

Housing Benefits and Monetary Incentives to Work: Simulations for France

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Abstract – This paper characterizes the impact of housing benefits on monetary incentives to work in France both at the intensive and extensive margins. Effective marginal and participation tax rates are estimated using the 2011 *enquête Revenus fiscaux et sociaux* (ERFS, Insee) for employed childless singles with the TAXIPP microsimulation model and decomposed by tax and transfer instruments. Means-testing implies that a 1-euro increase in gross labor earnings reduces housing benefits by 27 cents on average. Combined with reductions in other means-tested transfers (30 cents) and the payment of social contributions (21 cents) this translates into effective marginal tax rates close to 80%. Means-testing also induces a reduction in housing benefits upon taking a job which acts as a participation tax. Its magnitude depends on whether individuals receive unemployment benefits when out-of-work. Unemployment benefits increase overall participation tax rates by providing higher replacement earnings but decrease the participation tax linked to housing benefits by reducing the amounts of housing benefits received.

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Reminder:

The opinions and analyses in this article are those of the author(s) and do not necessarily reflect their institution's or Insee's views.

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Housing benefits schemes aim at helping low-income households cover their housing expenditures. In France, this is primarily achieved through monetary transfers to tenants that are increasing with the rent (benefits-rent linkage) and decreasing with households' earnings (means-testing). Seminal contributions (Laferrère & Le Blanc, 2004; Fack, 2005, 2006) show that the linkage with the rent causes 50 to 80% of housing benefits to be captured by homeowners through rents increase. This finding has prompted reform proposals, most recently by Trannoy and Wasmer (2013), Bozio *et al.* (2015a) and Bargain *et al.* (2017), aiming at the alleviation of this linkage and the induced phenomenon of capture.

Another concern these reform proposals try to address is the potentially large disincentives to work associated with means-tested housing benefits. Indeed, as an increase in labor earnings translates into a decrease in benefits received, means-testing mechanically reduces the monetary gains from work. This may induce individuals to reduce their labor supply¹ and has thus important consequences for the design of means-tested transfer schemes (Saez, 2002; Brewer *et al.*, 2010). A poorly designed housing benefits scheme combining benefits capture by landlords and large disincentives to work for low-income tenants may be conducive to a poverty trap.

This paper aims at informing future reforms of the housing benefits scheme by providing a detailed analysis of monetary incentives to work in France. Following the labor supply literature (e.g. Heckman, 1993), the analysis distinguishes between incentives to increase work intensity when in-work (intensive margin) and incentives to join the workforce when out-of-work (extensive margin). Monetary incentives to work are accordingly measured by effective marginal and participation tax rates.

These measures are estimated at the individual level for a representative sample of employed childless singles aged 25 to 54 from the 2011 *enquête Revenus fiscaux et sociaux* (ERFS). Taxes and transfers are computed using the TAXIPP microsimulation model and include social contributions, the income tax and means-tested transfers. A decomposition of aggregate work incentives in terms of the underlying tax and transfer instruments clarifies the articulation of these instruments. Moreover, it allows to precisely characterize the disincentives

to work associated with housing benefits as well as their contribution to the aggregate.

The article begins with a brief review of related research and a discussion of the approach adopted here. The data, microsimulation tool and methodology are then carefully described along with the main features of the French tax and transfer system. The results derived in a baseline scenario show that housing benefits entail important disincentives to work. In particular, their joint withdrawal with other means-tested transfers imposes disincentives to work that are probably too large. These results are then shown to be qualitatively robust to alternative assumptions like treating unemployment and pension contributions as savings rather than taxes or assuming employer contributions are shifted to workers.

Analyzing Monetary Incentives to Work

In France, previous studies have analyzed work incentives either at the intensive margin (Bourguignon, 1998; Chanchole & Lalanne, 2012; Fourcot & Sicsic, 2017) or at the extensive margin (Legendre *et al.*, 2003; Gurgand & Margolis, 2008). Both margins are analyzed in Laroque and Salanié (1999), in Immervoll *et al.* (2007) who carry out a comparative analysis of monetary incentives to work in 15 EU countries and more recently in Sicsic (2018) who studies the evolution of monetary incentives to work in France over time by household composition.

At the intensive margin, past studies have focused on the redistribution operated by the overall tax and transfer system and on associated aggregate disincentives to work. Early results show that the distribution of effective marginal tax rates across earnings levels follows a U-shape pattern (e.g. Chanchole & Lalanne, 2012). In contrast, the present analysis shows that this distribution follows a tilde-shape which is consistent with more recent evidence (Fourcot & Sicsic, 2017) and can be explained by the move towards make-work-pay policies in France (Sicsic, 2018).

1. Labor supply responses to monetary incentives to work are an important topic of the labor supply literature. Direct evidence is relatively scarce for France. Existing studies (Laroque & Salanié, 2002; Lehmann *et al.*, 2013; Cabannes *et al.*, 2014; Bargain *et al.*, 2014) seem to suggest labor supply elasticities are around 0.05 at the intensive margin and between 0.15 and 0.35 at the extensive margin. These modest elasticities – in comparison to other estimates in the literature (see the reviews of Saez *et al.*, 2012; Meghir & Phillips, 2010) – may nonetheless be attributed to adjustment frictions and the underlying elasticity parameters could well be larger (Chetty, 2012).

At the extensive margin, Legendre *et al.* (2003) and Gurgand and Margolis (2008) estimate the monetary gains to work of unemployed or inactive individuals using individual characteristics such as education or work experience to simulate plausible transitions to work. They conclude that agents have on average very little incentives to take a job (if any), calling for the move towards make-work-pay policies in France that has been recently observed.

Along with Fourcot and Sicsic (2017) and Sicsic (2018), this paper thus offers an update on monetary incentives to work in France after this important policy change. Beyond the valuable information brought by this exercise, the contribution of this paper to the literature is three-fold.

First, the decomposition of marginal and participation tax rates into the underlying tax and transfer instruments clarifies the role of the different instruments as well as their articulation.² In particular, alternating between simulation results for prototypical individuals and simulation results for the representative sample allows to directly connect the schedule of the instruments to monetary incentives to work.

Second, this study is the first to present results at the individual level which allows to better picture and understand heterogeneity in incentives to work. The important sources of heterogeneity between employed childless singles relate to housing statuses (as they determine potential eligibility to housing benefits) and the composition of their incomes (if individuals have other incomes beyond their wage earnings).

Third, to the best of my knowledge, this paper is the first to investigate how monetary incentives to work are affected by: (a) whether individuals receive unemployment benefits when out-of-work, (b) whether the incidence of employer contributions falls on employer or workers, and (c) whether contributory social contributions (unemployment and pension contributions) are treated as taxes or as savings. In practice, the right set of assumptions will likely be individual-specific and lie in between the polar cases analyzed here. Results can thus be interpreted as bounds for *true* effective marginal and participation tax rates.

The restriction to childless singles is admittedly the main limitation of this work given that the schedule of most taxes and transfers tends

to vary with household composition. However, this restriction allows to connect the schedule of tax and transfer instruments to work incentives in a transparent way and to understand the heterogeneity in work incentives using graphical representations at the individual level. In addition, the analysis of Sicsic (2018) suggests that the results obtained for childless singles extend, at least qualitatively, to other demographic groups. Hence, one can be confident that the analysis presented here conveys useful information about work incentives in France.

Methodology

Monetary incentives to work are here characterized by the wedge between gross labor earnings and disposable income. The tax and transfer system corresponds to all fiscal instruments that operate between the two.³ First, the payment of social contributions legally divided between employer and employee contributions determine net labor earnings. Net earnings are then subject to income taxes (see details about contributions and income taxes Box 1). Finally, means-tested transfers and in particular housing benefits may be received if remaining income falls below the thresholds determining eligibility to the schemes.

The schedule of housing benefits consists in a fixed allowance at very low-income levels followed by a phasing-out region in which amounts received are decreasing with income. In that respect, it resembles the schedule of a minimum income support program. Housing benefits are nonetheless different in that they can only be claimed by tenants and that amounts received vary by geographical location to reflect local variations in rents (see details about housing benefits and other means-tested transfers in Box 2).

Simulation of Taxes and Transfers Using TAXIPP Microsimulation Tool

Taxes and transfers are here simulated at the individual level using TAXIPP microsimulation model. TAXIPP is the static microsimulation model of the *Institut des Politiques*

2. A related decomposition also appears in Fourcot & Sicsic (2017), and Sicsic (2018).

3. Note that consumption taxes, local taxes and transfers in kind are here assumed away for the sake of simplicity.

Box 1 – Social Security Contributions and Income Taxes in France

Employer and Employee Contributions

Employer and employee contributions can be decomposed between contributions to contributory schemes (social insurance programs that open rights to future benefits) and contributions to non-contributory schemes (pure taxes). Following the classification of Landais *et al.* (2011) unemployment and pension contributions are treated as contributions to contributory schemes while health contributions, family contributions and all remaining contributions are treated as contributions to non-contributory schemes (see details in Online complement C1). Although standard, this decomposition between insurance and redistribution can be challenged as instruments may in practice respond to both motives.

Health contributions fall under the category of non-contributory components because they hold a substantial

redistributive role (Rochet, 1996) but a small share of health contributions is also used to finance sick leaves which is a pure insurance scheme. Similarly, the French pension system responds primarily to an insurance motive but has also been shown to hold a moderate redistributive role (Dubois & Marino, 2015).

The schedule of employer and employee contributions can then be expressed as rates of contributions that apply to gross labor earnings, here defined as nominal posted earnings (*revenus bruts*). Statutory rates of contributions depend on several factors like the hourly wage rate, the status of the employee (executive/non-executive) or the size of the firm. Assuming individuals work in firms of 20 to 249 employees, do not qualify as executives and have an hourly wage rate below the 2011 Social Security Threshold (SST) of 22 euros per hour at which contributions are capped, rates of contributions can then be simply summarized (Table A).

Table A
Statutory Rates of Contributions (0 to 1 SST Wage Bracket)

Contributions type	Employer rate (in %)	Employee rate (in %)
Contributory schemes	20.0	13.0
Unemployment scheme	4.4	2.4
Pension scheme	15.6	10.6
Non-contributory schemes	24.5	8.6
Total	44.5	21.6

Reading note: Employee rate of contribution to non-contributory schemes is 8.6% of gross labor earnings.

Scope: On-executive workers with wage below SST and employed in medium-size firms (20 to 249 employees).

Sources: *Barèmes IPP, LégiSocial* (2011 legislation).

Effective rates of employer contributions are nonetheless substantially lower than these statutory rates for low-wage workers because of reduction schemes aiming at reducing labor cost. The 2011 general reduction scheme (*réduction Fillon*) exonerates employers from remitting certain contributions for wage rates below 1.6 minimum wage rate (see details in Online complement C1). The effective rate of employer contributions falls down to approximately 18% at the minimum wage rate, 30% at 1.2 times the minimum wage rate and 38% at 1.4 times the minimum wage rate. Hence, effective rates of employer contributions are progressive and in practice equal to their statutory rates only for workers with wage rates higher than 1.6 times the minimum wage rate.

Income Tax

The income tax schedule in France is highly complex as it features several reduction and exemption mechanisms.

Assuming labor is the only source of income and ignoring non-standard reductions, a relatively simple formula may be derived for childless singles:

$$T_{IR} = \phi_{IR} \left(0.9 \left[y_{gross} - deductible\ contributions \right] \right) - D_{IR} \geq 0$$

Indeed, with only labor income, net taxable income is equal to gross labor earnings y_{gross} net of deductible contributions with a standard abatement of 10 percent. Additional earnings like financial income or unemployment benefits would increase net taxable income and thus the final amount of income tax paid. The main step in the computation of the income tax then lies in the application of the function ϕ_{IR} which is the known schedule of marginal tax rates by income tax brackets. In the 2011 legislation, there exists five income tax brackets described below (Table B).

Table B
Income Tax Brackets and Associated Marginal Tax Rates

Bracket (in euros)	0 - 5,963	5,963 - 11,896	11,896 - 26,420	26,420 - 70,830	+70,830
Marginal tax rate (in %)	0	5.5	14	30	41

Reading note: Households with taxable income in the 5,963 - 11,896 bracket face a marginal tax rate of 5.5%.

Sources: *Barèmes IPP, LégiFiscal* (2012 legislation on 2011 earnings).



Box 1 (contd.)

This generally yields net income tax, i.e. what is effectively paid by the household. An important exception relates to households who benefit from the *décote* system which provides partial or full exemption to households with low income tax. For 2011, the deductible amount D_{IR} and the net income tax T_{IR} are given by

$$D_{IR} = \left(439 - \frac{1}{2} T_{IR}^{gross} \right) \mathbb{I} \left\{ T_{IR}^{gross} \leq 2^* 439 \right\}$$

$$T_{IR} = \max \left[T_{IR}^{gross} - D_{IR}; 0 \right]$$

In words, the scheme provides a total exemption for households with a gross income tax below 293 euros and a partial exemption for fiscal households with gross income tax between 293 and 878 euros. Consequently, the *décote* simultaneously reduces the income tax burden of low-income households and increases effective marginal tax rates above statutory ones. The global progressivity of the income tax schedule is thereby non-monotonic.

Publiques. It aims at simulating the entire French tax and benefit system and is composed of several modules simulating different parts of the legislation. Bozio *et al.* (2015b) offer a general presentation of the model with a description of the “social contributions” and “income tax” modules; a description of the “means-tested transfers” module can be found in Bozio *et al.* (2012).

As it is standard in the literature on monetary incentives to work, simulations abstract from

the problems of fraud and take-up. It is thus assumed that individuals who are eligible to a transfer scheme do receive the benefits they are eligible to, while non-eligible individuals do not. The perfect take-up assumption seems acceptable for housing benefits and the make-work pay policy of *prime pour l'emploi* (PPE) for which take-up rates are close to 100%, but may be problematic for the minimum income support scheme called *revenu de solidarité active* (RSA) as its take-up rate is somewhat lower (Lalanne, 2011). Furthermore, as entitlements

Box 2 – Housing benefits and other means-tested transfers

In the 2011 legislation, prime age childless singles are potentially eligible to the following means-tested transfer schemes: a minimum income support scheme named *Revenu de solidarité active* (RSA), an earned income tax credit called *prime pour l'emploi* (PPE) and housing benefits or *allocation logement* (AL).

The scheme of housing benefits in France is very complex and this description focuses on its main features with an emphasis on the relevant aspects for the analysis of work incentives. Childless singles eligibility to housing benefits is determined solely by housing status and earnings. Although the general scheme is divided into several sub-schemes specific to particular housing statuses the analysis focuses on the schedule for recipients who rent a home as they correspond to 85% of housing benefits recipients (*Minima sociaux et prestations sociales*, DREES 2015).

Renting a home thus determines *potential eligibility* to the scheme of housing benefits and individuals become *eligible* to the scheme if their earnings pass the means-test. This is the case if their entitlement to housing benefits, AL , turns out to be positive. Formally, AL is given by:

$$AL = \min[L; L_0] - T_p \max[y_h - y_0; 0] \geq 0$$

where L is the rent, L_0 is a reference value that depends on geographical location to reflect prices of

the local housing market and on household composition. The benefit-rent linkage relates to this first term as a one-euro increase in a rent below L_0 is matched by a one-euro increase in benefits. However, 87% of rents are in practice higher than L_0 (ref) meaning that the amount received does not depend on the rent. Housing benefits are thus akin to a means-tested transfer scheme conditional on geographical location. Means-testing relates to the second term with $T_p = 33.23\%$ a parameter (see *Éléments de calcul des aides personnelles au logement*, Ministère du Logement, 2012) that governs the speed at which the amount of transfer decreases when net taxable income y_h increases above the reference income y_0 .

The schedule of other means-tested transfers can be summarized as follows: RSA guarantees a minimum monthly income, which is withdrawn at a 38% rate with net earnings. The earned income tax credit (PPE) kicks in at higher earnings, phases-in slowly at a 7.7% rate and is phased-out at a 19.9% rate. More details are provided in Online complement C2.

Finally, other transfer schemes are either targeted towards households with dependent children (*allocations familiales*) and typically not means-tested or targeted towards very specific categories like the handicapped (*allocation aux adultes handicapés*) or the elderly (*minimum vieillesse*).

to PPE strongly depend on amounts of RSA received, they are treated as a unified transfer scheme throughout the analysis⁴ although PPE is a negative income tax and thus means-tested using another earnings concept.

Some simplifying assumptions are also made regarding the timing of taxes and transfers. In particular, although housing benefits are means-tested against two-year-lagged income, they are here means-tested against current income.⁵ This assumption is suitable when earnings are relatively smooth over the years and, if there are sharp changes, it reflects the legislation which states that a contemporaneous evaluation of resources should in that case be made. Also, with annual data, it is not possible to follow individuals on a monthly basis. This implies that amounts of transfers are here simulated on the basis of average monthly earnings which may lead to averaging errors due to the non-linearity of the schemes – for instance, RSA is evaluated on rolling 3-months windows.

Another important source of non-linearity in the schedule of housing benefits is a peculiar rounding rule that imposes household income to be rounded up to the nearest hundred. To give a concrete example, a household with an income of 1,002 euros and another with an income of 1,098 euros will be imputed with the exact same value $y_h = 1100$ euros in the computation (Box 2). To focus on structural incentives to work and to ease the interpretation of the results, this rounding rule is here assumed away.

Since this paper focuses on monetary incentives to work, housing characteristics (housing status, rent, geographical location) are taken as given. Therefore, the incidence of a change in the amount of housing benefits stemming from a variation in labor earnings is supposed to be borne by the household and not by the landlord. This last assumption may seem contradictory with Fack (2005, 2006) who shows that housing benefits are captured by landlords through rents increases. However, this inflationary effect operates through market prices which are arguably orthogonal to the labor earnings of a specific individual. In other words, it is assumed that changes in housing benefits induced by changes in labor earnings will not be matched by a subsequent change in the rent and are thus effectively borne by households.

A Representative Sample of Employed Childless Singles

This paper uses ERFS (*enquête Revenus Fiscaux et Sociaux*, Insee) data which is a match between the Labor Force Survey and administrative income tax records. It provides all the variables required for the simulation of taxes and transfers, in particular detailed information on income (wage labor income, non-wage labor income, replacement income, capital and financial income) and hours worked on a yearly basis. ERFS data does not include rents but since 87% of rents are above the reference threshold of the housing benefits scheme (Bozio *et al.*, 2015a), they do not affect the amount of housing benefits received in practice and are thus not necessary for this analysis. Another potential concern with the use of ERFS data to study the bottom of the income distribution is that very low-income households have been shown to be underrepresented in the survey (Lalanne, 2011). This typically poses a problem for recovering the budget devoted to means-tested transfers at an aggregate level, as underrepresentation leads to the underestimation of the number of recipients. However, it should not affect the analysis of monetary incentives to work at the individual level.

Simulations are based upon the 2011 wave of the ERFS – the latest version available when starting this project – and taxes and transfers are accordingly simulated using the 2011 tax code. Given the relative stability of the income distribution in France, the use of more recent data should not particularly affect the results. In contrast, the French tax code tends to be much more volatile and simulation results presented here accurately capture monetary incentives to work for the 2009-2015 period while recent reforms suggest they can be seen as illustrative for posterior years.⁶

4. This convention is also in-line with the recent 2016 reform that introduced a unique make-work-pay transfer scheme named *prime d'activité* as a replacement for PPE and the make-work-pay component of RSA (see Appendix).

5. The notion of earnings used for housing benefits means-testing corresponds to net taxable income in year N-2 except in a handful of cases described in the Appendix of Bozio *et al.* (2015a). In particular, job loss induces earnings means-testing in year N and grants individuals a 30% abatement on unemployment benefits. Similarly, although the income tax is in practice paid with a one-year lag, it is here assumed to be paid during the current year.

6. On the transfer side, an important reform of means-tested transfers occurred in 2009 with the introduction of RSA schemes. Also, in 2016 the make-work-pay part of RSA called RSA *activité* and PPE were merged into a unified scheme called *prime d'activité* while maintaining the minimum income support part of RSA called RSA *socle*. On the tax side, reforms of the income tax schedule were implemented in 2012 (addition of a bracket at the top) and 2015 (deletion of the first bracket and changes in entry thresholds). In addition, employer social contributions were further reduced for low-wage workers in 2013 with the introduction of CICE (-4%) and its expansion in 2014 (-6%) and 2017 (-7%).

Sampling weights in ERF5 data are defined at the household level and used throughout the analysis. The initial sample comprises 56,486 observations representative of the 28 million households living in France in 2011. The analysis focuses on a homogeneous demographic group: childless singles aged 25-54. This restriction simplifies the analysis and allows connecting the schedule of tax and transfer instruments to monetary incentives to work as well as understanding the sources of heterogeneity in work incentives that are unrelated to household composition. The sample is further restricted to employed individuals, defined using two conditions on labor earnings:

- Annual gross labor earnings exceed 1,365 euros (this corresponding to one-month full-time minimum wage earnings);
- Annual gross labor earnings times the replacement rate of 60% exceed the amount of gross unemployment benefits received.⁷

In other words, individuals are considered employed if they have a minimum amount of labor earnings during the year and, for those receiving unemployment benefits, if they spent at least more time employed than unemployed. With this definition, the employment rate among childless singles aged 25-54 in France is 81.1%.⁸ Finally, public sector employees (public sector variable) and self-employed workers (defined by non-wage labor income higher than wage labor income), two categories subject to specific social contributions schemes, are further excluded from the sample. In addition, compared to private sector employees, the self-employed have stronger work incentives and are less protected (no unemployment insurance and potentially large income variations) while public sector employees tend to have weaker

work incentives and to be more protected (job security for civil servants and public sector pay scales). The final sample of analysis comprises 3,745 observations representing the 2.2 million childless single households in France.

While the study of monetary incentives to work at the intensive margin (increasing work intensity when in-work) requires using a sample of employed individuals, the analysis of work incentives at the extensive margin (joining the workforce when out-of-work) involves making a choice: one can either use data on employed individuals and simulate their counterfactual situation if they were not employed as in Immervoll *et al.* (2007) or Sicsic (2018), or use data on individuals who are not employed and simulate their counterfactual situation if they were employed as in Gurgand and Margolis (2008). We follow the first route in order to characterize incentives to work at both margins for the same sample of individuals.

Descriptive statistics (Table 1) show that labor is the major source of earnings for all individuals in the sample.⁹ Nonetheless, some individuals do receive additional incomes which will turn out to be a main source of heterogeneity in monetary incentives to work. The other main source of heterogeneity relates to housing status determining potential eligibility to housing benefits. More than 80% of individuals are potentially eligible to housing benefits in the first income quartile and more than 70% in the second. The

7. This is a proxy for the rules of unemployment insurance in France. Precise simulation of unemployment benefits would require information on past labor earnings which is not available in the data.

8. The 2011 employment rate among all individuals aged 25-54 in France is 81.4% (Insee).

9. The distribution of annual gross labor earnings in the sample of analysis is reported in Appendix.

Table 1
Descriptive Statistics for the Whole Sample and by Quartiles of Labor Earnings

Means	Sample	Q1	Q2	Q3	Q4
Gross labor earnings (euros / year)	28,173	11,846	21,252	27,776	51,842
Hours worked (hours / year)	1,855	1,516	1,877	1,902	2,130
Unemployment benefits (euros / year)	374	883	228	197	173
Financial income (euros / year)	1,298	413	682	857	3,219
Gender (% of men)	61.7	52.2	60.9	65.9	68.1
Age (in years)	38.9	38.7	38.5	38.9	39.7
Potential eligibility to housing benefits (%)	65.8	81.4	72.3	58.1	50.8

Reading note: On average, individuals in the first income quartile work 1,516 hours per year.

Coverage: Sample of employed prime age childless singles.

Sources: Insee, ERF5 2011; author's computation.

schedule of housing benefits thus affects the work incentives of a large fraction of low-income individuals and is thereby important to take into account when analyzing incentives to work.

Definition and Estimation of Effective Marginal and Participation Tax Rates

Monetary incentives to work are captured in the wedge between labor income y and disposable income c . Given the relationship $c = y - T(y)$, the characterization of incentives to work thus falls down to a characterization of taxes and transfers $T(y)$. In order to reflect the dichotomy between labor supply decisions at the intensive margin and at the extensive margin (Heckman, 1993) this characterization is made through the estimation of marginal and participation tax rates.

This estimation requires precise definitions of income y and the components of the tax function $T(y)$. As a benchmark, let's first consider a baseline scenario in which the real incidence of taxes coincides with their legal incidence. In that case, employer contributions are effectively paid by employers meaning that workers' labor earnings correspond to gross labor earnings (*salaires bruts*) and not to labor cost. The tax function then corresponds to employee contributions $T_w(y)$ and income taxes $T_{IR}(y)$ net of transfer benefits $B(y)$:

$$T(y) = T_w(y) + T_{IR}(y) - B(y)$$

In this baseline scenario, let's also consider pension and unemployment contributions as taxes. This is the relevant assumption for agents who do not internalize the future expected benefits derived from pension and unemployment contributions in their labor supply decisions. It also provides what can be interpreted as an upper bound for disincentives to work.¹⁰

Incentives to work at the intensive margin are incentives to increase work intensity (e.g. hours worked) when employed. The standard measure associated with labor supply incentives at the intensive margin is the marginal tax rate defined as $dT(y)/dy$. Following a marginal increase in labor earnings, the marginal tax rate measures the fraction of additional earnings that will be paid in taxes. In other words, the marginal tax rate measures how much of a one-euro increase in labor earnings is taxed away.

Its empirical counterpart, the effective marginal tax rate (EMTR), is computed in TAXIPP using a 2% increase¹¹ in gross labor earnings y , simulating $T(y)$ for the new earnings level and computing the effective differences $\Delta T(y)$ and Δy . To be consistent with the literature, this increase in labor earnings is associated to an increase in hours worked rather than to an increase in the hourly wage rate.¹² An exception is overtime hours that, following the legislation, are assumed to be paid at an hourly wage rate 25% higher than standard hours.¹³ Also, effective marginal tax rates are decomposed by tax and transfer instruments for the purpose of the analysis:

$$\begin{aligned} \text{EMTR}(y) &= \frac{\Delta T(y)}{\Delta y} \\ &= \frac{\Delta T_w(y)}{\Delta y} + \frac{\Delta T_{IR}(y)}{\Delta y} + \frac{\Delta[-B(y)]}{\Delta y} \end{aligned}$$

$$\text{EMTR}(y) = \text{EMTR}_w(y) + \text{EMTR}_{IR}(y) + \text{EMTR}_B(y)$$

Incentives to work at the extensive margin are incentives to join the workforce when not employed. The standard measure associated with labor supply incentives at the extensive margin is the participation tax rate defined as $[T(y) - T(0)]/y$. Upon taking a job, individuals jump from zero labor earnings to labor earnings $y > 0$ and the effective participation tax rate measures the change in taxes net of transfers as a fraction of y . Importantly, this measure captures the resulting reduction in means-tested transfers which acts as a "participation tax" and reduces monetary incentives to participate in the workforce.

The computation of effective participation tax rates (EPTR) thus requires information on earnings and taxes net of transfers when employed (respectively y and $T(y)$) and transfers received when not employed $T(0)$. Earnings y are taken from the data and taxes and transfers $T(y)$ are simulated with TAXIPP microsimulation model. Last, $T(0)$ is imputed as the amount of transfers received had individuals been out-of-work.

10. These two assumptions and their impact on monetary incentives to work are analysed in the next Section.

11. Increases of earnings by 1% to 5% are common in the literature. Different values do not affect the results except at the entry and exit thresholds of tax and transfer schemes, where smaller increases in earnings tend to magnify the discontinuities associated to these thresholds (if any).

12. This choice does not affect the results in the baseline scenario as it only impacts rates of employer contributions through the indexation of reduction schemes on hourly wage rates.

13. 25% is the legal overtime rate unless a specific agreement is in place in the firm. Since this information is not in the data, this rate is applied to all individuals.

The imputation procedure for $T(0) = -B(0)$ differs depending on whether individuals are assumed to receive unemployment benefits when out-of-work. Under the assumption that individuals do not receive unemployment benefits, transfers are simulated setting labor earnings to zero and holding all other individual characteristics constant. A similar imputation procedure is used by Laroque and Salanié (1999) and Sicsic (2018), who interpret their results as reflecting long-term incentives to join the workforce in the sense that individuals may receive unemployment benefits only for a limited period of time. Under the assumption that individuals receive unemployment benefits, the imputation is done in three steps: (1) assign gross unemployment benefits equal to 60% of observed annual gross labor earnings;¹⁴ (2) set labor earnings to zero; (3) simulate transfers. A similar procedure is used by Immervoll *et al.* (2007) and results can be interpreted as reflecting short-term incentives to join the workforce upon losing a job.

The computation of effective participation tax rates is then straightforward; for the purpose of this analysis they are decomposed by tax and transfer instruments:

$$\begin{aligned} \text{EPTR}(y) &= \frac{T(y) - T(0)}{y} \\ &= \frac{T_w(y)}{y} + \frac{T_{IR}(y)}{y} + \frac{-[B(y) - B(0)]}{y} \\ \text{EPTR}(y) &= \text{EPTR}_w(y) + \text{EPTR}_{IR}(y) + \text{EPTR}_B(y) \end{aligned}$$

Incentives to Work in the Baseline Scenario

This section characterizes monetary incentives to work in the baseline scenario with a focus on the role played by housing benefits. The budget set of childless singles is first depicted to get a sense of the importance of housing benefits in low-income workers' budget. Simulation results for effective marginal and participation tax rates are then presented, both for fictitious prototypical individuals (assumed to derive earnings only from labor) and for individuals from the representative sample. Alternating between simulation results for fictitious prototypical individuals and for individuals from the representative sample allows to directly connect the schedule of the instruments to monetary

incentives to work and helps understand the heterogeneity in incentives to work.

The Importance of Housing Benefits in the Budget of Low-income Workers

The budget set of childless single workers (Figure I) reveals that housing benefits can be an important fraction of the budget of low-income workers. For instance, individuals working a half of a full-time job paid at the minimum wage rate earn 6,432 euros net per year, receive 3,548 euros in RSA and an additional 2,515 euros in housing benefits. Housing benefits thus account for 20% of total disposable income which is 12,495 euros per year. In contrast, an individual not eligible to housing benefits would only benefit from RSA and have a total disposable income of 9,980 euros.

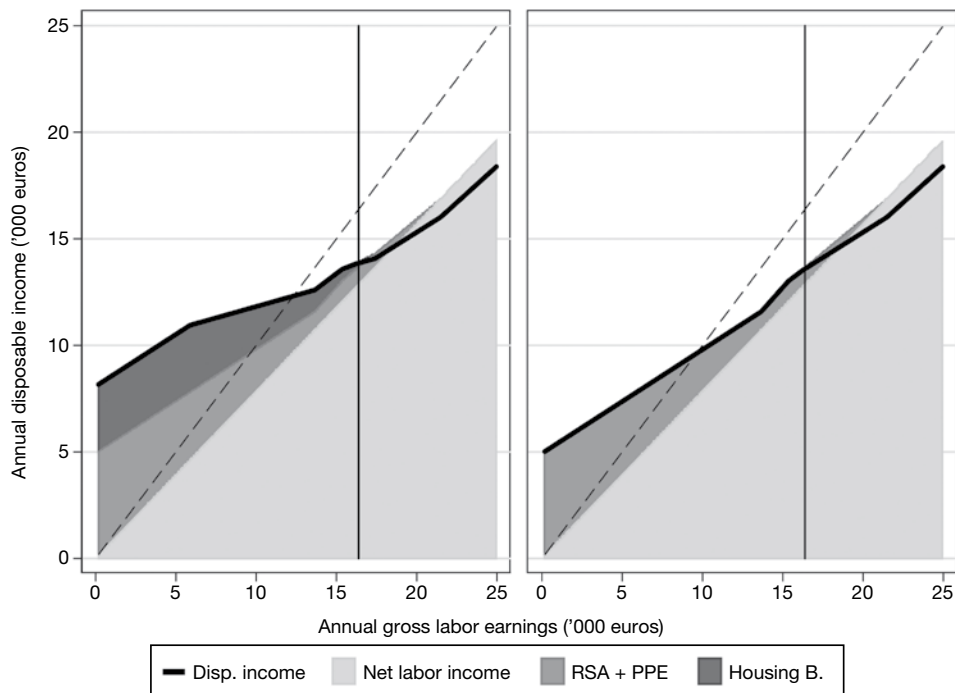
Housing benefits have thus two effects on incentives to work: first, means-testing induces disincentives to work for individuals eligible to the scheme. Second, housing benefits create substantial heterogeneity in incentives to work between individuals who are eligible to the scheme and those who are not.

Phasing-Out and Incentives at the Intensive Margin

At the intensive margin, housing benefits entail strong disincentives to work in the phasing-out region of the scheme. For a childless single who receives housing benefits, the phasing-out is such that a 1-euro increase in gross labor earnings reduces the amount of housing benefits by 27 cents on average (left panel of Figure II). Combined with the reduction in the amount of RSA-PPE received (30 cents) and the payment of employee contributions (21 cents), individuals thus face an extreme marginal tax rate of 78%. In other words, a 1-euro increase in labor earnings translates in a 22-cents increase in disposable income. In contrast, individuals not eligible to the scheme face a marginal tax rate of 51% in the same income region, meaning that a 1-euro increase in labor earnings yields a 49-cents increase in disposable income (right panel of Figure II).

14. This is a proxy for the rules of unemployment insurance in France. Precise simulation of unemployment benefits requires detailed information on past labor earnings which is not in the data.

Figure I
Budget Sets of Low-income Workers

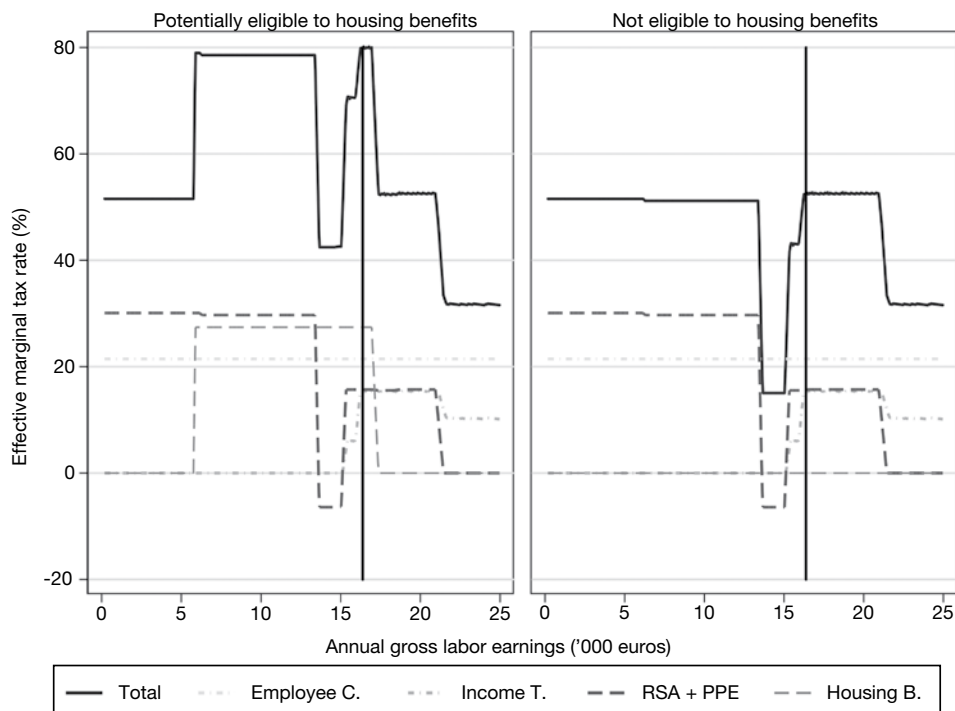


Note: Individuals in the left and right panel only differ with respect to their eligibility to housing benefits (schedule of zone II). Baseline treats social insurance contributions as taxes and assumes employer contributions are paid by employers. The vertical line signals a full-time job paid at the minimum wage rate.

Scope: Simulations for fictitious childless singles assuming labor is the only source of earnings under the 2011 legislation.

Sources: TAXIPP microsimulation model; author's computation.

Figure II
Housing Benefits and Marginal Tax Rates



Note: Individuals in the left and right panel only differ with respect to their eligibility to housing benefits (schedule of zone II). Baseline treats social insurance contributions as taxes and assumes employer contributions are paid by employers. The vertical line signals a full-time job paid at the minimum wage rate.

Scope: Simulations for fictitious childless singles assuming labor is the only source of earnings under the 2011 legislation.

Sources: TAXIPP microsimulation model; author's computation.

Such extreme values for marginal tax rates are to be contrasted with the average estimated marginal tax rate of 43% for individuals in the representative sample. Simulation results on the representative sample show that such rates correspond to the top of the distribution of effective marginal tax rates across earnings levels (Figure III). Indeed, the distribution of local average marginal tax rates with earnings (dashed curve) follows a distinctive tilde-shape pattern with the top of the tilde located in the phasing-out region of housing benefits.¹⁵ This finding is consistent with those of Sicsic (2018) and reflects the recent policy move towards make-work-pay policies (RSA *activité*, PPE).¹⁶

The mechanisms behind this tilde-shape pattern are transparent from the decomposition. Marginal tax rates rise at the bottom of the earnings distribution due to the phasing-out of transfers. Marginal tax rates are then minimal around median earnings and increase with earnings afterwards as individuals fall into higher

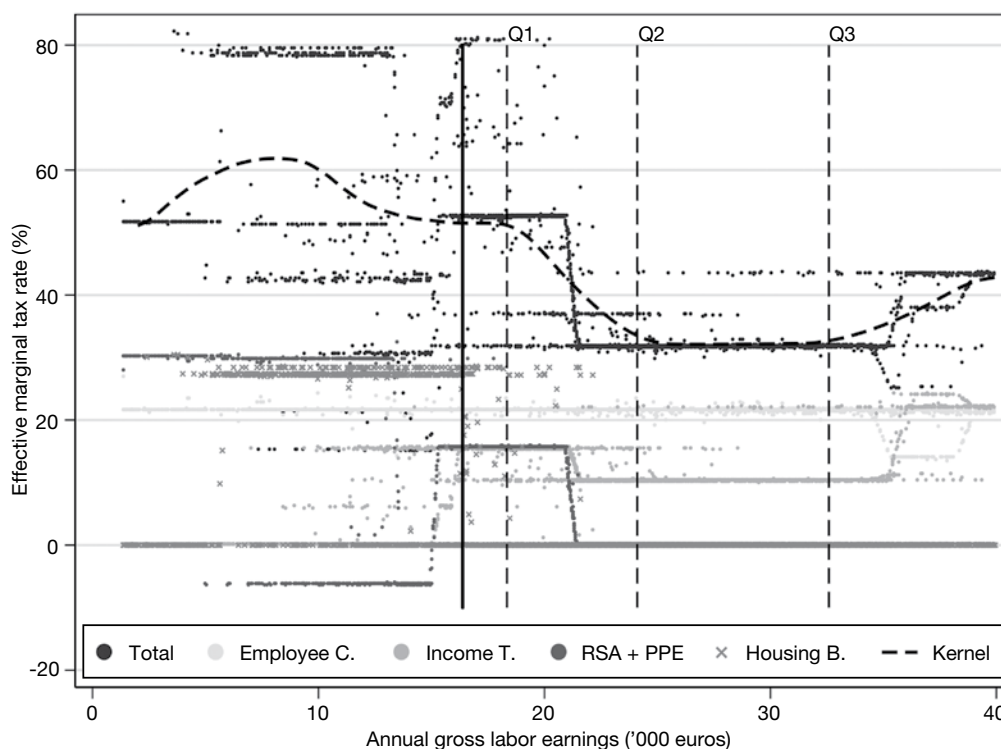
income tax brackets. Employee contributions have a uniform impact across the board, which reflects their flat schedule among the general working population.

Nonetheless, this tilde-shape pattern masks the important heterogeneity between individuals with similar labor earnings. Eligibility to the scheme of housing benefits is an important driver of heterogeneity together with differences in additional incomes (e.g. unemployment benefits, financial income). For instance, individuals with the lowest marginal tax rates in the first income quartile are those who are not eligible to housing benefits and not entitled to RSA after accounting for earnings other than labor.

15. The three different marginal tax rates associated with the phasing-out of housing benefits corresponds to the geographical zoning into three zones and their specific schedules.

16. Immervoll et al. (2007) also show that the distribution of marginal tax rates is tilde-shaped, although their study precedes the introduction of make-work-pay policies. However, their sample includes households with different demographic characteristics and they explain that the hump in their quasi-U-shape pattern is driven by high marginal tax rates imposed on secondary earners in couples.

Figure III
Distribution of Effective Marginal Tax Rates



Note: Baseline treats social insurance contributions as taxes and assumes employer contributions are paid by employers. The dashed curve represents a kernel estimation of the local average EMTR (bandwidth of 4,000 euros). The vertical line signals a full-time job paid at the minimum wage rate and the dashed vertical lines indicate the quartiles of the earnings distribution.

Coverage: Employed prime age childless singles.

Sources: Insee, *ERFS* 2011; TAXIPP microsimulation model; author's computation.

Means-Testing and Incentives at the Extensive Margin

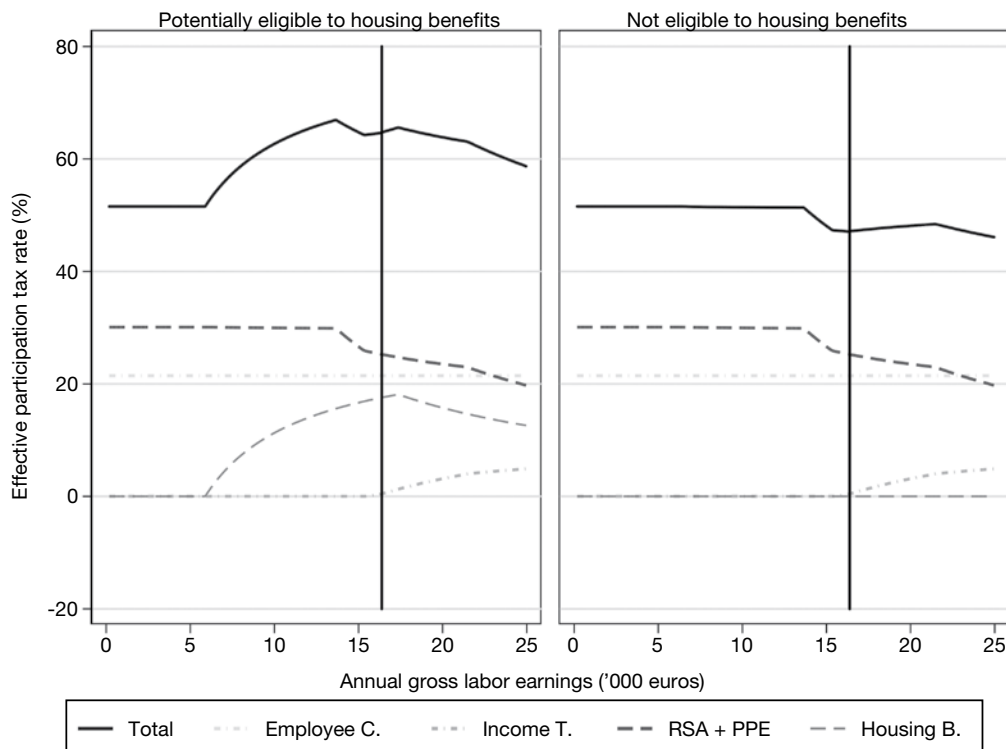
First assume individuals do not to receive unemployment benefits when out-of-work as in Laroque and Salanié (1999) and Sicsic (2018). This may be interpreted as a long-term perspective in the sense that it captures the incentives to work of long-term unemployed whose rights to unemployment insurance have expired. It also captures the work incentives of individuals who are not entitled to unemployment benefits (e.g. first entry on the labor market, job resignation).

Upon taking a job, housing benefits means-testing implies that the amount of housing benefits received decreases for individuals eligible to the scheme. The loss of housing benefits thus acts as a participation tax that can go up to 18% upon taking a full-time job paid at the minimum wage rate (left panel of Figure IV). The total participation tax then corresponds to 64% of labor

earnings for individuals eligible to the scheme whereas it is 46% for non-eligible individuals (right panel of Figure IV). Moreover, eligibility to housing benefits generates a profile of participation tax rates that is increasing with earnings given the extreme marginal tax rates imposed in the phasing-out region of housing benefits.

Given the large fraction of individuals potentially eligible to the scheme of housing benefits, the distribution of participation tax rates estimated using the representative sample more closely resembles that of eligible individuals (Figure V). The average participation tax rate is 51% and local average participation tax rates are broadly increasing with earnings at low income levels and decreasing with earnings at higher income levels. The initial increase in participation tax rates reflects the increase in amounts of transfers lost through means-testing upon taking a job. The subsequent decrease reflects the diminishing importance of this loss as labor earnings on-the-job grow.

Figure IV
Housing Benefits and Participation Tax Rates (No Unemployment Benefits)



Notes: Individuals in the left and right panel only differ with respect to their eligibility to housing benefits (schedule of zone II). Baseline treats social insurance contributions as taxes and assumes employer contributions are paid by employers. It is here assumed that individuals do not receive unemployment benefits when out-of-work. The vertical line signals a full-time job paid at the minimum wage rate.
Scope: Simulations for fictitious childless singles assuming labor is the only source of earnings under the 2011 legislation.
Sources: TAXIPP microsimulation model; author's computation.

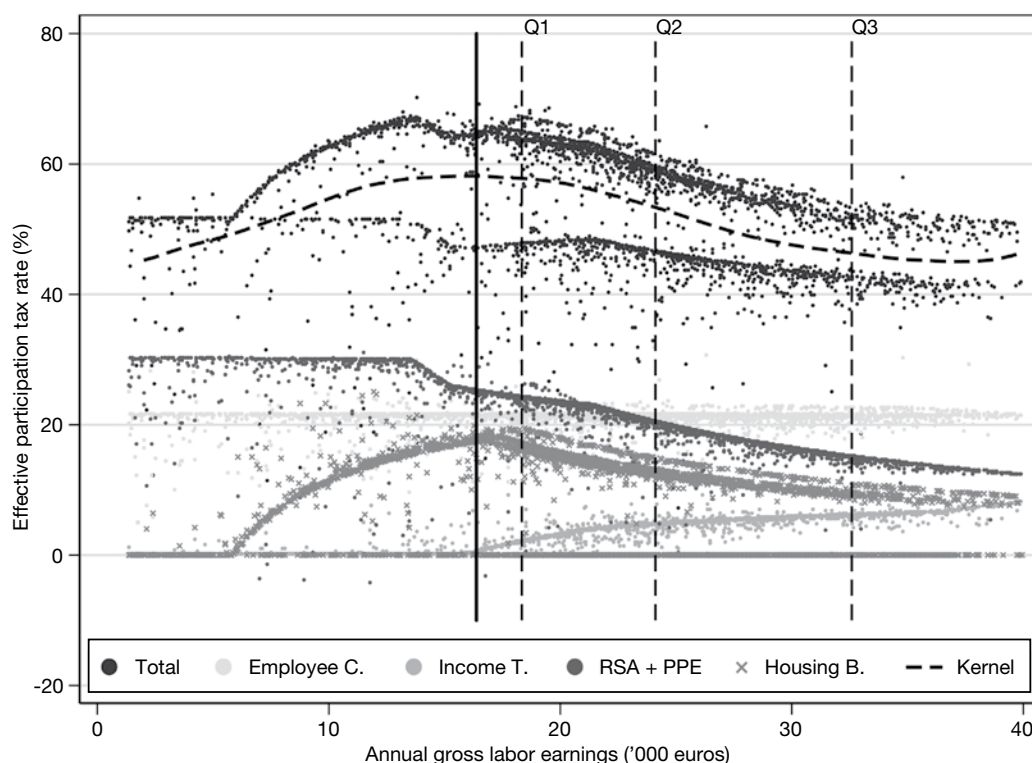
These results are considerably impacted when unemployment benefits are included into the picture. Assuming individuals receive unemployment benefits when out-of-work as in Immervoll *et al.* (2007) may be interpreted as a short-term perspective in the sense that unemployment benefits entitlements are limited in time. Unemployment benefits have two effects on disposable income when not employed. First, disposable income increases as unemployment benefits are a new source of income. Second, as unemployment benefits enter means-testing, entitlements to means-tested transfers decrease: unemployment benefits and means-tested transfers are substitutes. Hence, beyond the overall increase in disposable income, the composition of disposable income when out-of-work drastically changes.

The impact of housing benefits on incentives to take up a job is thus strongly mitigated by the presence of unemployment benefits (Figure VI). Since unemployment benefits

increase with labor earnings, higher labor earnings on-the-job imply higher unemployment benefits when not employed and by the substitution effect, lower entitlements to housing benefits. As a result, an increase in labor earnings decreases entitlements to housing benefits when in-work but also decreases entitlements to housing benefits when out-of-work. Hence, the participation tax associated to the loss of housing benefits is reduced and features an 8% *plateau*.

Furthermore, the presence of unemployment benefits overturns the impact of other means-tested transfers on incentives to join the workforce. Absent unemployment benefits, RSA and PPE scheme-specific participation tax is large and positive (around 30% at low earnings) as means-tested transfers decrease upon taking a job. With unemployment benefits, the RSA and PPE scheme-specific participation tax is still large but negative (around -27% at low earnings). Indeed, in-work

Figure V
Distribution of Effective Participation Tax Rates (No Unemployment Benefits)



Notes: Baseline treats social insurance contributions as taxes and assumes employer contributions are paid by employers. It is here assumed that individuals do not receive unemployment benefits when out-of-work. The dashed curve represents a kernel estimation of the local average EPTR (bandwidth of 4,000 euros). The vertical line signals a full-time job paid at the minimum wage rate and the dashed vertical lines indicate the quartiles of the earnings distribution.

Coverage: Employed prime age childless singles.

Sources: Insee, *ERFS* 2011; TAXIPP microsimulation model; author's computation.

transfers (*RSA activité* and *prime pour l'emploi*) are now larger than out-of-work transfers (*RSA socle*): make-work-pay schemes literally make work pay.

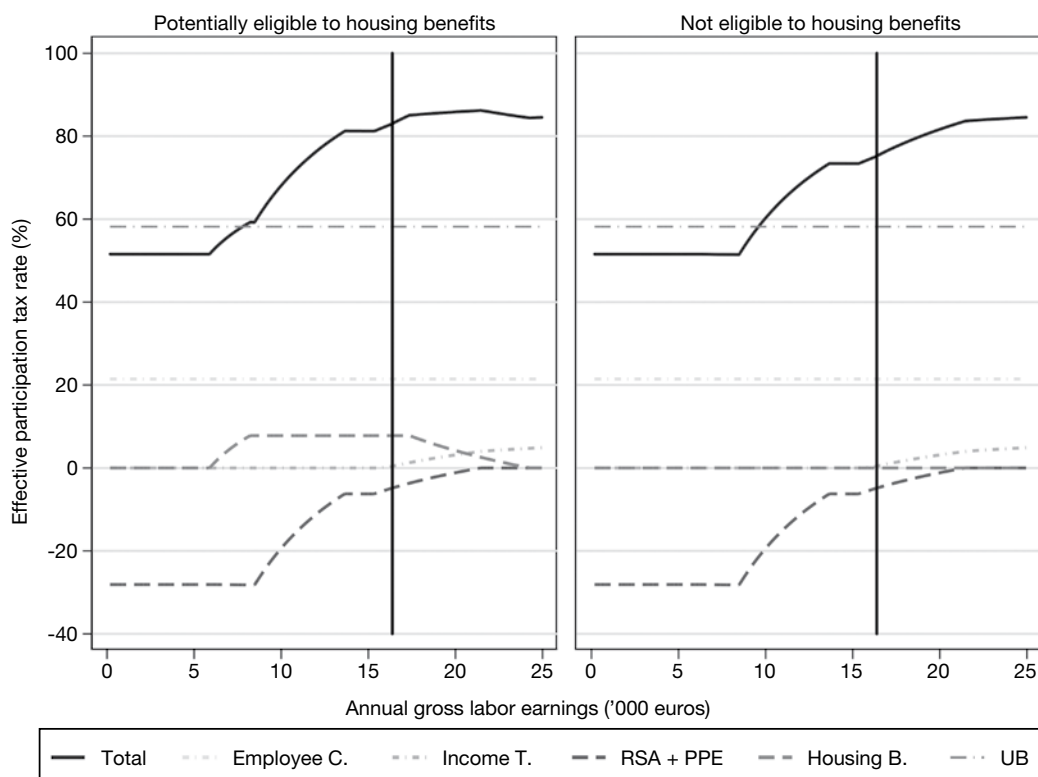
Looking at the distribution of participation tax rates (Figure VII), unemployment benefits increase the average participation tax rate in the sample to 77%. This increase in participation tax rates reflects the increase in the total amount of transfers received when not employed. Also, the loss of unemployment benefits upon taking a job becomes the main driver of participation tax rates.

The distribution of effective participation tax rates is now strongly increasing with earnings at low income levels and moderately increasing at higher income levels. This strong increase at the bottom is jointly driven by make-work-pay schemes and by the substitution effect between unemployment benefits and means-tested transfers. Indeed, as noted before, these two

features imply that the amount of means-tested transfers received when in-work is higher than the amount received when out-of-work. This translates into negative participation tax rates attached to the RSA and PPE schemes. The strong increase in participation tax rates as earnings grow can thus be explained by the phasing-out of make-work-pay subsidies on-the-job. In contrast, moderately increasing participation tax rates at higher income levels are related to the increase of the income tax with earnings.

These findings are difficult to compare with previous findings in the literature, as Legendre *et al.* (2003) and Gurgand and Margolis (2008) do not report the distribution of participation tax rates with respect to earnings on-the-job. The only point of comparison is Immervoll *et al.* (2007), who obtain a distribution of participation tax rates that is increasing with earnings at low income levels and decreasing with earnings at higher income levels. They find an average participation tax rate close to 70%. However, in

Figure VI
Housing Benefits and Participation Tax Rates (With Unemployment Benefits)



Notes: Individuals in the left and right panel only differ with respect to their eligibility to housing benefits (schedule of zone II). Baseline treats social insurance contributions as taxes and assumes employer contributions are paid by employers. It is here assumed that individuals receive unemployment benefits when out-of-work. The vertical line signals a full-time job paid at the minimum wage rate.
Scope: Simulations for fictitious childless singles assuming labor is the only source of earnings under the 2011 legislation.
Sources: TAXIPP microsimulation model; author's computation.

addition to childless singles, their sample features couples and families with children whose tax treatments are different. Moreover, they randomly assign unemployment benefits to a part of their sample to reflect the fact that some but not all individuals receive unemployment benefits when out-of-work. Last, their study precedes the introduction of make-work-pay policies in France. Therefore, comparisons between the two sets of results involve too many differences to be truly informative.

Incentives to Work in Alternative Scenarios

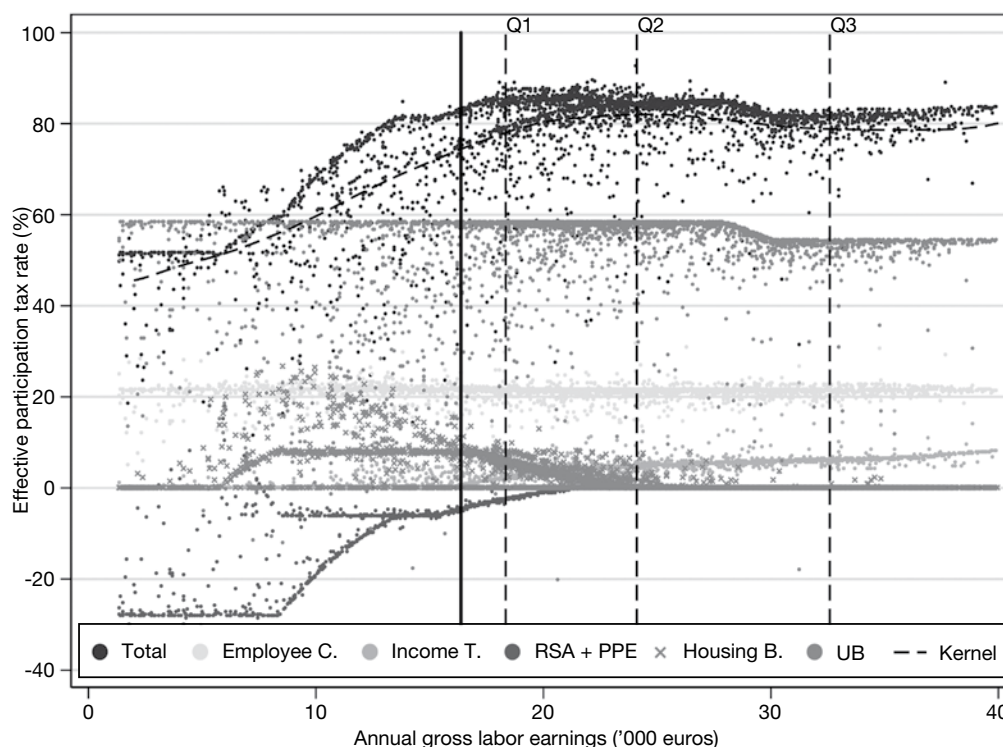
The previous characterization of monetary incentives to work has been obtained under the assumption that employer contributions are effectively paid by employers and that contributions to social insurance programs (pension and unemployment contributions) are taxes

although they primarily relate to an insurance motive and might thus be interpreted as savings rather than taxes.

Incidence of Employer Contributions on Workers

Assuming that the real incidence of taxes coincide with their legal incidence is a standard simplifying assumption commonly used as a benchmark (e.g. OECD data on labor wedges). Also, recent studies show that the legal incidence of taxes may distort their real incidence towards the legal taxpayer (Chetty *et al.*, 2009). However, there is in principle no reason for the real and the legal incidence of taxes to coincide. A standard result in economic theory due to Harberger (1964) states that the burden of a tax in a market is shared by both demand and supply sides in relative proportions that depend on the ratio of the respective elasticities. The more elastic one side of the market is, the more the

Figure VII
Distribution of Effective Participation Tax Rates (With Unemployment Benefits)



Notes: Baseline treats social insurance contributions as taxes and assumes employer contributions are paid by employers. It is here assumed that individuals receive unemployment benefits when out-of-work. The dashed curve represents a kernel estimation of the local average EPTR (bandwidth of 4,000 euros). The vertical line signals a full-time job paid at the minimum wage rate and the dashed vertical lines indicate the quartiles of the earnings distribution.

Coverage: Employed prime age childless singles.

Sources: Insee, *ERFS* 2011; TAXIPP microsimulation model; author's computation.

burden of the tax is shifted to the other side of the market.

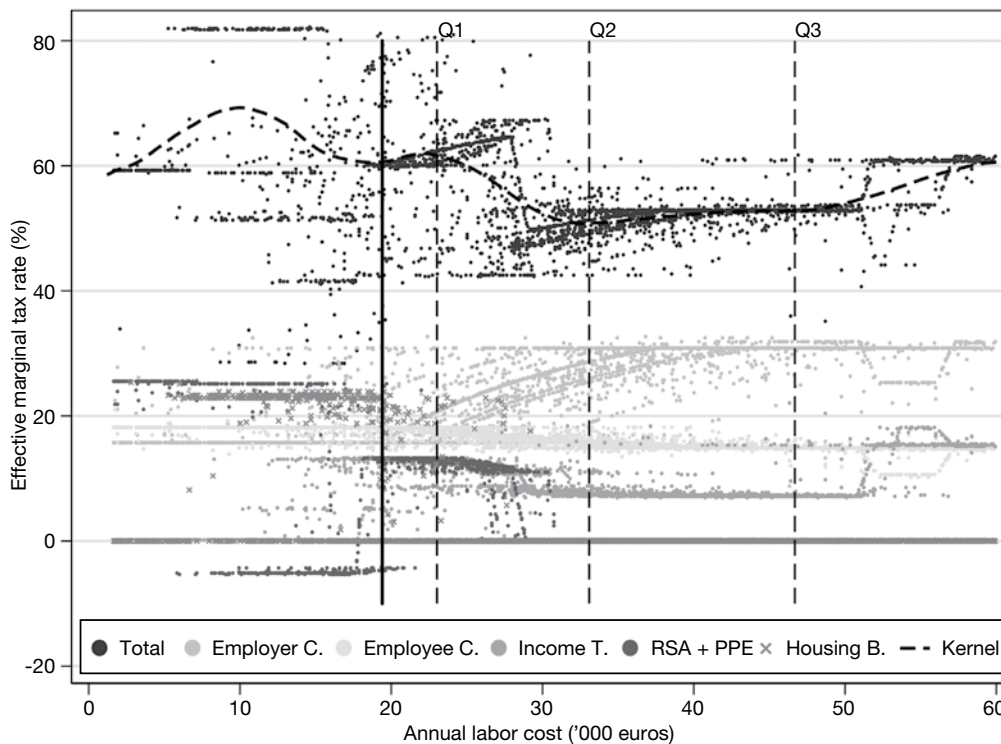
Empirical evidence on this question is mixed. In the short-run, Lehmann *et al.* (2013) show that wages are rigid and that an increase in employer contributions is borne by employers. Studying the medium-run effects of social security contributions reforms in France, Bozio *et al.* (2017) identify a partial shifting of employer contributions to workers.¹⁷ However, an important rigidity in the wage adjustment process in France is the existence of a relatively high minimum wage.¹⁸ This rigidity strongly suggests that, at least for wages close to the minimum wage, the real incidence of employer contributions should fall on employers. Hence, the baseline scenario seems relevant for the study of monetary incentives to work of low-wage individuals who are the major recipients of housing benefits. It is nonetheless interesting to understand how monetary incentives to work are affected when employer contributions are assumed shifted to workers. In this scenario, workers labor earnings y correspond to the labor cost,

and taxes and transfers $T(y)$ include employer contributions.

At the intensive margin, the average marginal tax rate increases to 57%, against 43% in the baseline. Moreover, assuming employer contributions are shifted to workers compresses the distribution of effective marginal tax rates towards a flat rate compared to the baseline (Figure VIII). Indeed, the progressivity of employer contributions stemming from the reduction schemes for low wage workers significantly increases marginal tax rates in the middle of the earnings distribution and at the top. As a result, the tilde-shape pattern of marginal tax rates is largely attenuated. The impact of housing benefits on incentives to work is qualitatively the same as in the baseline. The only

17. Bozio *et al.* (2017) provide micro-evidence for employed individuals. They argue that adjustments could also take place through other channels (e.g. job creation and destruction) that need to be further investigated.
18. This rigidity seems well understood by policy makers as reductions in employer contributions tend to be concentrated around the minimum wage in order to obtain the largest effect on employment (Lehmann & L'Horty, 2014).

Figure VIII
Distribution of Effective Marginal Tax Rates (Incidence on Workers)



Note: Social insurance contributions are treated as taxes while the incidence of employer contributions is assumed to fall on workers. The dashed curve represents a kernel estimation of the local average EMTR (bandwidth of 4,000 euros). The vertical line signals a full-time job paid at the minimum wage rate and the dashed vertical lines indicate the quartiles of the earnings distribution.
Coverage: Employed prime age childless singles.
Sources: Insee, *ERFS* 2011; TAXIPP microsimulation model; author's computation.

change is that housing benefits are phased-out at a 23% rate with respect to labor cost, against a 27% rate with respect to gross labor earnings.

At the extensive margin, assuming employer contributions are shifted to workers increases participation tax rates. Absent unemployment benefits, the average participation tax rates is 63%, against 51% in the baseline scenario. With unemployment benefits, the average participation tax rates climbs to 82%, against 77% in the baseline. However, this increase in participation tax rates does not strongly affect the pattern of participation tax rates (Figure not reported). The intuitive reason is that the incidence of employer contributions does not affect the amount of welfare benefits received when out-of-work but only taxes paid when in-work. Accordingly, housing benefits have once again the same qualitative impact on incentives to work while their magnitude is slightly reduced.

Social Insurance Contributions as Savings

Contributions to social insurance programs (pension and unemployment contributions), have so far been treated as taxes. However, these contributions are not pure taxes as they respond to an insurance motive: they aim at transferring resources from an individual currently employed to the same individual later in life, when either unemployed or retired. Hence, the tax hypothesis made in the baseline scenario corresponds to individuals who do not internalize future expected benefits in their labor supply decisions (e.g. myopic agents) or who anticipate that they will not benefit from unemployment insurance (e.g. no unemployment spell) or the pension system (e.g. early death).

In all generality, disincentives to work associated with social insurance contributions are equal to contributions costs net of future expected benefits (Disney *et al.*, 2004). As future expected benefits have so far been assumed away (tax hypothesis), previous marginal and participation tax rates can be interpreted as upper bounds for their true values. Evaluating future expected benefits stemming from pension or unemployment contributions is beyond the scope of this work. Instead, it is assumed here that future expected benefits are exactly equal to contributions paid (savings hypothesis). This corresponds to the case in which social insurance programs are perfectly fair actuarially and operate no redistribution across individuals. In other words, pension and

unemployment contributions are akin to savings and perceived as such.¹⁹

While little evidence seems available on the redistribution operated by the French unemployment insurance system, a small literature characterizes the redistribution operated by the French pension system distinguishing between (1) redistribution within generations and (2) redistribution across generations. Paul-Delvaux (2015) shows that, within generations, the rate of return on general pension contributions is slightly decreasing with earnings. In other words, future expected benefits are relatively subsidized at low earnings levels and taxed at high earnings levels. Dubois and Marino (2015) characterize redistribution across generations and show that the rate of return on pension contributions is steadily decreasing across cohorts. This finding reflects the impact of global ageing on a pay-as-you-go pension system and tends to suggest that current workers are taxed to finance the pensions of retired individuals. Building on these contributions, redistribution within and across generations work in opposite directions for low-wage workers, meaning that marginal and participation tax rates derived under the savings hypothesis could be close to their true values. In contrast, they work in the same directions for high-wage workers, suggesting that marginal and participation tax rates derived under the savings hypothesis should rather be interpreted as lower bounds.

Under the savings hypothesis, assuming employer contributions are paid by employers, workers labor earnings y is gross labor earnings, while taxes and transfers $T(y)$ no longer include worker pension and unemployment contributions.²⁰ At the intensive margin, treating pension and unemployment as savings decreases marginal tax rates by 13 percentage points across the board (Figure IX). The average marginal tax rate is then equal to 30%, against 43% in the baseline scenario. The impact of housing benefits on monetary incentives to work is not affected.

At the extensive margin, the impact of the savings hypothesis greatly depends on the treatment

19. Using survey data, Dominitz *et al.* (2003) elicit Americans' expected returns on their pension contributions and show there exists substantial heterogeneity in perceptions. At the two extremes, some individuals do not expect the pension system to survive, while others tend to overestimate their future benefits.

20. Assuming simultaneously that employer contributions are paid by workers and treating pension and unemployment contributions as savings generates hard-to-interpret results because reductions in employer contributions reduce the rates of contributions without reducing future benefits. Hence, future expected benefits are larger than contributions, which is not consistent with the savings hypothesis.

of unemployment benefits when out-of-work. When non-employed individuals do not receive unemployment benefits, effective participation tax rates decrease following the increase of disposable income on-the-job (Figure not reported). The average participation tax rate is then equal to 39%, against 51% in the baseline scenario. In contrast, when non-employed individuals receive unemployment benefits (short-term perspective), the savings hypothesis has a more drastic impact on participation tax rates. Indeed, if unemployment contributions are treated as savings, unemployment benefits are the depletion of past savings. Hence, unemployment benefits should not be treated as transfers. As a result, effective participation tax rates fall to unrealistically low values that contradict casual empiricism on monetary incentives to work in France (Figure X).

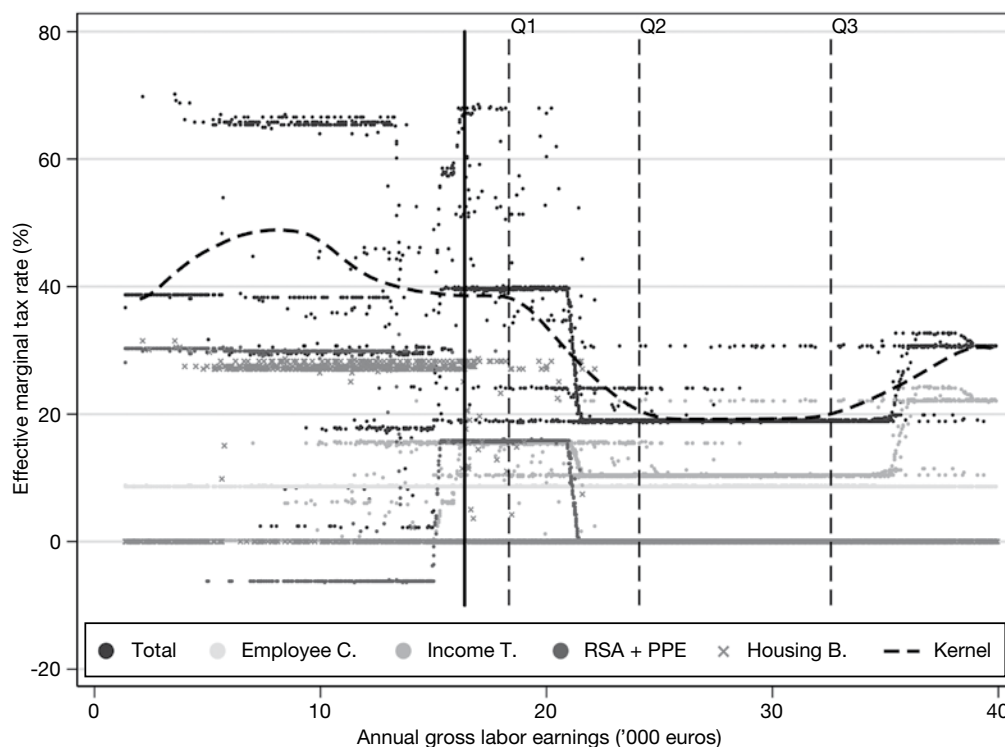
Such extremely low values do not only reflect the importance of unemployment benefits in disposable income when out-of-work, they once again highlight the important substitution

effect between unemployment benefits and means-tested transfers. Indeed, effective participation tax rates are close to zero because means-tested transfers when out-of-work are substantially reduced in the presence of unemployment benefits. Hence, excluding unemployment benefits from means-tested transfers is misleading for the analysis of incentives to take up a job because unemployment benefits precisely replace means-tested transfers. In other words, the savings hypothesis seems of limited relevance for the analysis of incentives to work, at least in the kind of static framework considered here.

* *
*

This paper has analyzed monetary incentives to work in France and proposed a decomposition in terms of the underlying tax and transfer instruments. The decomposition reveals the interactions at play and allows to identify the impact of

Figure IX
Distribution of Effective Marginal Tax Rates (Savings Hypothesis)



Notes: The savings hypothesis treats social insurance contributions as savings while employer contributions are again assumed paid by employers. The dashed curve represents a kernel estimation of the local average EMTR (bandwidth of 4,000 euros). The vertical line signals a full-time job paid at the minimum wage rate and the dashed vertical lines indicate the quartiles of the earnings distribution.
Coverage: Employed prime age childless singles.
Sources: Insee, *ERFS* 2011; TAXIPP microsimulation model; author's computation.

each instrument on incentives to work. Housing benefits entail substantial adverse effects on monetary incentives to work for individuals in the first income quartile.

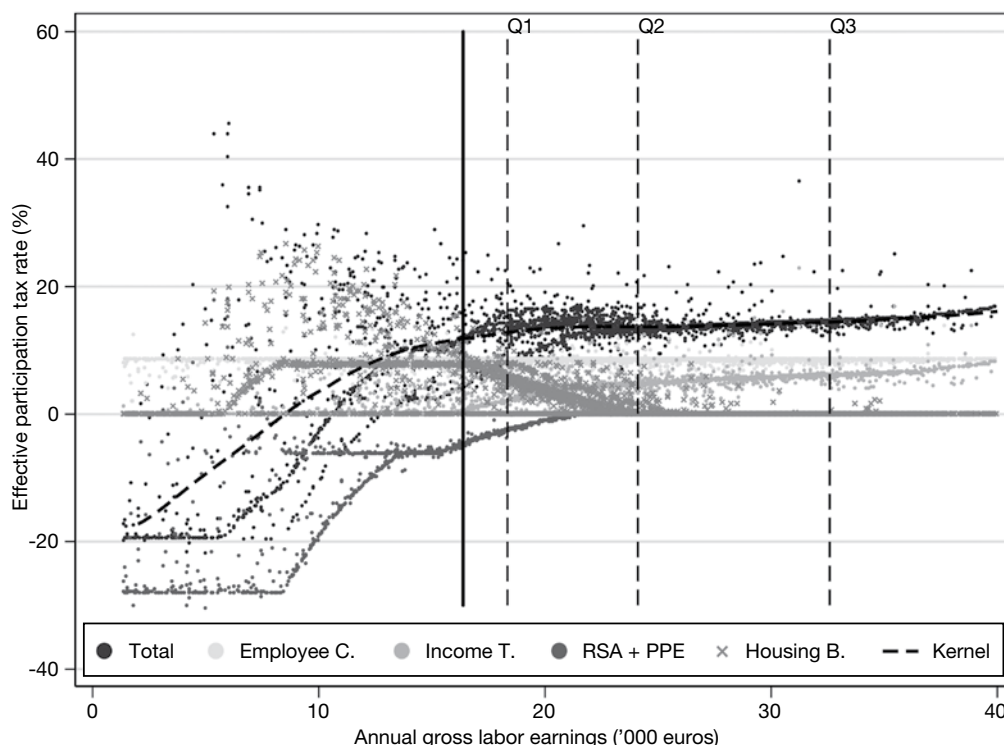
At the intensive margin, a 1-euro increase in gross labor earnings reduces housing benefits by 27 cents on average in the phasing-out region of the scheme. The phasing-out of other means-tested transfers (30 cents) together with the payment of social contributions (21 cents) imply that in this region a 1 euro increase in gross labor earnings only translates into a 22 cents increase in disposable income. This corresponds to a marginal tax rate of nearly 80% and to the top of the tilde-shape distribution of marginal tax rates across earnings. In comparison, the average marginal tax rate is 43%.

At the extensive margin, monetary incentives to work greatly depend on whether individuals receive unemployment benefits when out-of-work. In the absence of unemployment benefits, the amount of housing benefits lost

upon getting a job may represent up to 18 % of gross labor earnings on the job. Associated with the loss of other means-tested transfers (30%) and the payment of social contributions on the job (21%), transfers loss and tax payments may represent up to 70% of gross labor earnings. These top participation tax rates are attained upon taking a full-time job paid at the minimum wage rate and can be compared to the average participation tax rate of 51%. With unemployment benefits, the average participation tax rate shoots up to 77% as monetary gains to join the workforce decrease. However, because unemployment benefits and means-tested transfers act as partial substitutes, the amount of housing benefits received when out-of-work becomes rather small and the participation tax associated to the loss of housing benefits does not exceed 8%.

The identified substitutability of unemployment benefits (insurance) and means-tested transfers (redistribution) may bear substantial implications for the articulation of these

Figure X
Distribution of Effective Participation Tax Rates (Savings Hypothesis)



Notes: The savings hypothesis treats social insurance contributions as savings while employer contributions are again assumed paid by employers. Individuals are here assumed to receive unemployment benefits when out-of-work, however unemployment benefits are now the depletion of past savings and thus not treated as a transfer scheme. The dashed curve represents a kernel estimation of the local average EPTR (bandwidth of 4,000 euros). The vertical line signals a full-time job paid at the minimum wage rate and the dashed vertical lines indicate the quartiles of the earnings distribution.

Coverage: Employed prime age childless singles.

Sources: Insee, *ERFS* 2011; TAXIPP microsimulation model; author's computation.

schemes. Surprisingly, although standard in modern welfare systems, this interaction between social insurance and redistribution instruments has received little attention in the normative literature.

These baseline results are derived under the assumptions that workers' social insurance contributions are treated as taxes and paid by workers while employer social contributions are paid by employers. Treating workers' pension and unemployment contributions as savings rather than taxes decreases marginal (-13 percentage points) and participation tax rates (-12 percentage points) across the board. In contrast, assuming employer contributions are being shifted to workers increases marginal and participation tax rates in a non-uniform way and compresses the tilde-shape pattern of marginal tax rates towards a flat rate because of the progressivity of employer contributions. The impact of housing benefits on monetary incentives to work is robust to these changes.

Last, housing benefits generate heterogeneity in incentives to work based on housing statuses

which determine potential eligibility to the scheme. While the tilde-shape distribution of local average marginal tax rates across earnings seems broadly consistent with policy recommendations of the optimal taxation literature (Saez, 2002), it seems likely that top marginal tax rates faced by individuals eligible to housing benefits are too high to be optimal.

Overall, housing benefits adverse effects on labor supply incentives are to be put into perspective with the phenomenon of capture identified in the literature. Since housing benefits are captured by home-owners through increases in rents (Laferrère & Le Blanc, 2004; Fack, 2005; 2006), low-income individuals may not effectively receive these benefits even when they effectively face reduced incentives to work. Housing benefits may thus contribute to generating a poverty trap. A structural reform of the scheme – for instance through its integration with other means-tested transfers as proposed by Bozio *et al.* (2015a) and Bargain *et al.* (2017) – could then be highly beneficial both for low-income individuals and for the French economy. □

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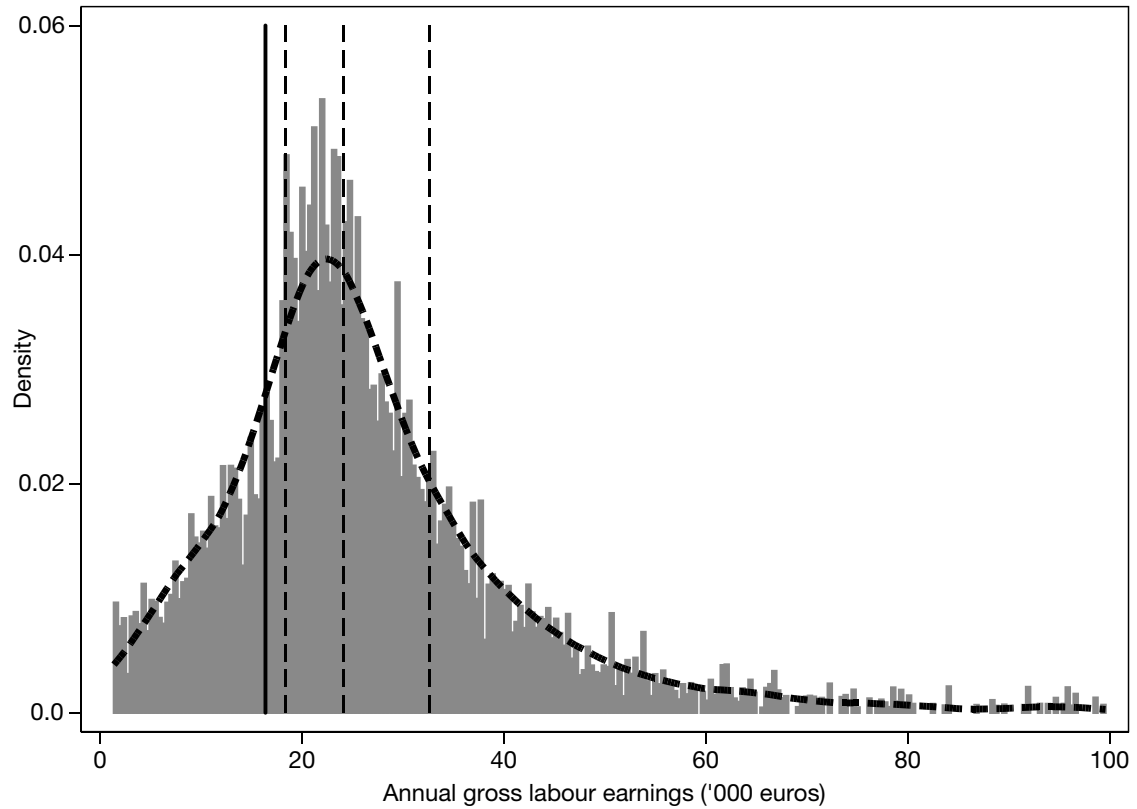
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EARNINGS DISTRIBUTION IN THE SAMPLE

Figure A-1
Distribution of Labor Earnings Among Employed Prime Age Childless Singles



Note: The vertical line signals a full-time job paid at the minimum wage rate and the dashed vertical lines indicate the quartiles of the earnings distribution.

Coverage: Employed prime age childless singles.

Sources: Insee, *ERFS* 2011; author's computation.

