185 euros per month and 208 euros for beneficiaries at the minimum wage (Dardier, Doan, and Lhermet, 2022).

This pushed the importance of the design of working poor programs into the French public debate. Arguments about what should be or should not be done to improve the French tax and transfer system are regularly discussed. The trade-off between efficiency and equity considerations plays a crucial role in this debate: we may want to transfer more for equity reasons to the working poor without distorting the rich. But are we sure that such trade-off has some bite? A tax and transfer system has inefficiencies when there is room for self-financing tax reforms (also called Pareto improving reform), i.e. reforms that harm no one and help at least one household. Can we identify a situation where inefficiencies are present in a given tax system (say France in December 2018)? In such a case, can we propose specific tax reforms to cure these inefficiencies? Can we evaluate implemented tax reforms to see whether the tax and transfer system has been improved after a reform compared to the status quo (say the *Prime d'activité* reform of January 2019)?

Self-financed tax reforms. Tax reforms that make everybody better off are called Pareto-improving tax reforms: reforms of this type eliminate inefficiencies in the existing tax system and are self-financing tax cuts. As such, these reforms are non-controversial and are supported by the whole population (Bierbrauer, Boyer, and Peichl, 2021). Whereas self-financing tax cuts are associated with the tax rate at the top of the income distribution and to the Dupuit-Laffer curve,[1] tax rates can also be inefficiently high at lower incomes, or the structure of the tax rates can be inefficient. In particular, at income levels where traditional means-tested programs are phased out, tax and transfer systems may exhibit high tax rates and/or discontinuous jumps between the tax rate before and after the phasing out of the transfers.

How can one figure out whether a given tax-transfer system admits a Pareto-improving reform? Bierbrauer, Boyer, and Hansen (2023) propose a new approach for answering this question motivated by the following observation. The reforms of earnings subsidy programs such as the *Prime d'activité* typically involved two income brackets: a phase-in range with lower marginal tax rates[2] and a phase-out range with higher ones with respect to the status quo. Working out the properties of these two-bracket reforms leads to a test for the presence of inefficiencies in a tax and transfer system.

This involves an object that we refer to as the test function which can be applied to real-world tax and transfer system. This function assigns to every level of income the additional tax revenue that becomes available when marginal tax rates are raised in a bracket containing that income level, thereby increasing the tax burden at all higher levels of income. The test for the presence of inefficiencies then makes use of the following insights: there is no Pareto-improving reform if and only if the test function is between 0 and 1,[3] and is non-increasing. A violation of this last condition implies that the tax system can be Pareto-improved by a *Prime d'activité*-like reform, i.e., a two-bracket reform with a phase-in and a phase-out range. This reform is being discussed in Germany as part of coalition agreements aimed at reforming subsidies for low-income households, as highlighted in a report presented to the Ministry of Labor at the end of November (Peichl et al., 2023).

Inefficiencies in the French system and the 2019 reform of the *Prime d'activité*. Taking the case of single people with one child as an illustration, an application of our approach to the French tax and transfer system in 2018 shows that some inefficiencies were present prior to the 2019 reform: a reform of the *Prime d'activité* was needed and could have been self-financing. However, the 2019 reform itself was not self-financing: implementing a self-financed reform would have required focusing on a narrower income range than the one chosen in 2019.

The French earning subsidies: the *Prime d'Activité*

According to the OECD, in-work benefits are "*welfare schemes designed to provide income supplement to needy families or individuals on the condition that they work.*"

[1] The Laffer curve after Arthur Laffer (an economic advisor under the Reagan administration) describes the relation between tax rates and tax revenues and postulates the existence of a revenue-maximizing tax rate, referred to as the top of the Laffer curve. As an aside, a French engineer Jules Dupuit already formalized the insight of Laffer in an academic article entitled "De la mesure de l'utilité des travaux publics" in 1844.

[2] The marginal tax rate is the tax rate payed on an additional euro of income.

[3] As detailed in Bierbrauer, Boyer, and Hansen (2023), these bounds admit an interpretation as Dupuit-Laffer conditions that, respectively, indicate whether marginal tax rates are inefficiently high or inefficiently low.

(OECD, 2005). It has this dual objective of, on the one hand, creating incentives to work (the more you work, the higher the benefit) and reduce poverty as these subsidies are targeted to low income households. Building on the early experiences in the USA, in-work benefits have grown increasingly popular in OECD countries since the 2000s (see Box 1). In 2020, at least 16 OECD countries implemented an in-work benefit program, whether in the form of cash transfers or tax benefits paid to workers.

The *Prime d'activité* is paid monthly and is administered by the welfare agency *Caisse d'allocations familiales* (CAF). It is an earning subsidies program that started in 2016. The *Prime d'activité* originated from the merger of two pre-existing instruments: the *Revenu Solidarité Active Activité* (*RSA Activité*) and the *Prime pour l'emploi*, the latter created in 2001. The *Prime d'activité* has the same objective as the previous ones, i.e. to provide incentives to return to employment and increase the purchasing power of the working poor. The merger was proposed as a way to correct the inefficiencies of the previous programs: high non take-up rate (that is the share of eligible households that do not ask for the benefit) of the *RSA Activité*, low amount of subsidies and low incentives to work for the *Prime pour l'emploi*.

In December 2018, as a response to the Yellow Vests movement (Boyer et al., 2020), President Macron announced an increase of 90 euros of the *Prime d'activité* for individuals at the French minimum wage (SMIC) starting from January 2019, increasing substantially the generosity of the program: the cost of the *Prime d'activité* increased from 5.3 billion euros in 2018 to 9.4 billion euros in 2019 (Dardier, Doan, and Lhermet, 2022). Moreover, the reform also increases the top of the income range that are eligible: the new range became between 0.5 SMIC and 1.5 SMIC for childless singles (instead of 1.3 SMIC before) and the amount of the bonus increases until 1.2 SMIC instead of 0.95 SMIC. At the end of 2019, 4.5 million households (6.46 million people) received the *Prime d'activité* (1.3 million more than in 2018) which corresponds to 10 percent of the adult population (Cabannes and Chevalier, 2020). We focus on the case of single parents with one child as they represent the household that are typically targeted with these in-work benefits. By the end of 2018, single parents (which are single mothers in 92% of the cases) represented up to 19% of the recipients of the *Prime d'Activité*.

Inefficiencies in 2018 French tax-and-transfer system

We describe the main empirical components of the test function we use below for the evaluation of the 2018 French tax-and-transfer system.

We apply the test function described in details in Box 2 to detect inefficiencies in the French tax-and-transfer system in 2018 for households where the first filer is between 25 and 55 years old.

Intuitively, two drivers of inefficiencies are (i) larger behavioral responses to taxation (labor supply responses at the intensive and extensive margin), (ii) large variations of the marginal tax rates along the income distribution typically occurring at the phasing out of welfare programs.

We present the results for a subsample of French households: those with one adult and one child. Figure 1 shows that for every level of annual gross wage, the test function is between 0 and 1. However, between 22,000 and 28,000 euros (i.e. between 1.2 and 1.8 SMIC), one can see that the test function increases. The first increase is driven by the phasing-out of the *Prime d'activité* while the second one is driven by the phasing-out of the *Décôte* and when individuals are starting paying personal income tax. Hence, a self-financing reform was possible in this range. More precisely, there exists a tax reform of the *Prime d'activité* (i.e. a two-bracket tax cut with a phase-in where marginal tax rate declines and a phase-out where it increases) that is self-financed.

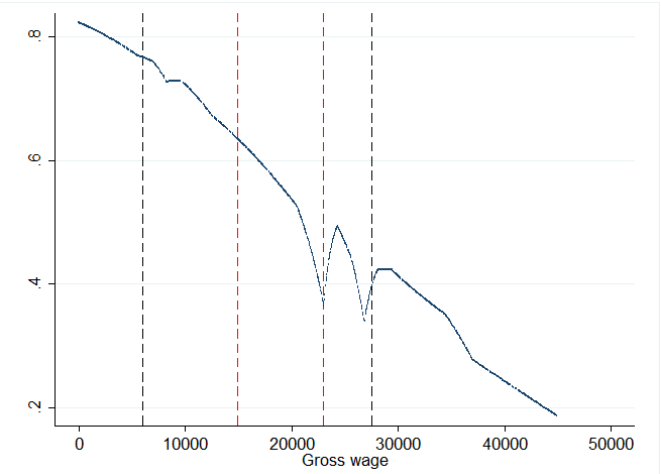


Figure 1: Test function of the 2018 French tax-transfer system for single parents with one child.

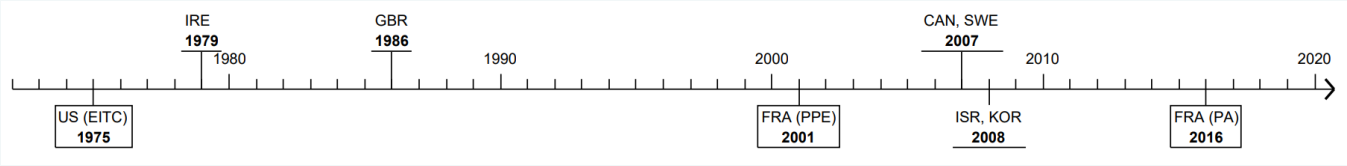
Notes: Figure 1 plots the test function for annual gross wage. The black dashed lines are the income threshold at which the 2019 reform of the *Prime d'activité* phases-in (6,000 euros per year for a single with one child) and phases-out (27,500 per year for a single with one child). The red dashed lines are the income threshold at which the 2019 reform of the *Prime d'activité* stops phasing-in (14,900 for the single with one child) and starts phasing-out (22,900 euros per year for a single with one child).
Reading: The test function is between 0 and 1. However, between 22,000 and 28,000 euros, the test function is increasing meaning a self-financed reform was possible.
Source: Openfisca engine, TAXIPP microsimulation model, ERFS survey (INSEE), and authors' calculations.

The 2019 reform of the *Prime d'Activité*

Description of the change in marginal tax rates. Figure 2 presents the marginal tax rates of the *Prime d'activité*, before (red line) and after the reform (blue line) for single parents with one child. Since the *Prime d'activité* increases with income (until a maximum amount), the marginal tax rates are negative on small gross wage (because the more

Box 1 : In-work subsidies introduction in OECD countries.

The introduction of the EITC (Earned Income Tax Credit) in 1975 in the USA was framed as a response to a "poverty trap". In the 1960s, new welfare programs have been introduced as part of President Johnson's "war on poverty". On the one hand, the new programs provided more generous benefits to families with low incomes. On the other hand, at the incomes where these benefits were phased out, low-income families could end up with high effective marginal tax rates exceeding 70% in many cases. In the following decade, the share of welfare recipients increased substantially. By the early 1970s, finding ways out of the "poverty trap" by an increase of work incentives was considered as a pressing political concern. Overtime, the EITC expended, became more generous so that it is today a pillar of the US transfer policies. Since the USA introduced the EITC in 1975, many OECD countries implemented such programs, whether in the form of cash transfers or tax benefits paid to workers (see Figure below).



Time line of selected in-work benefits implementation

Note: The figure indicates the creation date of *some* in-work subsidies in OECD countries. In 1975, the US introduced the EITC.
Reading: In France, such program was first implemented in 2001 with the *Prime pour l'Emploi* (PPE), later transformed into the *Prime d'Activité* in 2016.
Source: OECD policy description (`https://www.oecd.org/social/benefits-and-wages/`) and Laun (2019).

Box 2 : Details on the test function.

The main components of the test function we use are the following.

Elasticities. Important parameters determining the existence of inefficiencies are labor income elasticities. These parameters capture the following general idea: how does the labor supply react (i.e. how much an individual is willing to work) when net wage increases? This reaction is decomposed in two margins:

- An intensive margin elasticity and extensive margin elasticity. The first one is simple: if the net wage of an individual increases by 1%, how many more hours is this individual willing to work? In our baseline case we followed Chetty et al. (2013) and fixed it at 0.33 (if the hourly net wage increases by 1%, the number of hours worked increases by 0.33%).
- For the second one, let's take an example to explain the logic. Suppose that an individual does not work. If an employer wants to hire them for 1,010 euros/month instead of 1,000, how would the probability of accepting this job offer increase, compared to the situation when 1,000 euro/month was offered. The decision to work is affected by the presence of fixed costs which people have to pay if they work: for instance, transportation costs or cost of daycare for children. The extensive margin elasticity tries to capture how responsive an individual is to these costs. Intuitively, the more responsive the households at the intensive and extensive margins, the higher the room for addressing inefficiencies. In our baseline case, we assume that extensive margin elasticity is decreasing (falling from 0.4 at low incomes to 0.2 at high income (above 30,000 euros per year). If the annual net wage increases by 1%, the probability of accepting the job increases by 0.4% at low level of income and by 0.2% at higher levels.).

In general, the higher the elasticities, the greater the inefficiencies. We check the robustness of our result with different (extensive margin) elasticity values ranging from 0 to 0.5: the outcomes are changed only by a small magnitude.

Income distribution and representation of the tax and transfer system in the analysis. The income distribution that we used to build the test function is derived from the gross labor income of the ERFS (*Enquête sur les Revenus Fiscaux et Sociaux*) 2018. This implies that we have few observations at the very top of the income distribution. When computing different marginal tax rates, we use a microsimulation model that does not include all the tax and transfers of the French socio-fiscal system. In particular, we have the following subset of tax instruments: personal income tax (*Impôt sur le revenu des personnes physiques* et *Décôte*), in-work benefits (*Prime d'activité*), and welfare transfers (RSA). Important instruments that are not included are social security contributions, housing benefits (e.g., APL), or family benefits (e.g., *Allocations Familiales*). Hereafter, we identify some inefficiencies using these instruments as an illustration of the method.

you earn, the more your *Prime d'activité* increases). Then, the *Prime d'activité* phases out which explains the positive marginal tax rates around 6,000 and 20,000 euros per year. After the *Prime d'activité* is completely phased out, the marginal tax rates of the *Prime d'activité* stays at 0. As one can see, the reform is a two bracket reform since the marginal tax rates are reduced between 6,000 and 14,900 euros per year and increased between 22,900 and 27,500 euros per year.

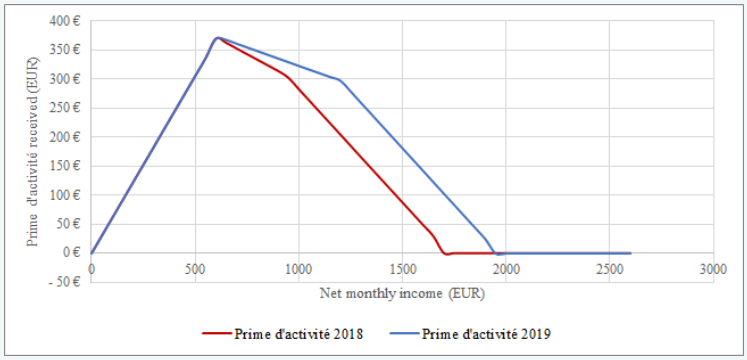
Was the 2019 reform self-financing? We evaluate if the reform was self-financing. Figure 3 shows that this reform was not self-financing with different values for extensive margin elasticities. If the reform was self-financing, it would have generated more tax revenue than before (or at least as much). However, we see that it is not the case for this reform. Figure 3 presents the revenue generated

Box 3 : The computation of the *Prime d'activité*

The *Prime d'activité* is based on the number of household members and their resources of the last three months. It composed of three parts:

- First, there is a lump-sum amount depending on your household composition (the more people there are in your household, the greater this amount).
- Second, part of all income (a certain share of labor income and other subsidies such as housing subsidies or children subsidies) is subtracted to the *Prime d'activité*.
- Third, there is an individual bonus for each person in the household who is working and earns more than 0.5 minimum wage, depending on labor income (the higher the salary, the higher is the bonus, until a cap).

This is precisely the last part that changed with the 2019 reform, increasing both the maximal amount that you can get from the individual bonus (it increased by around 90 euros) and the labor income for which you get the maximum amount for the individual bonus (before the reform it was at 0.8 minimum wage, after the reform it is at 1 minimum wage - 1,200 euros net per month in 2019).



Case study - single with one child - Amount of *Prime d'Activité* received by month before and after the reform

Reading: The figure presents how much the *Prime d'Activité* of a single parents with one child could receive based on her net income. This individual could receive up to 369 euros per month for a monthly income of 600 euros. This is a case study for which we assume that this individual benefits from housing subsidies and has no other income than her wage.
Source: Authors' calculation.

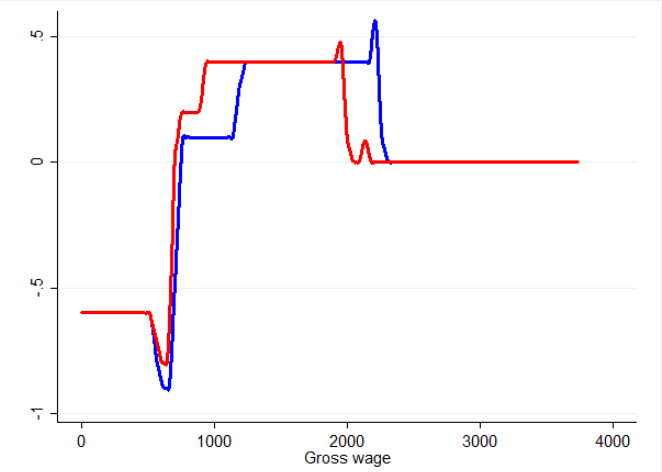


Figure 2: Marginal tax rates of the *Prime d'activité* in 2018 and 2019 (single people with one child).

Notes: Figure 2 plots marginal tax rates for the *Prime d'activité* for both 2018 (red) and 2019 (blue) for each monthly gross wage for singles with one child, assuming they earn the same wage for one year.
Reading: The first euro earned by a single with one child implies receiving 0.61 euros of *Prime d'activité*. Earning one more euro when having a 1,500 monthly gross wage implies paying 0.39 euros more taxes (ie. *Prime d'activité* decreases by 0.39 euros).
Source: Openfisca engine, TAXIPP microsimulation model, ERFS survey (INSEE), and authors' calculations.

by the reforms for different extensive margin elasticities: the reform is not self-financing for all the extensive margin elasticity values chosen. The loss in tax revenue (increased generosity of the program) in the phase-in of the reform was not compensated by the increase of tax revenue due to higher marginal tax rates in the phase-out of the reform.

This result could be surprising at first sight because the inefficiencies we had seen earlier were covered by the reform (red dashed lines in Figure 1). However, this reform covered a much larger share of income distribution (reform's phase-in starts at 6,000 euros per year, while the reform's phase out was at 27,500 euros per year for a single with one child) while the inefficiencies were located especially between 22,000 and 28,000 euros per year. We comment on the second part of the figure in the next section.

An example of a self-financing reform. Since the 2019 reform was not self-financing, one can ask what could have been a reform that would have been self-financing. A self-financing reform would have been more targeted at levels of income corresponding to the inefficiencies (where the curve increases in Figure 1). Figure 3 presents how much tax revenue such a reform could have rebated to households if it had been implemented. These 1% change tax cuts, that would be maximizing the tax revenue rebated to the households, would have been like this: *(i)* a phase-in at

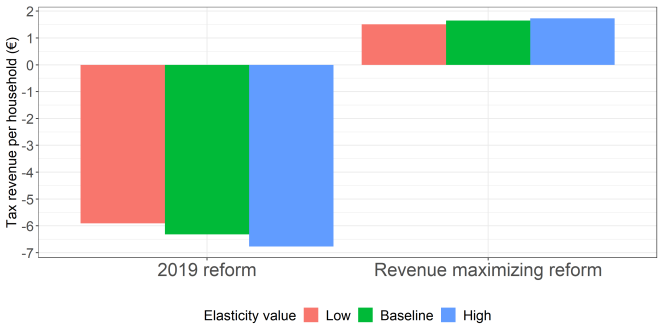


Figure 3: Tax revenue of 2019 reform and of a revenue maximizing reform (single with one child).

Notes: Figure 3 displays the total impact (for single parents with one child) of tax revenue of the 2019 reform and of a revenue maximizing reform for the three cases: an extensive margin decreasing elasticity (green) that falls from 0.4 at low incomes (incomes below 30,000 euros per year) to 0.2 at high incomes (incomes above 30,000 euros per year), that is equal to 0 (red) or 0.5 (blue). The intensive margin elasticity is fixed at 0.33. In 2020, 25% of families were single-parent families, including 45% with one child (Algava (2021)).
Reading: The 2019 reform would have generated a loss in tax revenue equivalent to a loss of 6.32 euros per household of single parents with one child and per year. The revenue maximizing reform available at that time would have generated the equivalent of 1.65 euros per household and per year.
Source: Openfisca engine, TAXIPP microsimulation model, ERFS survey (INSEE), and authors' calculations.

21,950 euros per year (25,980 for the second reform), *(ii)* a phase-out between 23,700 and 25,450 euros per year (resp. 27,940 and 29,900 for the second reform). With the tax revenue gain from the reform, it would have been possible to pay an additional lump-sum of 1.65 euros per year to each household of single parents with one child (with our baseline elasticity).

Conclusion

Earning subsidies are welfare schemes designed to provide income supplements to low-income families while maintaining work incentives. The 2019 reform of the French *Prime d'Activité* is part of a movement that extends and develops these programs in OECD countries. At the end of 2019, 14% of French households benefited from the *Prime d'Activité*. Their interesting properties are making them very attractive to policymakers as they could reduce both poverty and unemployment. Therefore, there is a need to understand and evaluate these programs to better calibrate and design them. Finally, the methodology that we introduced offers a new tool to identify remaining inefficiencies in the tax-and-transfer system and potential self-financed tax cuts.

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