Work incentives on the intensive margin in France between 1998 and 2014

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13 septembre 2017, Paris

Insee Mesurer pour comprendre

UNIVERSITÉ PARIS II PANTHÉON-ASSAS

Aim of the paper

- Measure monetary incentives to work
  - The tax-benefit system is redistributive in France …
  - … but modifies incentives via the marginal tax rate
  - An increase of the labor income can lead to
    - Tax increase (income tax, payroll tax)
    - Less monetary benefit
  - Summarized by the marginal effective tax rate (METR) : the proportion of the increase captured by tax-benefit system
  - A high METR is disincentive

- How incentives have changed due to reforms since the late 1990's?

Motivation

- Pre-requisite to measure the efficiency costs from redistribution
  - *The statistical distribution of METR provides information on the efficiency costs resulting from redistribution. It is surprising that this information is not more systematically elaborated, used and disseminated (Bourguignon, 1998)*
  - Estimation of the labor supply elasticity wrt METR

- Compare empirical METR with the distribution of marginal tax rate predicted by optimal taxation (U shape?)

- Know better the tax-benefit system
  - *Contribute to a thorough understanding of the mechanics of tax-benefit systems. This understanding of how different tax-benefit instruments interact with each other, as well as with people's particular labour market and household situations, is an essential pre-requisite for identifying tax-benefit reform priorities (OECD, 2004)*

Context

- Growing use of incentives schemes to encourage people to work
  - US : earned income tax credit (EITC, 1975, 1987…, 2009)
  - UK : working families' tax credit (WFTC, 1999, 2000)
  - France : Prime pour l'emploi (PPE, 2001), RSA activité (2009), prime d'activité (2016)

- Important need to take into account welfare benefits in France to compute the METR
  - Very complex
  - ~ 4% of GDP in 2013
  - Main contribution to the reduction of inequality (by 2/3) (Insee, 2016)

Related literature on METR

- Representative tax profiles :
  - France : Paillaud & Eyssartier (1998); Hagneré et Trannoy (2001); …
  - International : Carone & al. (2004); OECD (2017)
  - But does not take into account the diversity of situations for a same level of income (type of family, of income, age, handicap…)

- Microsimulation from representative samples of the population:
  - France : Bourguignon (1998), Laroque & Salanié (1999), Legendre & al. (2003), Chanchole & Lalanne (2011), Ferey (2016)
  - International :
    - EU : Immervol (2002 et 2004), Immervol & al. (2007)
    - US : CBO (2005 & 2016), Kotlikoff & Rapson (2006)
    - Canada : Duclos & al. (2007)
    - Australia : Beer (2003)
    - UK : Browne J. (2010)
    - …

Contribution

- Contribution
  - Full description of METR in France : distribution for whole population, by level of income, by type of family, by sex
  - By individuals
  - Evolution of the METR between 1998, 2008 and 2014
  - More transfers taken into account
  - Two scenarios for the incidence of payroll tax

- Limits : we don't analyse
  - The extensive margin ➔ see Gurgand & Margolis (2008), Immervol & al. 2007 …
  - Non monetary incentives
  - Behavioral effects

Model

- Individual i in an household h with labor income W^i and not labor income or labor income of other peope of the household W^{-i}

$$C^h = W^i + W^{-i} - \sum T\left(W^i, W^{-i}; Z^h\right) + \sum B\left(W^i, W^{-i}; Z^h\right)$$

Hypothesis : $\dfrac{\partial W^{-i}}{\partial W^i} = 0$

$$\frac{\partial C^h}{\partial W^i} = 1 - \sum \frac{\partial T\left(W^i, W^{-i}; Z^h\right)}{\partial W^i} + \sum \frac{\partial B\left(W^i, W^{-i}; Z^h\right)}{\partial W^i}$$

$$METR_i = 1 - \frac{\partial C^h}{\partial W^i} = \sum \frac{\partial T^h}{\partial W^i} - \sum \frac{\partial B^h}{\partial W^i}$$

Estimation

- Estimation by microsimulation derivated with INES model
  - Simulate taxes and benefits in France
  - From representative sample of the population
  - Good fit of these transfers compared to data observed
  - A static model: no behavioral response
  - Co-management of INES : INSEE - DREES (Ministry of Health and Social Policy)
  - Open licence : https://adullact.net/projects/ines-libre

Estimation

- Two simulations to compute METR:
  - first in a counterfactual situation
  - and then in a situation in which the gross labor income is increased (by +3%).
- If more than one person is active in a household, the TMEP is calculated for each person
- No behavioral response
- The calculation of METR is consolidated and does not take into account the temporal lag of income that exists for certain transfers ➔ contributions of each transfer for the same year

Data

- Based on the Tax and Social Income Survey (ERFS)
- ERFS results from the match between
  - LFS: sample of 50 000 households
  - Administrative income tax and local residence tax records from fiscal sources
  - Administrative data on social benefits
- ERFS 2012 updated 2014

- Sample
  - Persons with labor income: employed and self-employed

  ➔ **56 712 people in 35 921 households (non weighted)**

  ➔ **28.8 million people in 18.5 million households (weighted)**

Transfers taken into account

Transfers between labor cost and net income :

- Social security payroll tax
  - Employer payroll tax + tax on wages + reduction schemes. *2 scenarios depending on the incidence of payroll tax since no consensus*
  - Employee payroll tax
- Income tax (5-6 brackets, with non linearities)
- Social security contribution CSG-CRDS
- Means-tested benefits
  - family allowances
  - social statutory minimum
  - housing allowances
- Incentive *in-work* scheme (with phase-in and phase-out)
  - Prime pour l'emploi (tax credit)
  - RSA activité

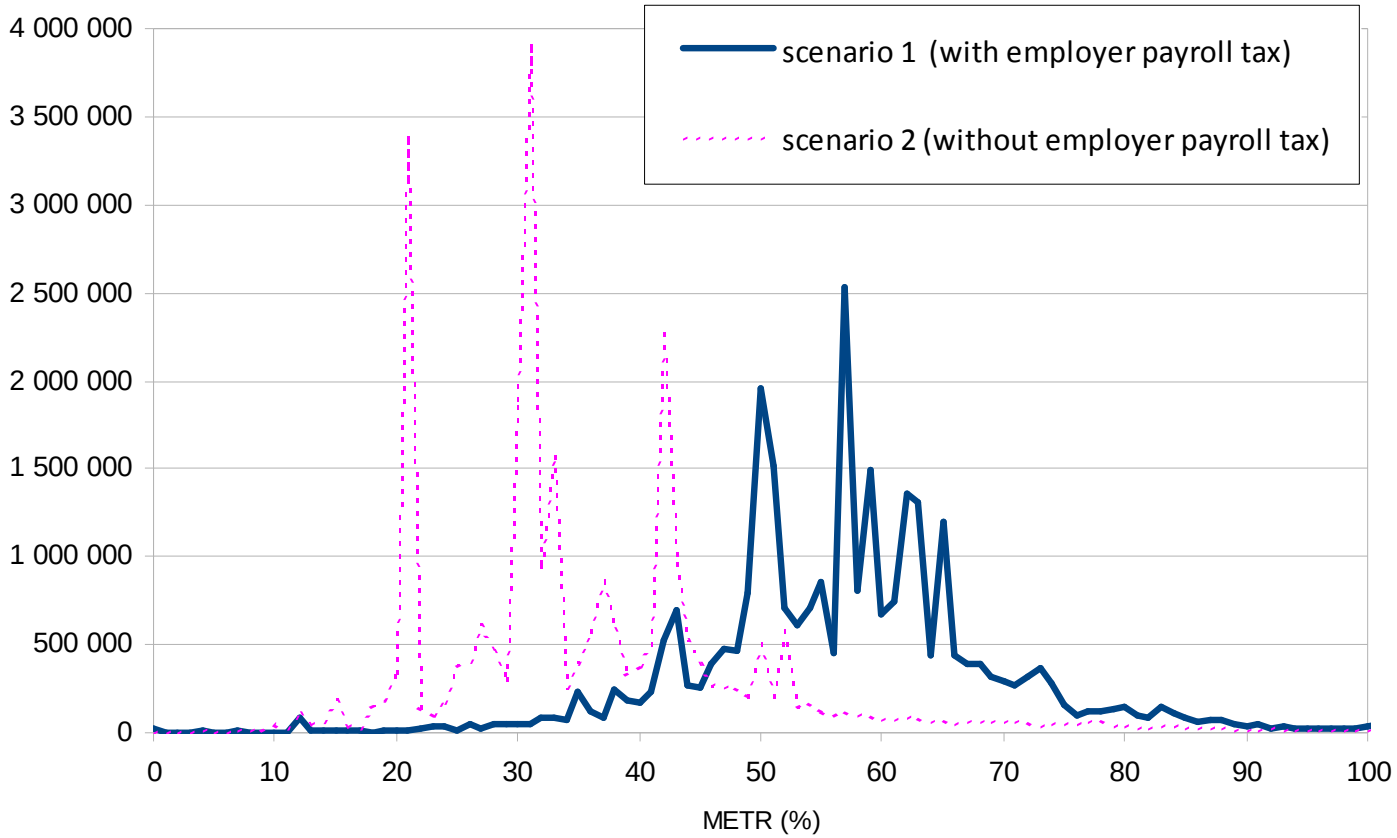
- Not taken into account
  - Local taxes and benefits ➔ see Anne & L'Horty (2002 & 2009)

How to compute METR on different year

- We want to compute METR on 1998, 2008 and 2014

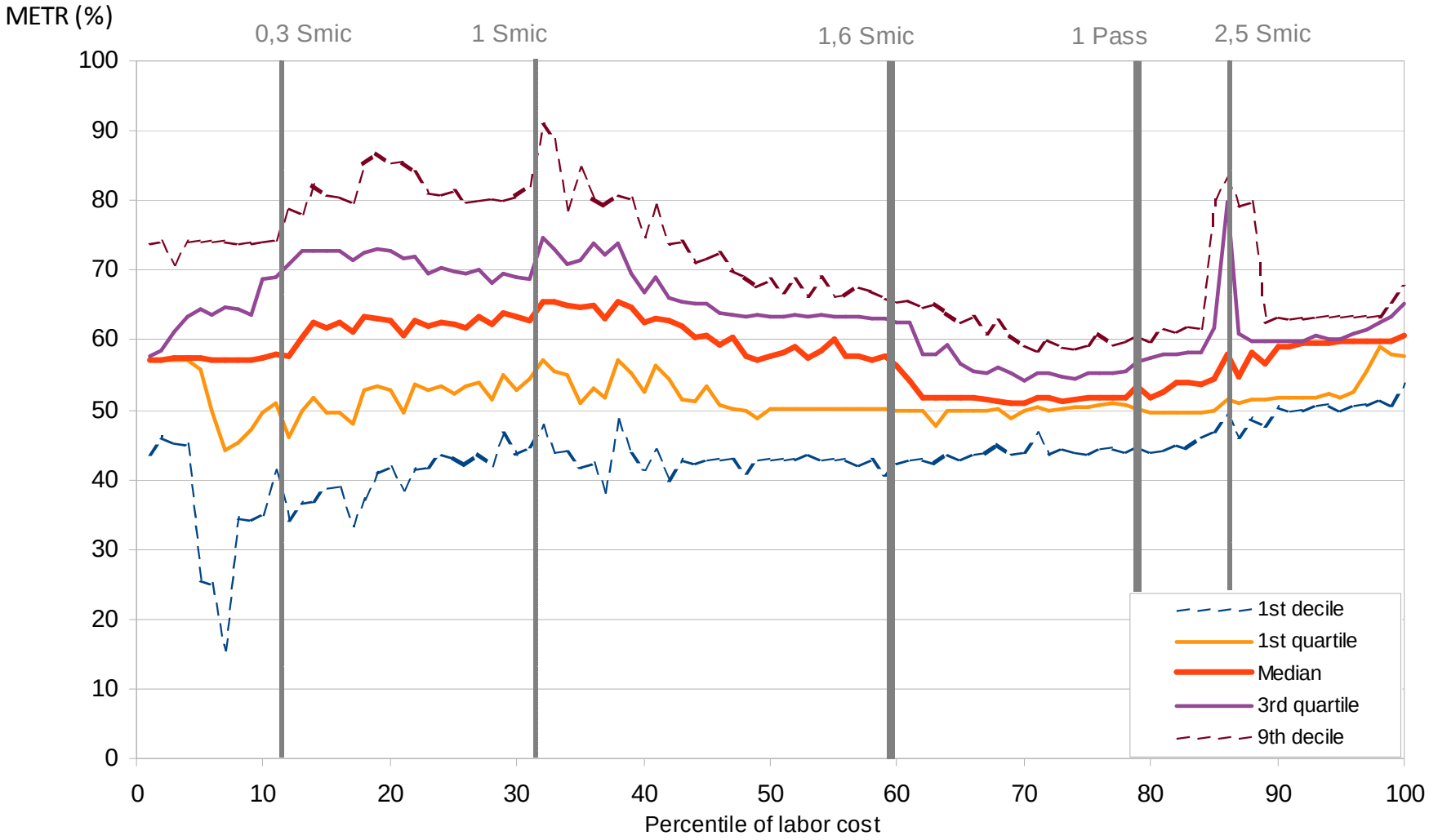
- Method of Eidelman et al. (2013)
  - Same population (2014) in order to comment on the evolution of the legislation and not on the socio-demographic situation
  - The scales of the legislation of 1998 and 2008 must be revalued in 2014 euros ➔ according to inflation

Distribution of the METR with 2 scenarios on incidence - 2014

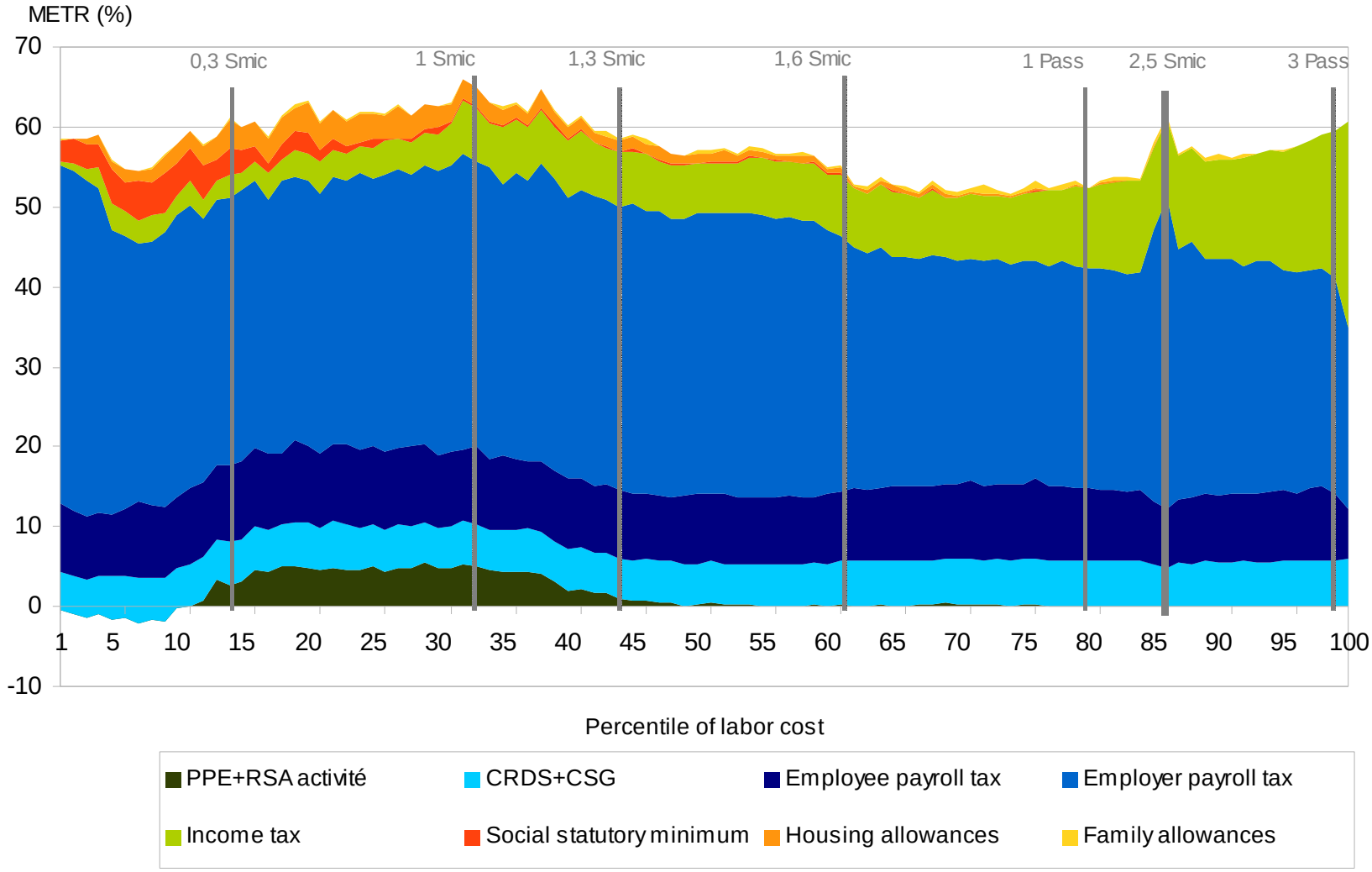


- Median : 57 %
- 1.5% have METR>100%

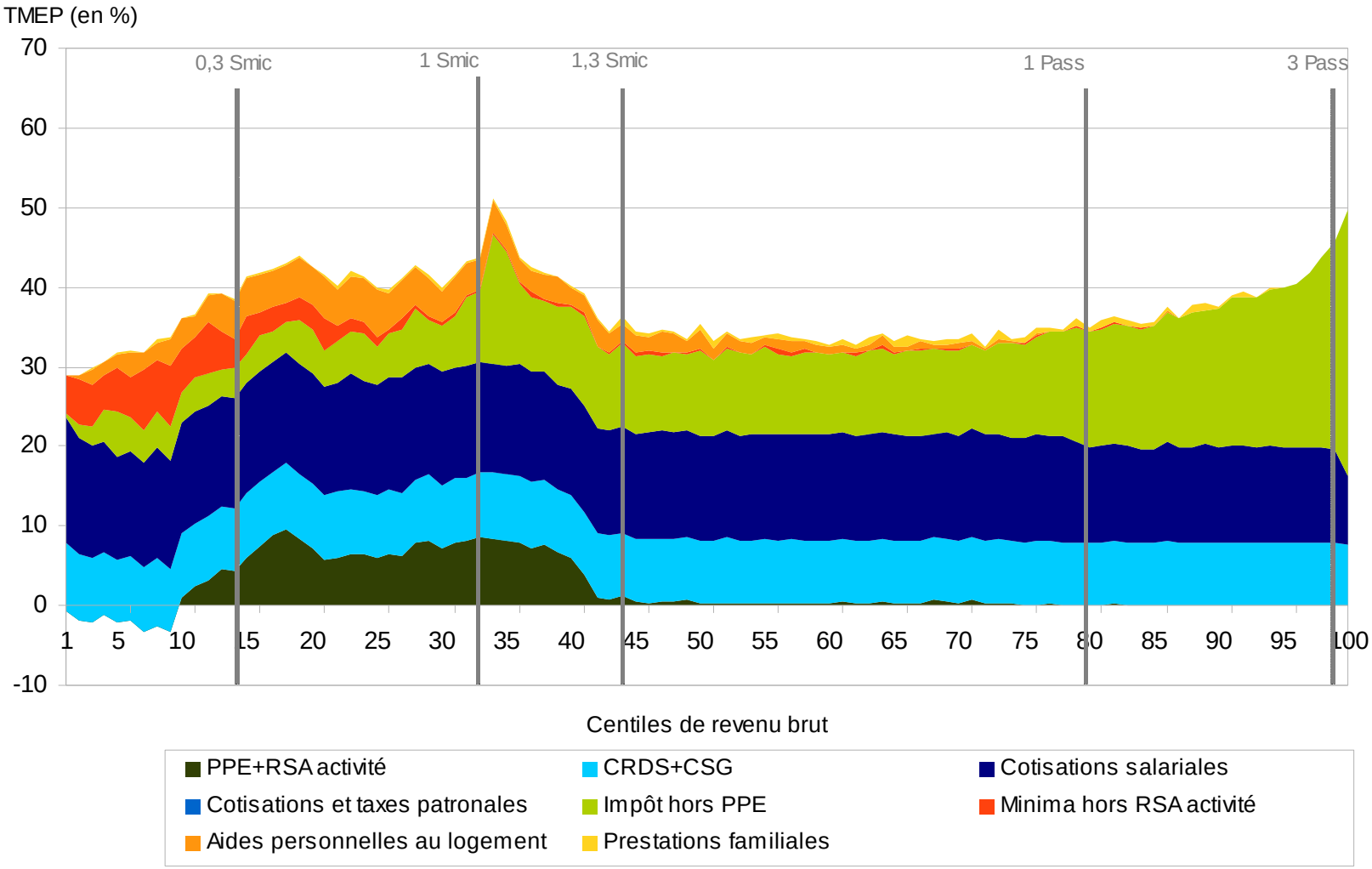
Distribution of the METR by income level - 2014



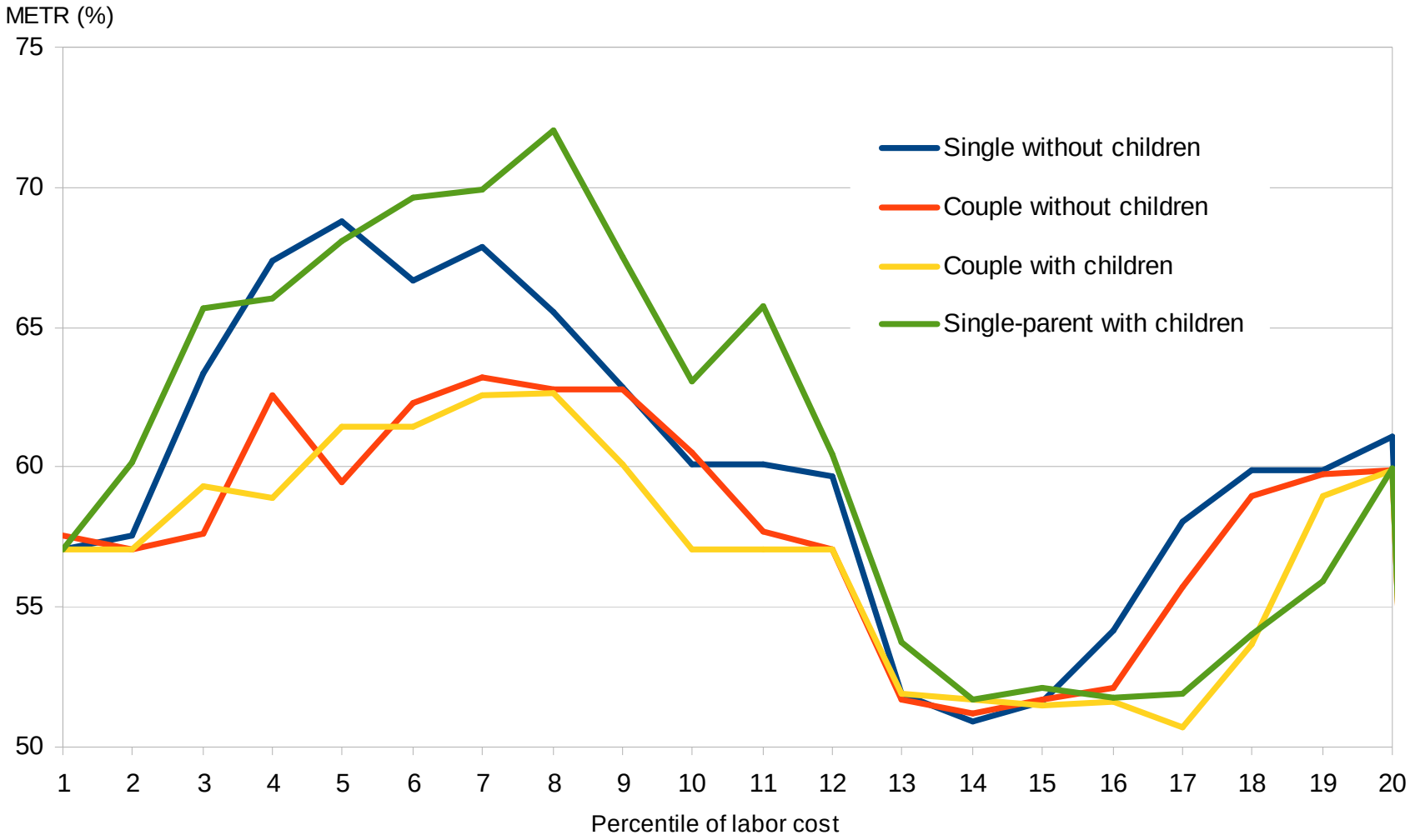
Decomposition of average METR by transfer type - 2014



Decomposition of average METR by transfer type – 2014 –2nd scenario

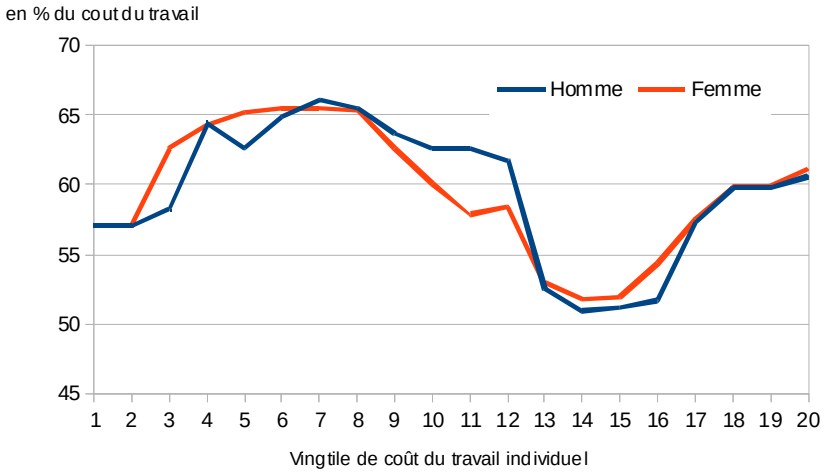


METR by family configuration - 2014

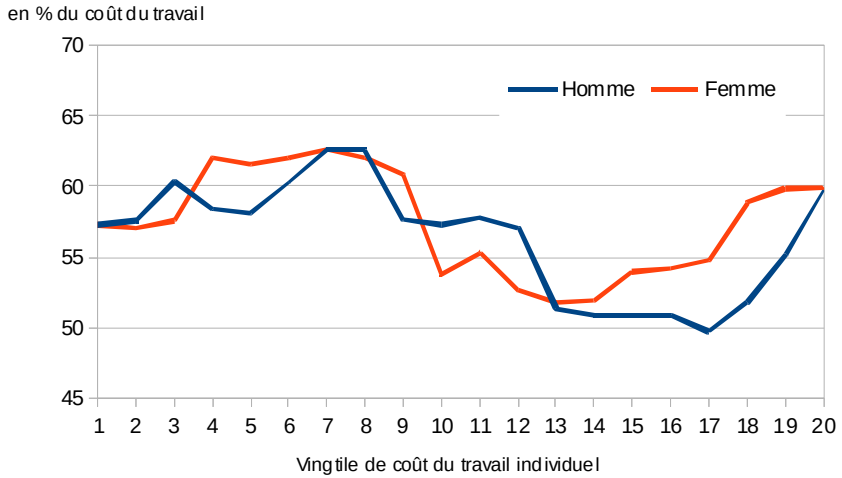


METR by sex and marital status - 2014

Célibataire



Marié ou pacsé



- Due to income tax

Comparison between 1998, 2008 and 2014

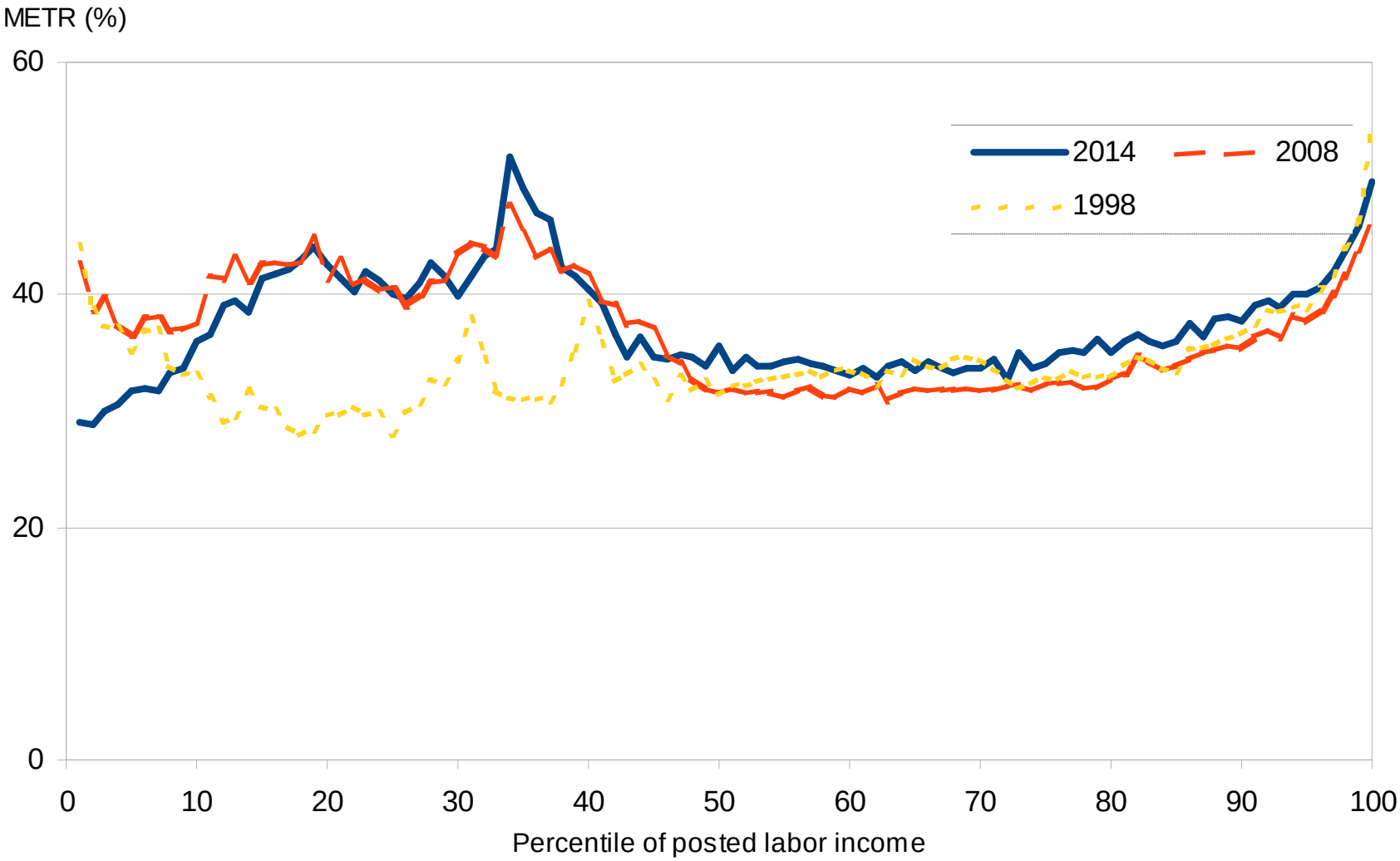
- Some reforms between 1998 and 2014 affecting METR
  - In-work benefit reforms :
    - Creation of PPE in 2001 and RSA activity in 2009,
    - increase in profit sharing mechanism for activity recovery
  - Employer payroll tax : tax increase (to finance pensions) & reduction schemes at low wage rate
  - Income tax reform (not clear conclusion for METR)
  - Some increase in means-tested benefit since 2012

Comparison between 1998, 2008 and 2014 (2)

- Results : 2014 compared to 1998
  - Increase in median METR (57% VS 50%) ➔ mainly due to increase in payroll tax
  - Decrease in the proportion of high METR (1.4% above 100% VS 2.5%) ➔ due to incentives schemes

		2014	2008	1998
METR level (% of labor cost)	1st decile	43,7	38,4	38,0
	median	**57,1**	**56,6**	**49,5**
	9th decile	73,1	74,2	60,0
	mean	57,9	56,7	50,4
Proportion (%)	METR<=0	0,2	0,2	0,1
	0< METR <=40	6,1	12,3	12,9
	40< METR <=60	55,2	52,1	77,0
	60< METR <=100	37,1	33,4	7,6
	100 < METR	**1,4**	**2,0**	**2,5**

Comparison between 1998, 2008 and 2014



Discussion

- Results
  - Distribution of METR by income : U shape in 1998 but ~ shape in 2014 due to in-work benefit reforms (PPE in 2001 and RSA activity en 2009)
- Is it optimal ?
  - Optimal taxation : U shape (Diamond 1998, Saez 2001, …).
  - But Saez 2002 and Immervol et al. 2007 show that in-work benefit reform is desirable (compared to traditional NIT program)
- Limitations
  - Taking account of local tax and benefit would increase METR for low income (Anne & L'Horty, 2002 & 2009)
  - Since 2014, some reforms, but should not change much METR

Thank you for your attention !

ANNEXES

- Legislation
- Other results

Take into account employer payroll tax ?

- Incidence of employer payroll tax?
  - Theory :
    - No distinction between employee and employer payroll tax
    - As we expect labor demand to be substantially more elastic than labor supply, the incidence should be borne primarily by workers
  - Empirics :
    - Macro in the long run : labor income share (which includes all payroll taxes) in GDP is fairly stable over time and across countries➔ incidence is borne primarily by workers
    - Micro in the short run :

      borne by workers : Gruber (1997) in Chili, et Anderson & Meyer (2000) in US

      borne by employer : Lehmann et al. (2013) in France et Saez et al. (2012) in Greece

      Mix : Bozio et al. (2017) ➔ limited shifting of SSCs to employees

➔ *2 scenarios depending on the incidence of payroll tax since no consensus*

retour

Employer payroll tax

	critères	0-1 PASS	1-3 PASS	3-4 PASS	4-8 PASS	8- PASS
Assurance maladie		12,8%				
Assurance vieillesse		8,45%	1,75%			
Chômage (dont AGS)		4,3%			-	-
Retraites complémentaires (dont ARRCO, AGIRC, AGFF et Contribution exceptionnelle)	Non cadre	5,78%	13,38%	-	-	-
	Cadre	6,00%	14,20%		0,129	-
Allocations familiales		5,25%				
Solidarité autonomie		0,30%				
Accident du travail		3,7% (variable par profession)				
APEC		0,02%	-	-	-	-
Total	Non cadre	40,60%	41,48%	26,35%	22,05%	12,80%
	Cadre	40,82%	42,30%	40,55%	34,95%	12,80%

back

Employee payroll tax

	critères	0-1 PASS	1-3 PASS	3-4 PASS	4-8 PASS	8- PASS
Maladie, maternité, invalidité, décès		0,75%				
Assurance vieillesse		6,80%	0,25%			
Assurance chômage		2,40%			-	-
Retraites complémentaires (dont ARRCO, AGIRC, AGFF et Contribution exceptionnelle)	Non cadre	3,85%	8,95%	-	-	-
	Cadre	4,08%	8,78%		7,88%	
APEC	Cadre	0,02%				
Total	Non cadre	13,82%	12,24%	3,42%	1,02%	
	Cadre	14,05%	12,20%	12,20%	8,90%	1,02%

back

contribution CSG-CRDS

	critères	0-1 PASS	1-3 PASS	3-4 PASS	4-8 PASS	8- PASS
CSG		98,25% * 7,5%			7,5%	
CRDS		98,25% * 0,5%			0,5%	
Contribution exceptionnelle		0,13%				
Contribution exceptionnelle de Solidarité	Fonctionaire	1,0%				

back

Employer tax & subvention

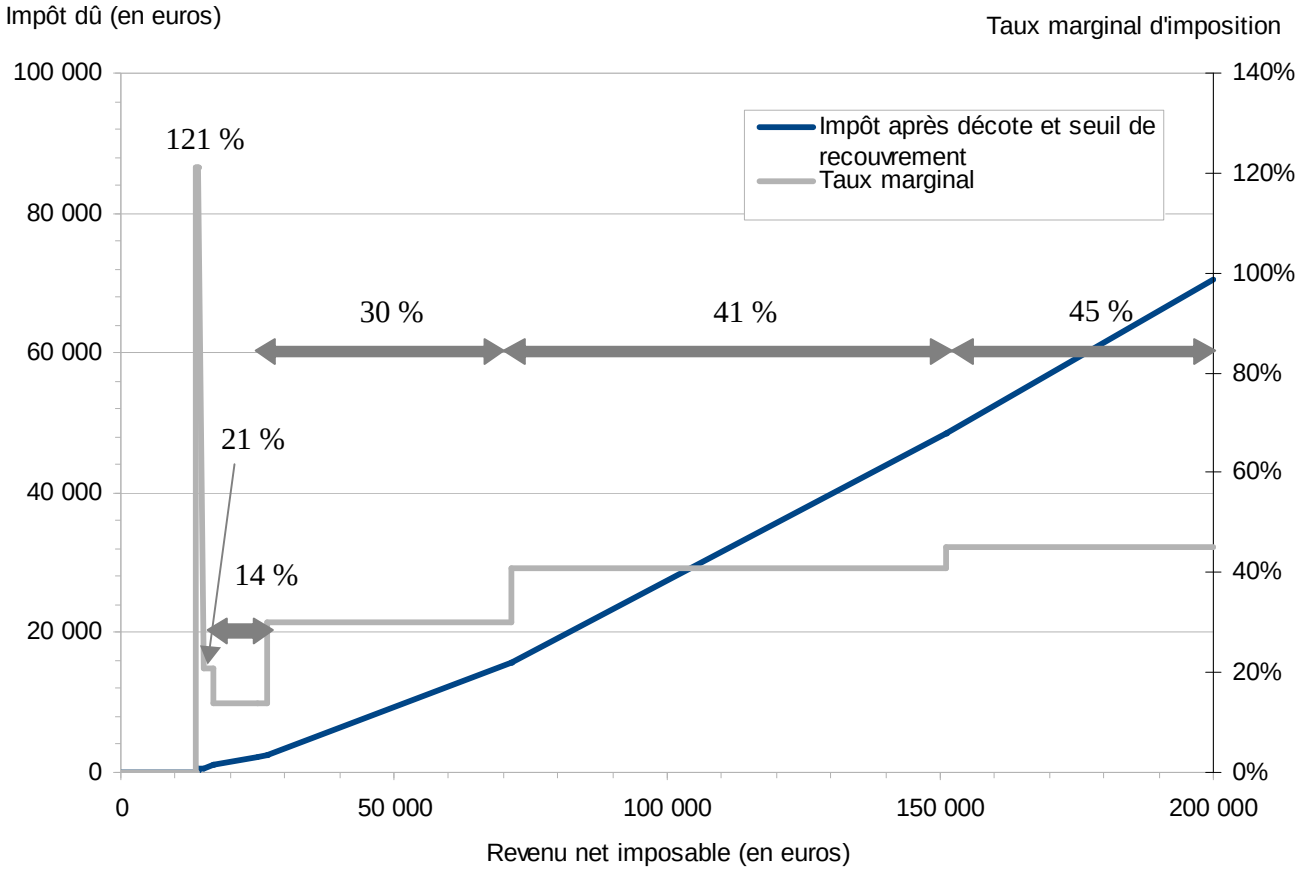
- Subvention
  - Réduction générale sur les bas salaires (allégements « Fillon ») : w<1,6 Smic, degressive
  - CICE : w<2,5 Smic, sudden stop
  - Pacte de responsabilité : réduction cotis allocation familiale
- Taxes

	critères	0-1 PASS	1-3 PASS	3-4 PASS	4-8 PASS	8- PASS
Taxe de prevoyance		1,5%	-			
forfait social sur la contribution patronale de prevoyance	Taille[1] >20	8%				
Apprentissage + contribution au développement de l'apprentissage		0,68%				
Participation à la formation	taille<10	0,55%				
	10<=taille<20	1,05%				
	taille >20	1,60%				
Participation à la construction	taille >20	0,45%				
Transport (variable selon commune)	taille >10	0,75%				
Taxe sur les salaires (pour les entreprises non assujéties à la TVA)	4 tranches suivants le salaire brut	4,25%				
		8,50%				
		13,60%				
		20%				

back

Income tax

- Calcul de l'IR= Application du barème + décote + réduction exceptionnelle d'impôt 2014 + seuil de recouvrement
  - Cas-type de l'IR d'une personne célibataire sans enfant, hors PPE.



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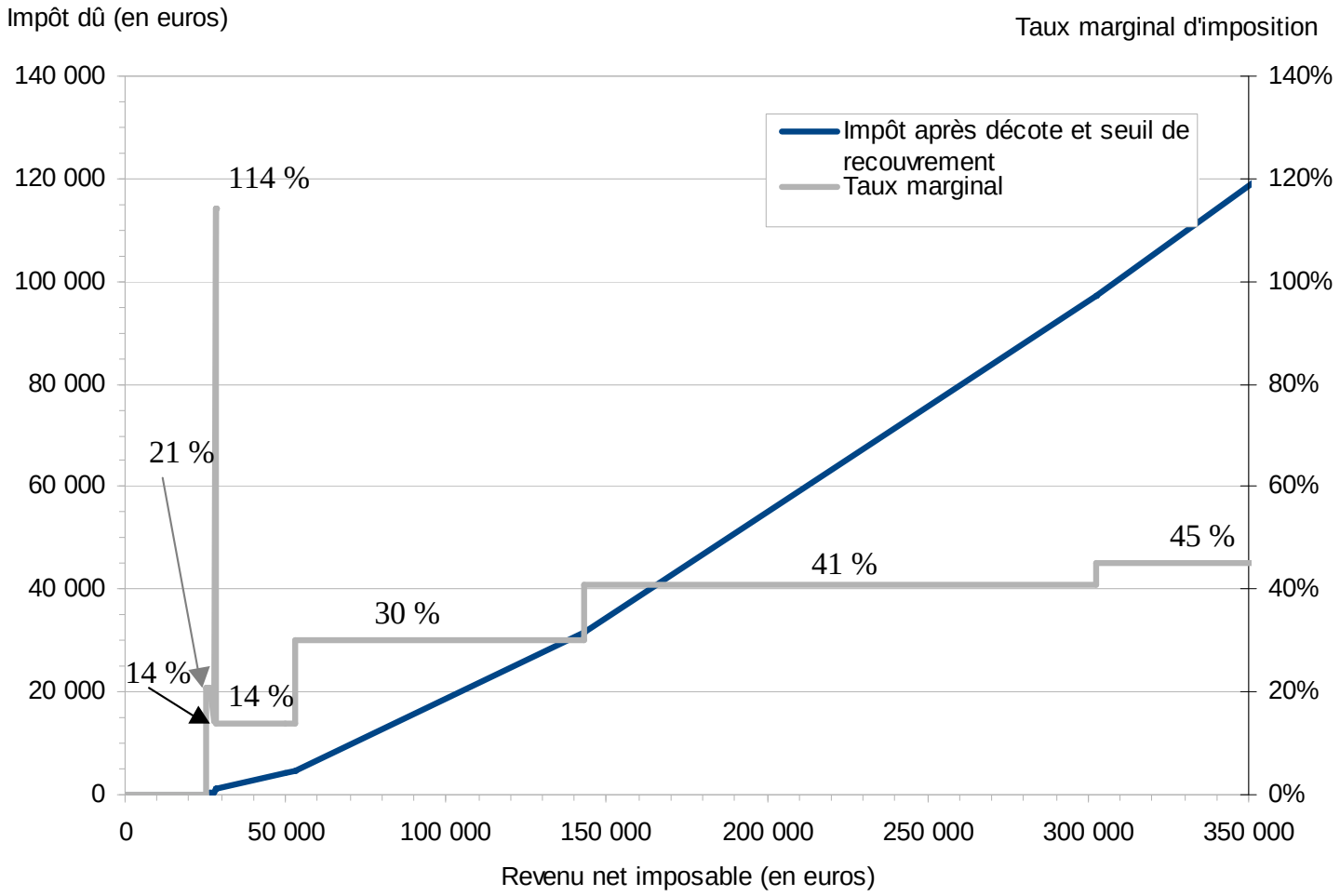
Cas-type de l'impôt sur le revenu de 2014 d'un couple sans enfant, hors PPE.



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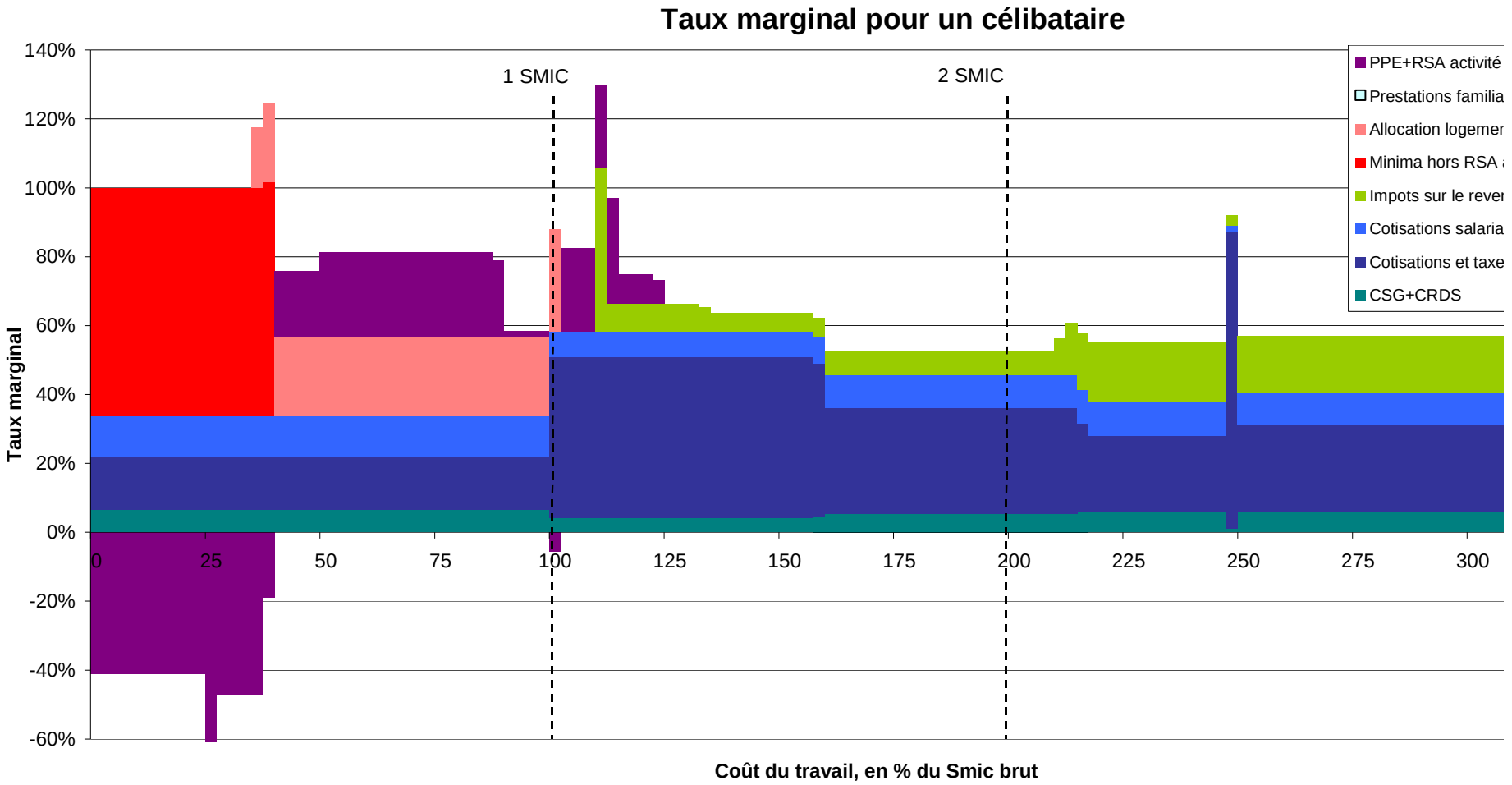
Means-tested benefits

	Seuil 1	seuil1 <TM<seuil 2	Seuil 2	Seuil 2 <TM<seuil 3	Seuil 3	Seuil de non versement
Minima (célibataire)						
RSA socle	0	100%	499	-	-	6
Aspa	0	100%	790	-	-	-
AAH	0	100%	790	-	-	-
Allocation supplémentaire d'invalidité (ASI)	0	0	298	100%	596	-
Prestations familiales (couple avec un revenu et un enfant)						
Complément familial	0	0	3108	100%	3122	-
Allocation de rentrée scolaire (ARS)	0	0	2011	100%	2042	15
PAJE (allocation de base et prime à la naissance)	Taux infinis au seuil de 2475 euros et 2957 euros					
Allocations logements (célibataire)						
Allocation logement	0	0	~ 423	~ 35%	~1130	15
Dispositifs d'incitation à l'emploi (célibataire)						
RSA activité	0	-62%	499	+32%	1354	6
PPE	312	-7,7%	1040	+19,3%	1454	2,5

- Lien RSA

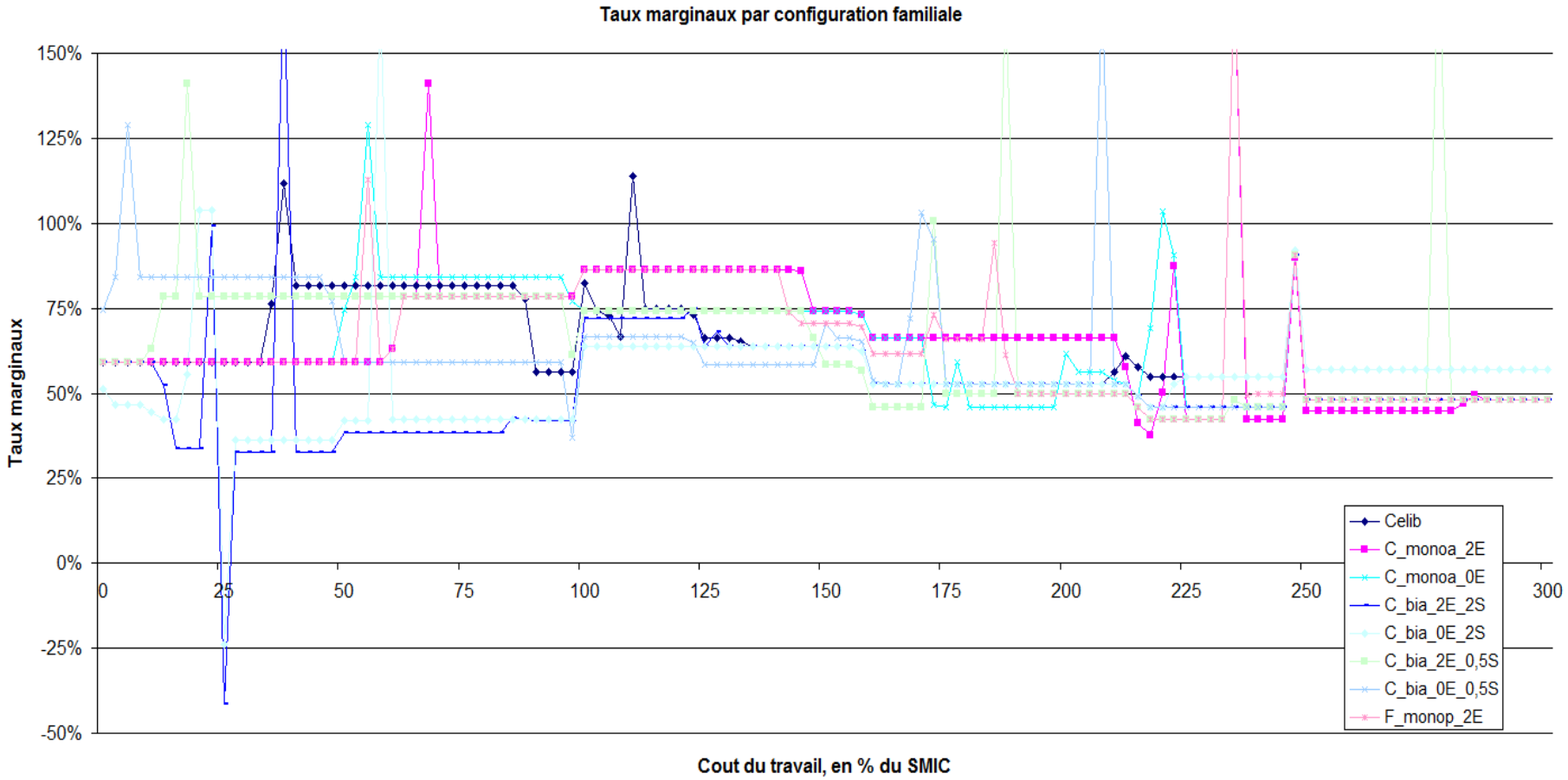
back

Tax-benefit system



Tax-benefit system (2)

- Hard to say something for the whole population!



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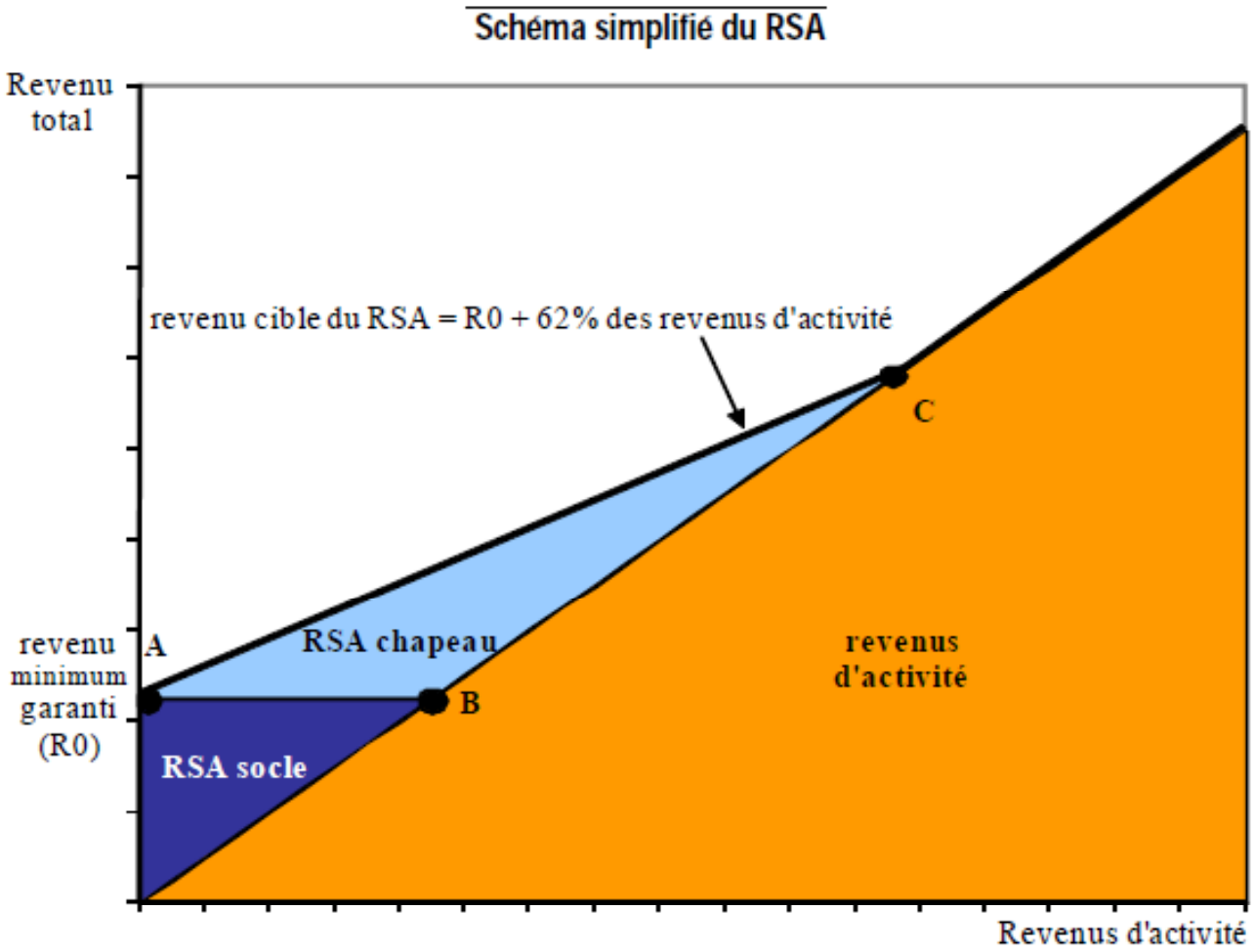
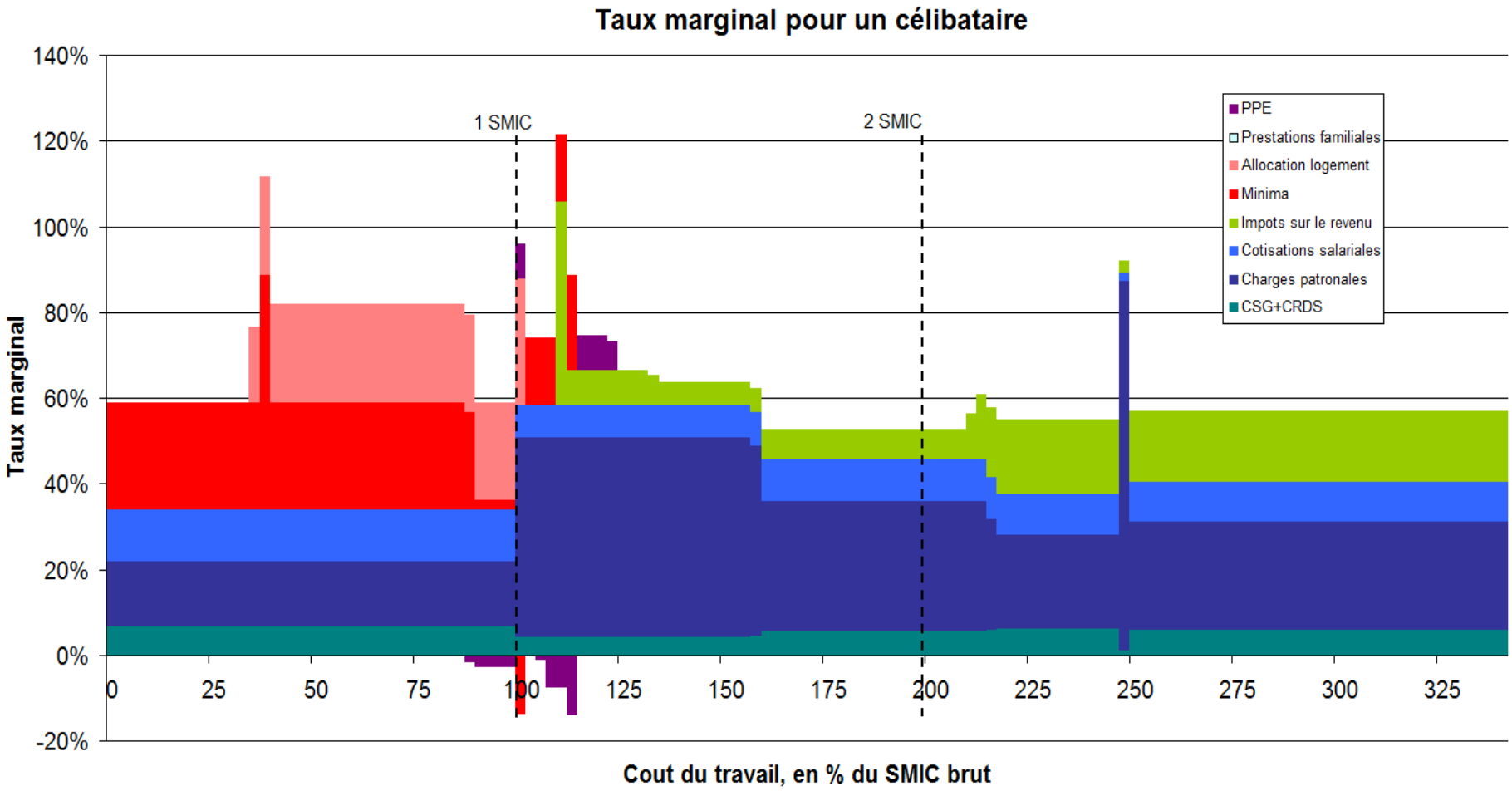
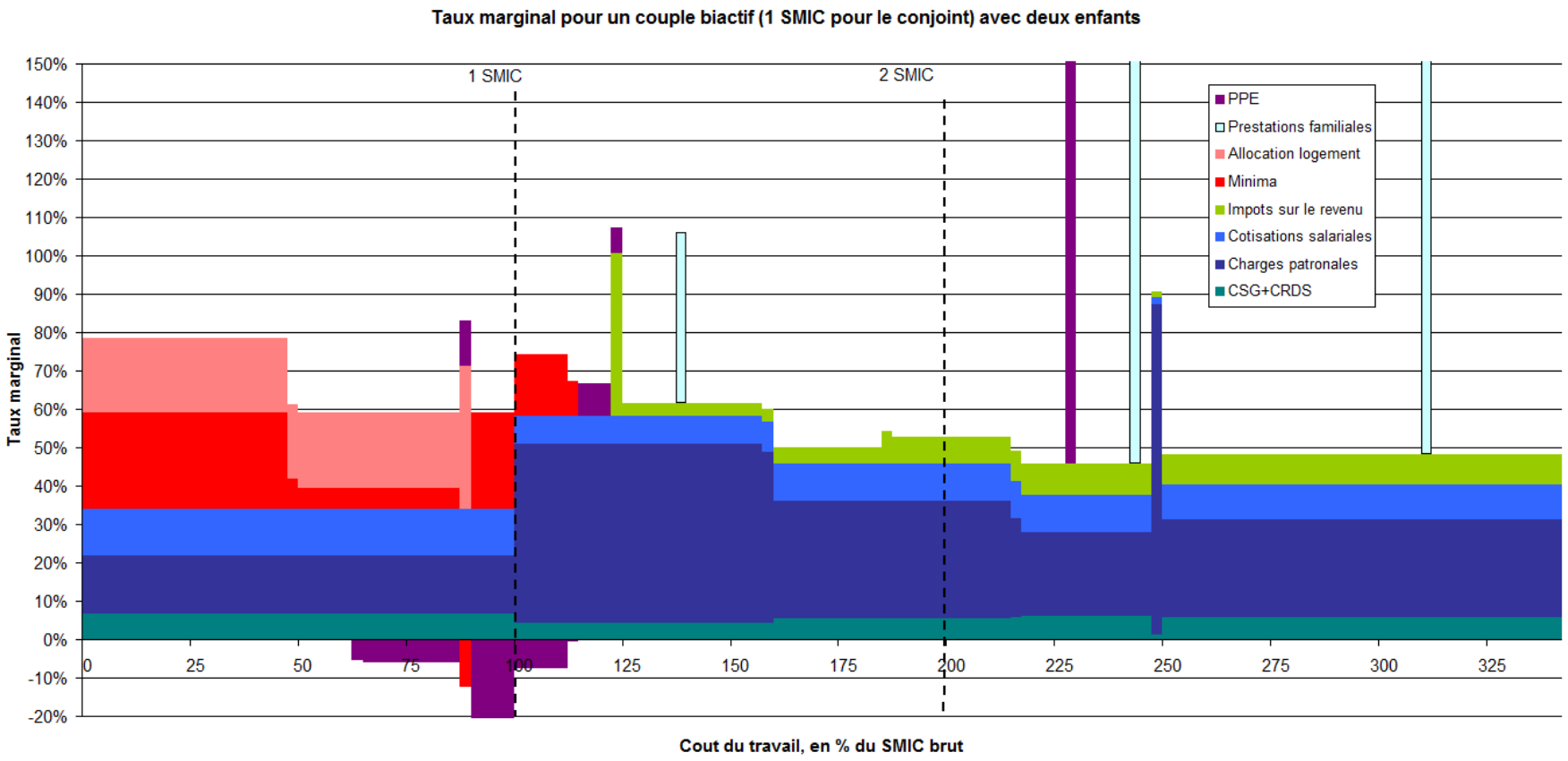


Schéma simplifié du RSA
Revenu total
revenu cible du RSA = R0 + 62% des revenus d'activité
C
revenu minimum garanti (R0)
A
RSA chapeau
B
RSA socle
revenus d'activité
Revenus d'activité

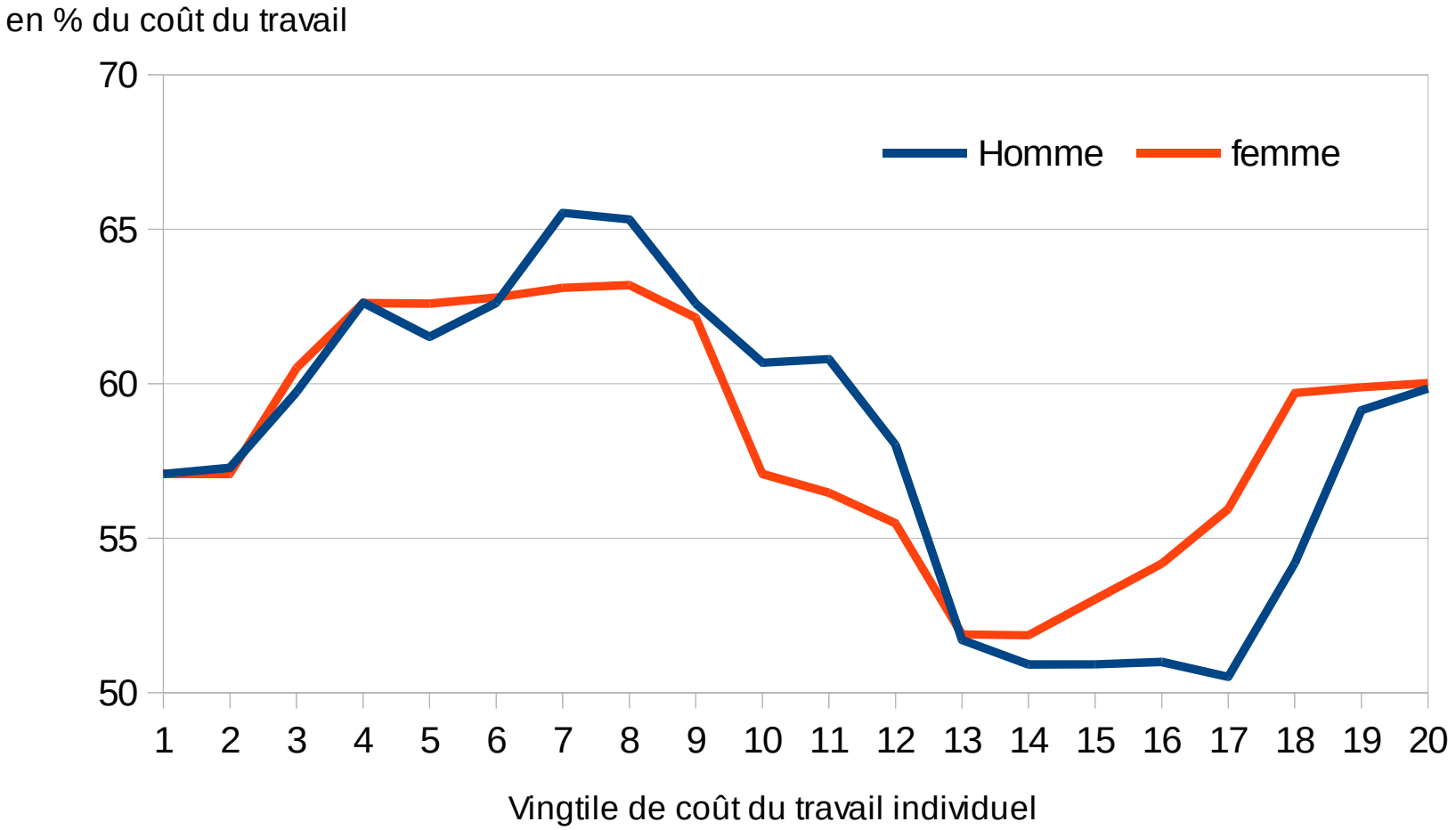
back

Taux marginaux et composantes dans le cas d'un célibataire sans enfant

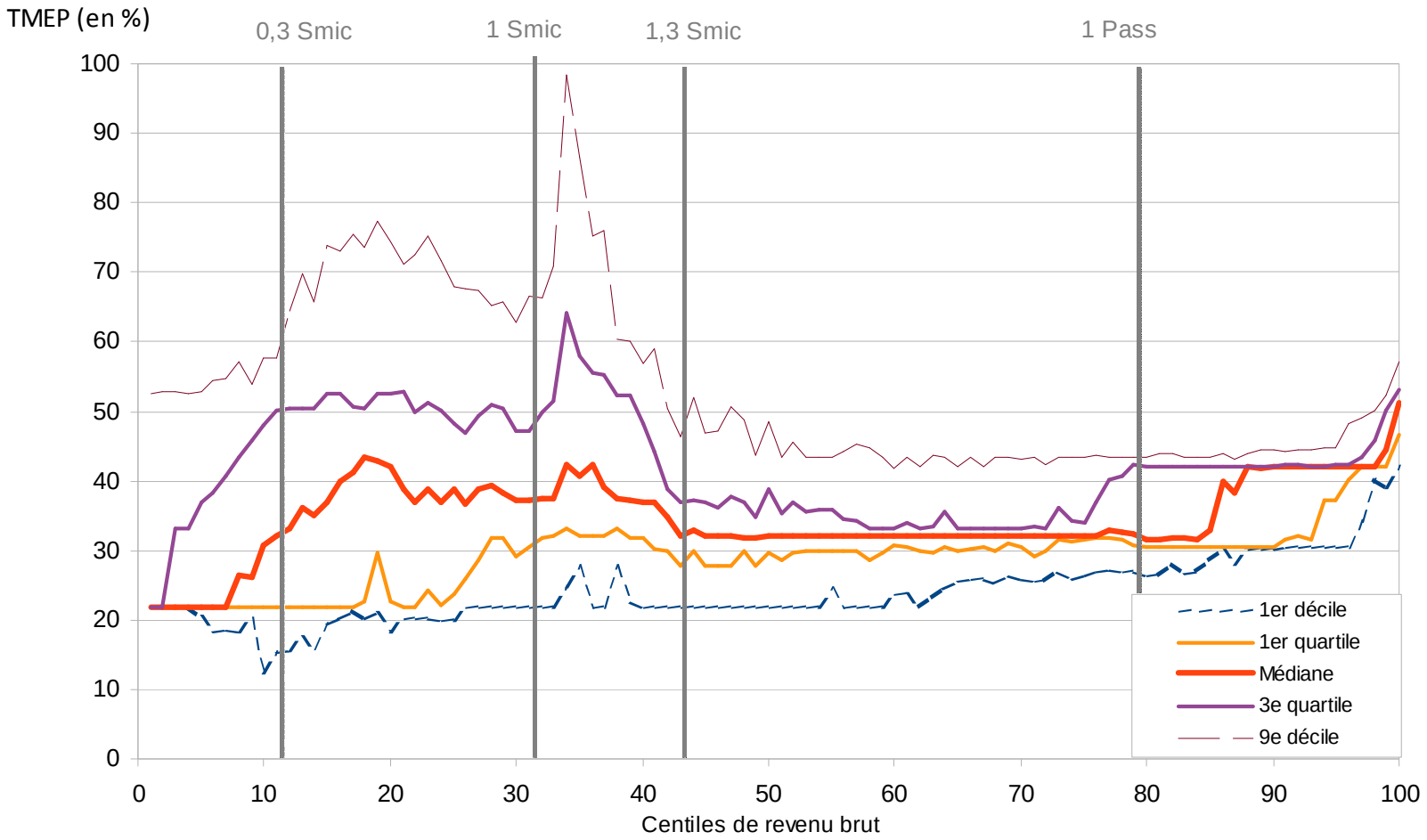



Taux marginal pour un couple biactif (1 SMIC pour le conjoint) avec deux enfants
1 SMIC
2 SMIC
PPE
Prestations familiales
Allocation logement
Minima
Impots sur le revenu
Cotisations salariales
Charges patronales
CSG+CRDS
Taux marginal
150%
140%
130%
120%
110%
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
-10%
-20%
0
25
50
75
100
125
150
175
200
225
250
275
300
325
Cout du travail, en % du SMIC brut

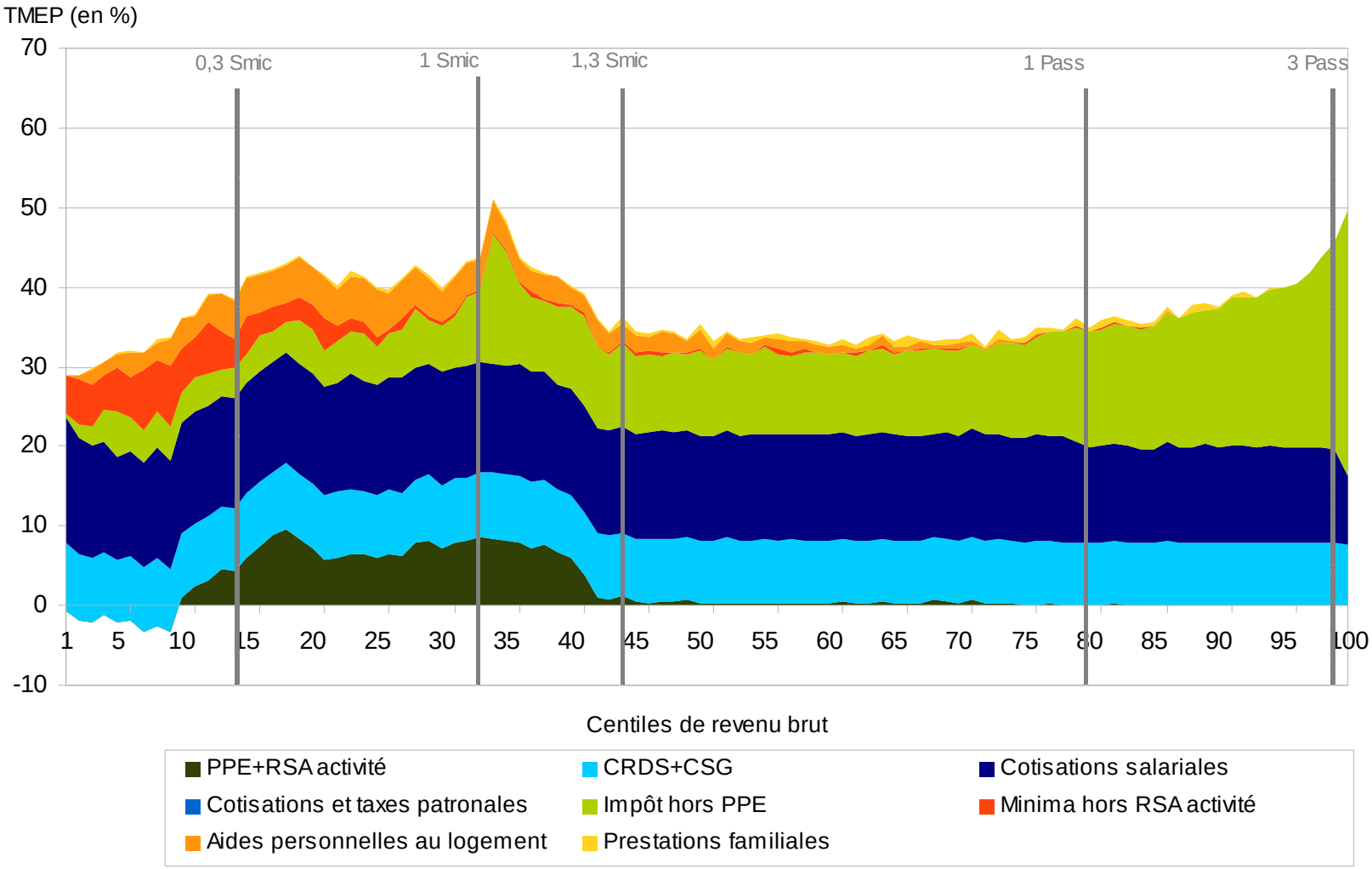
METR by sex - 2014



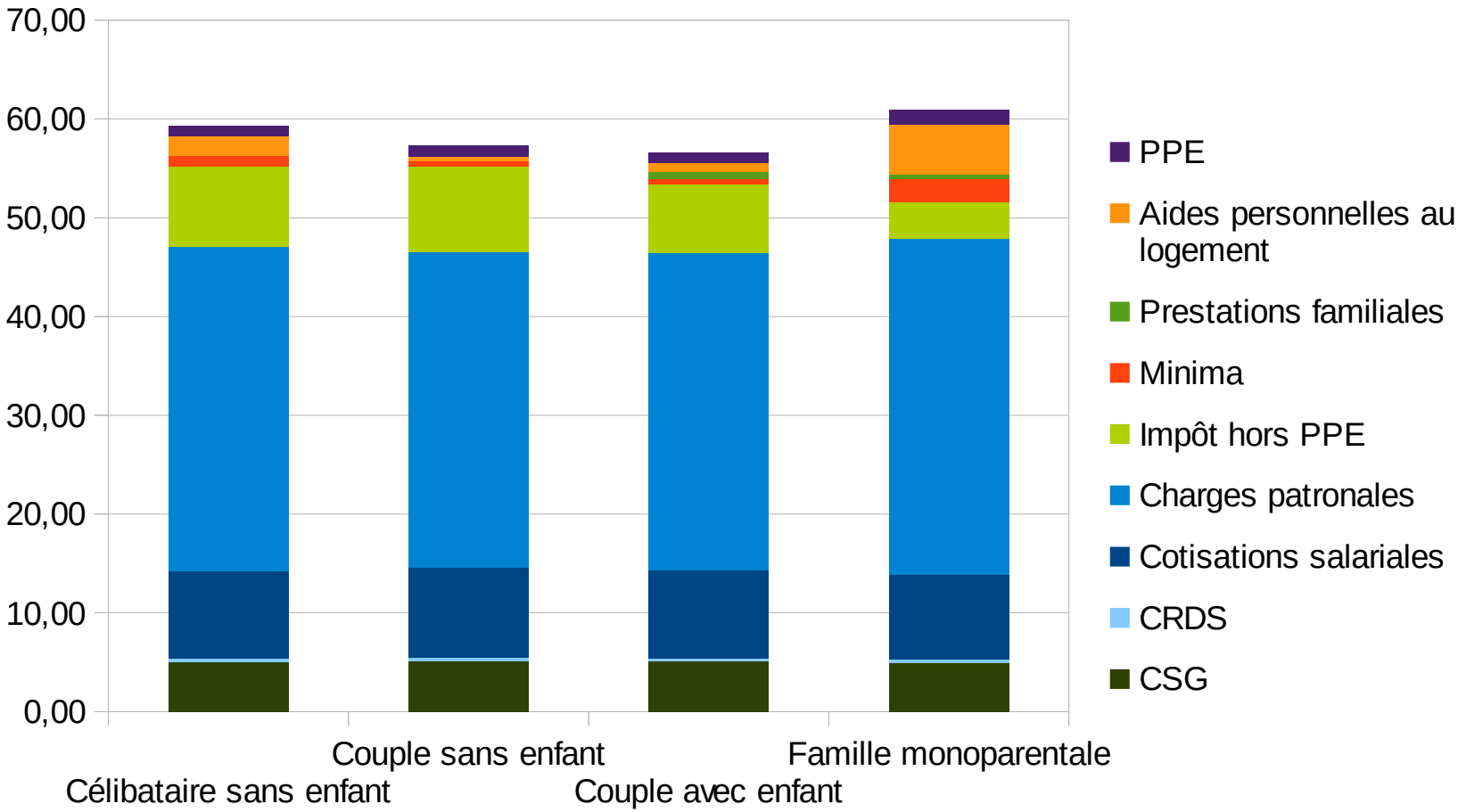
Distribution of the METR by income level - 2014



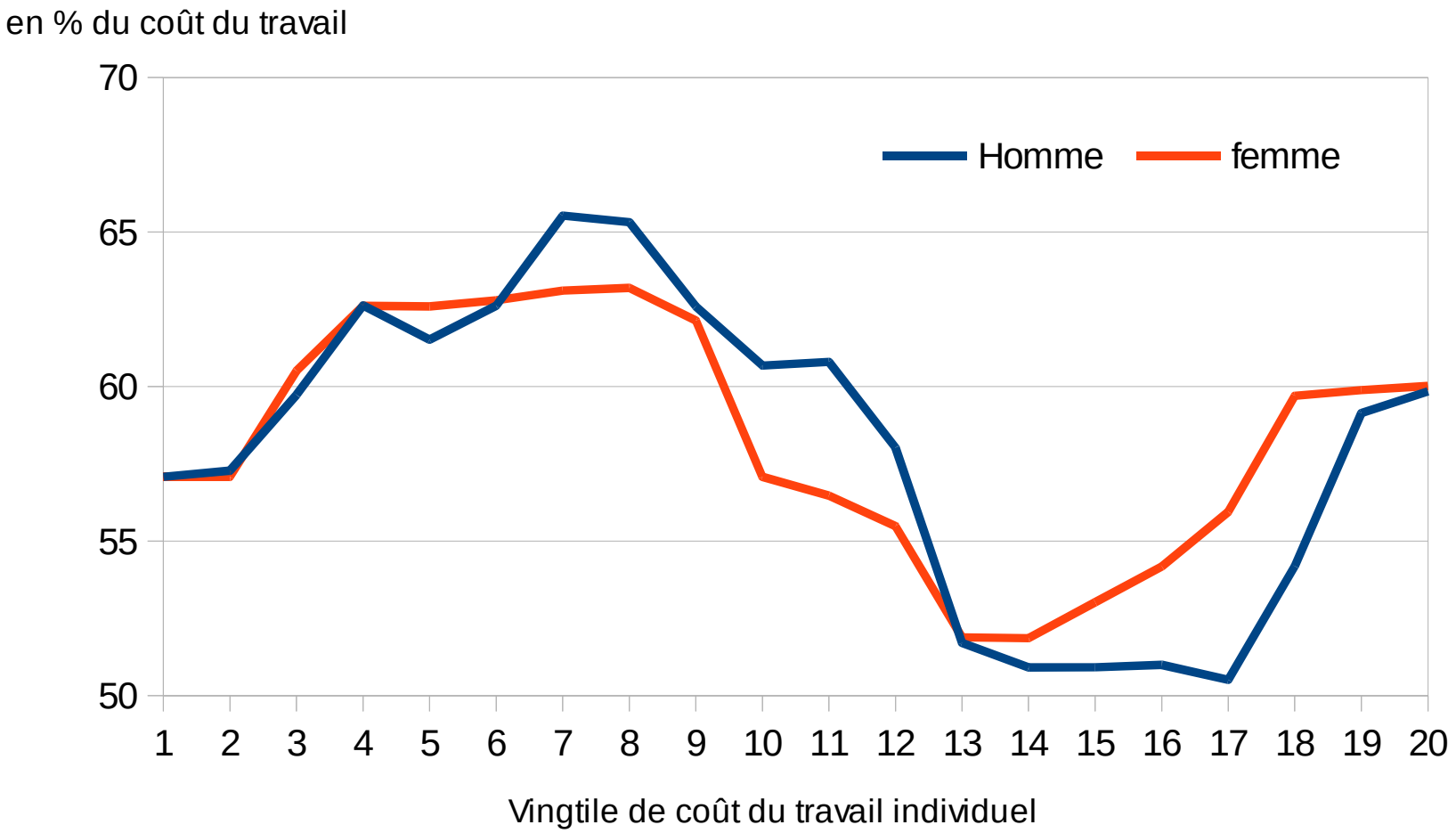
Decomposition of average METR by transfer type – 2014 –2nd scenario



METR by family configuration - 2014



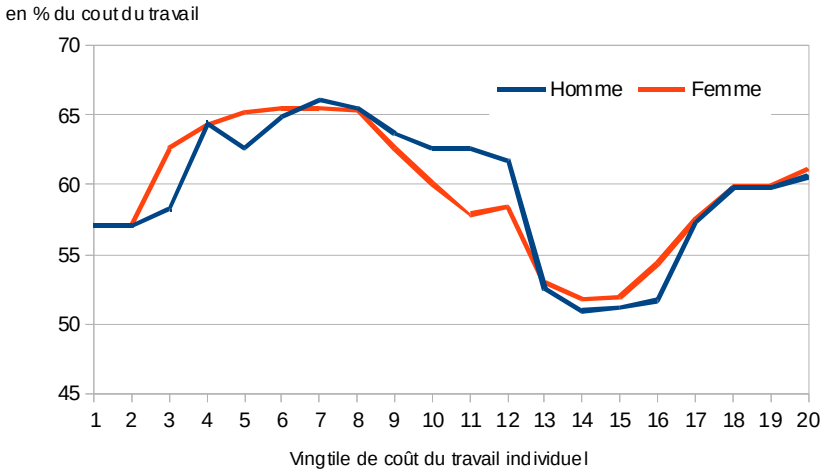
METR by sex - 2014



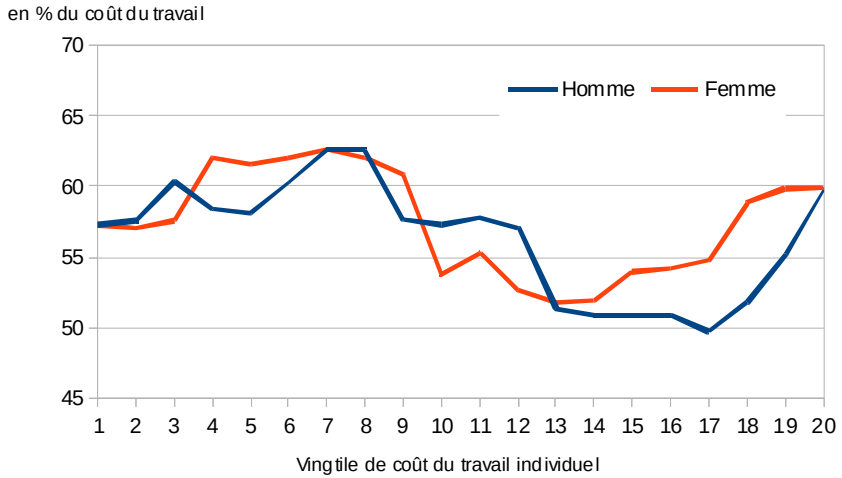
METR by marital status - 2014

- Due to income tax

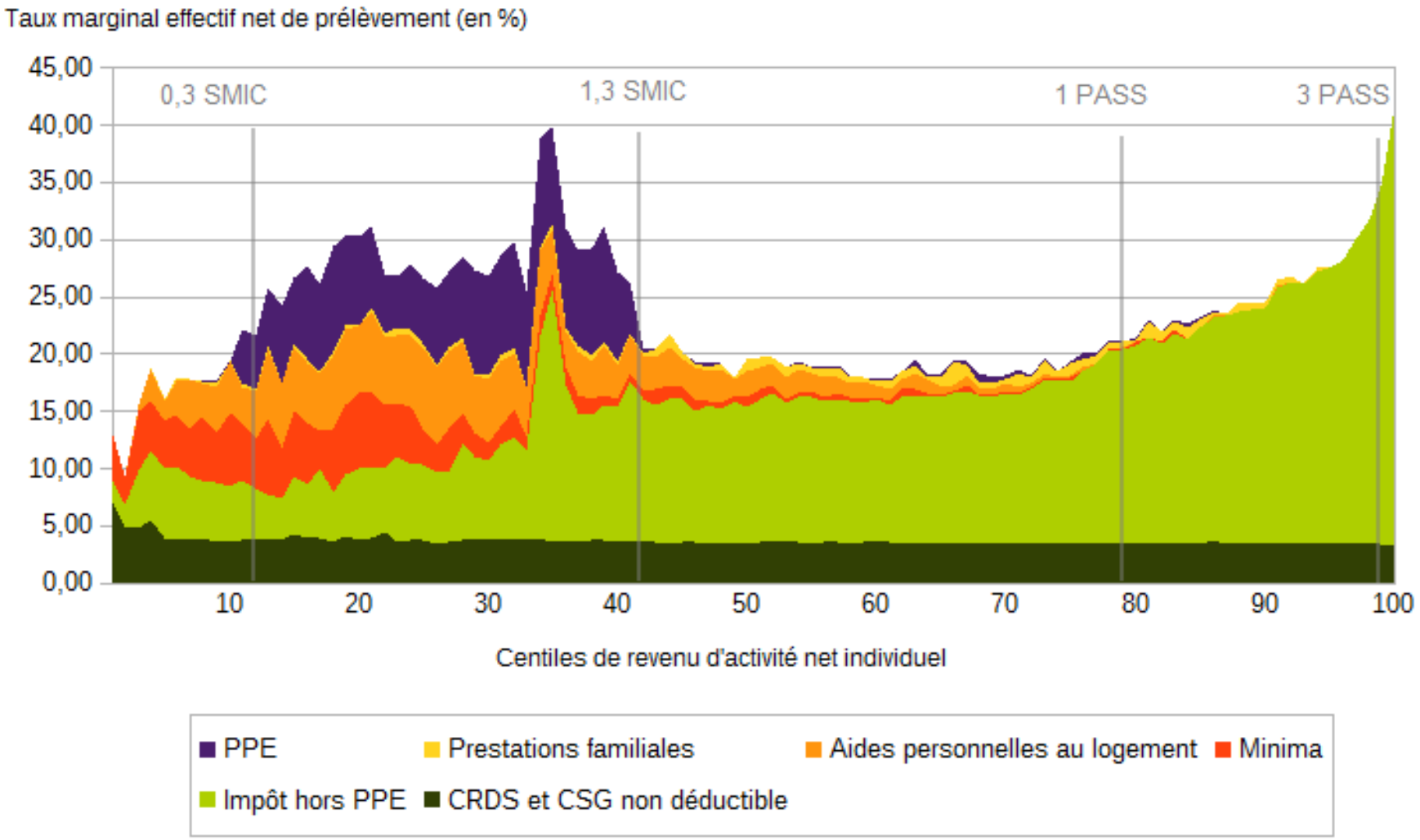
Célibataire



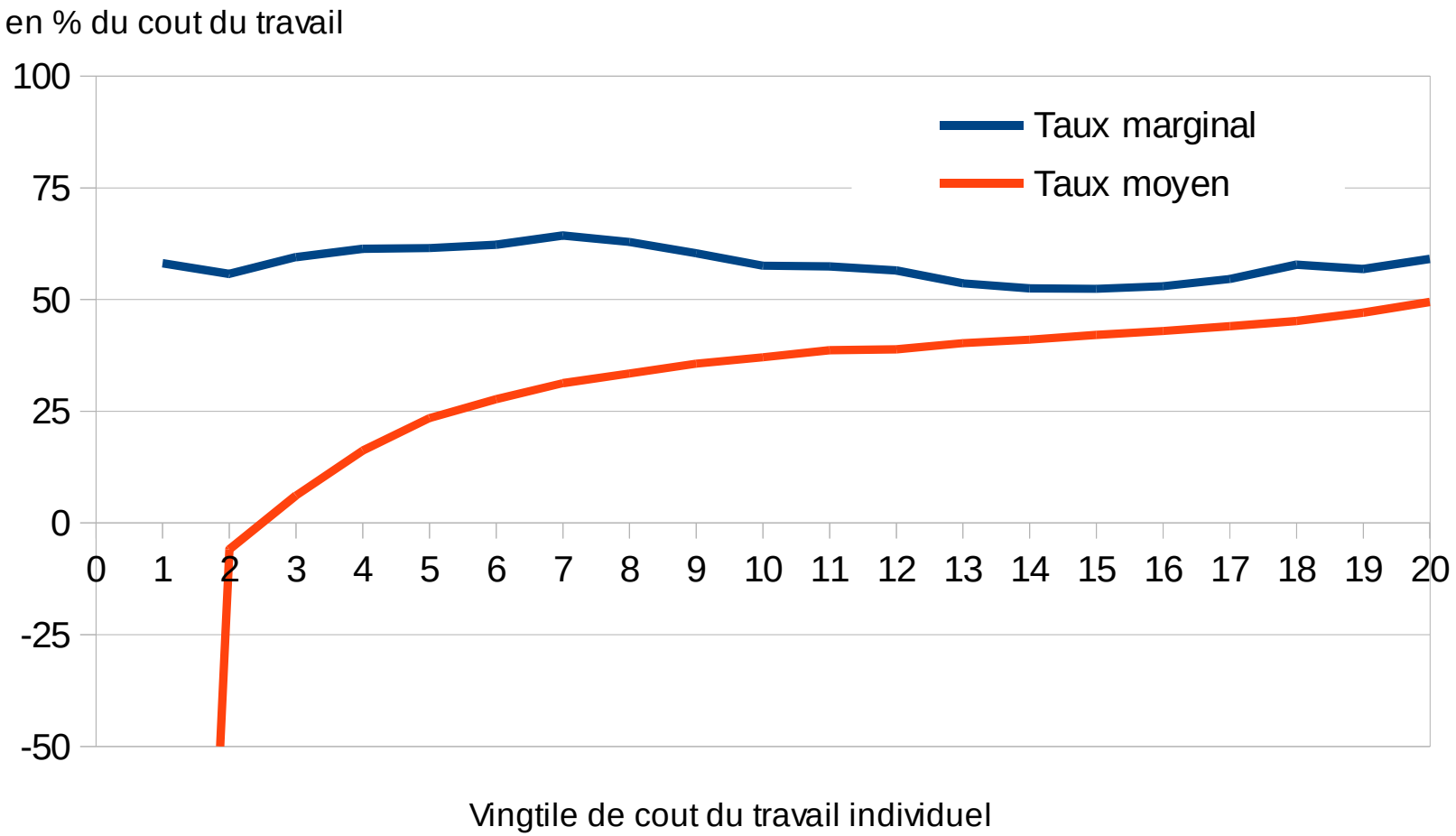
Marié ou pacsé



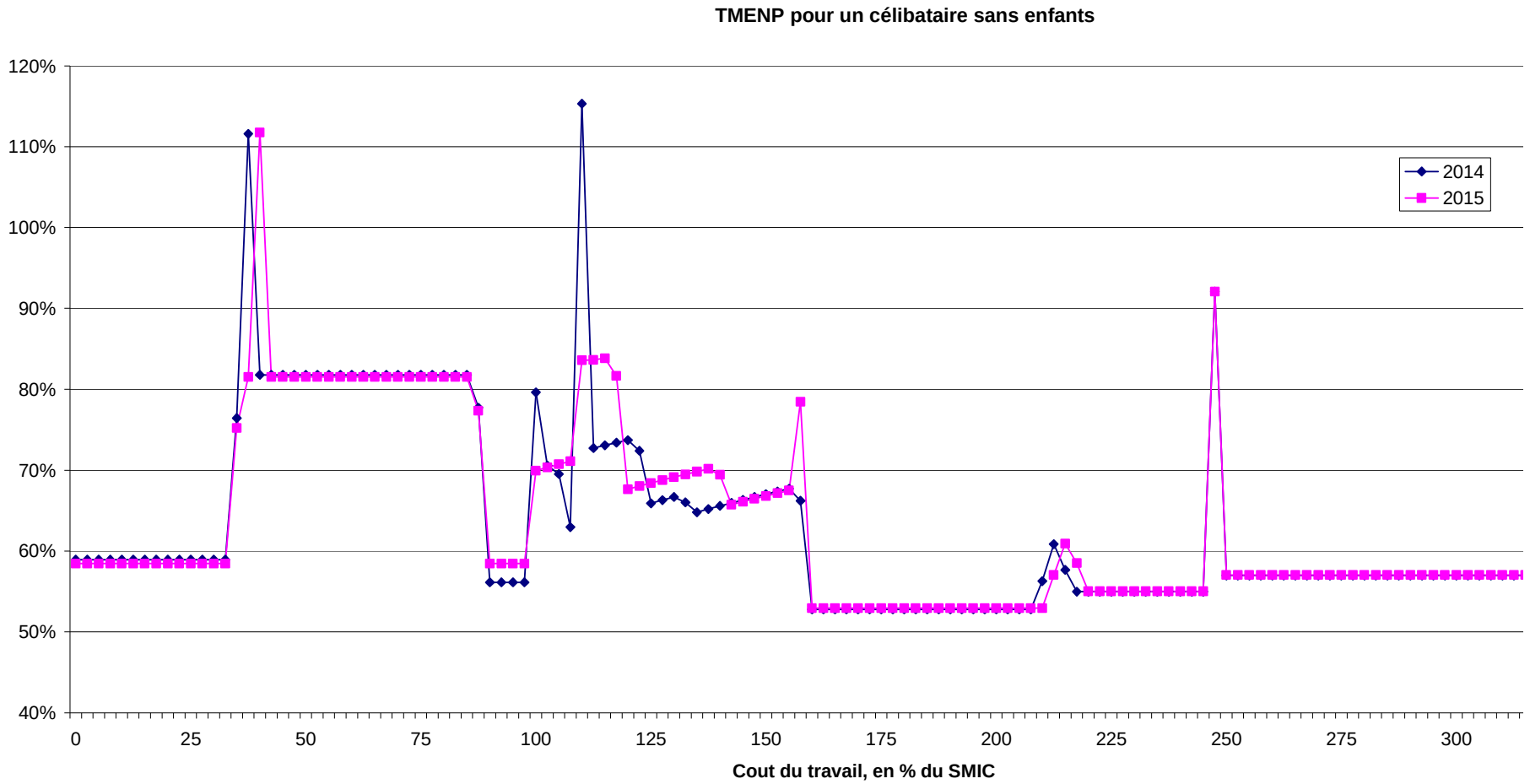
TMENP en fonction du revenu net



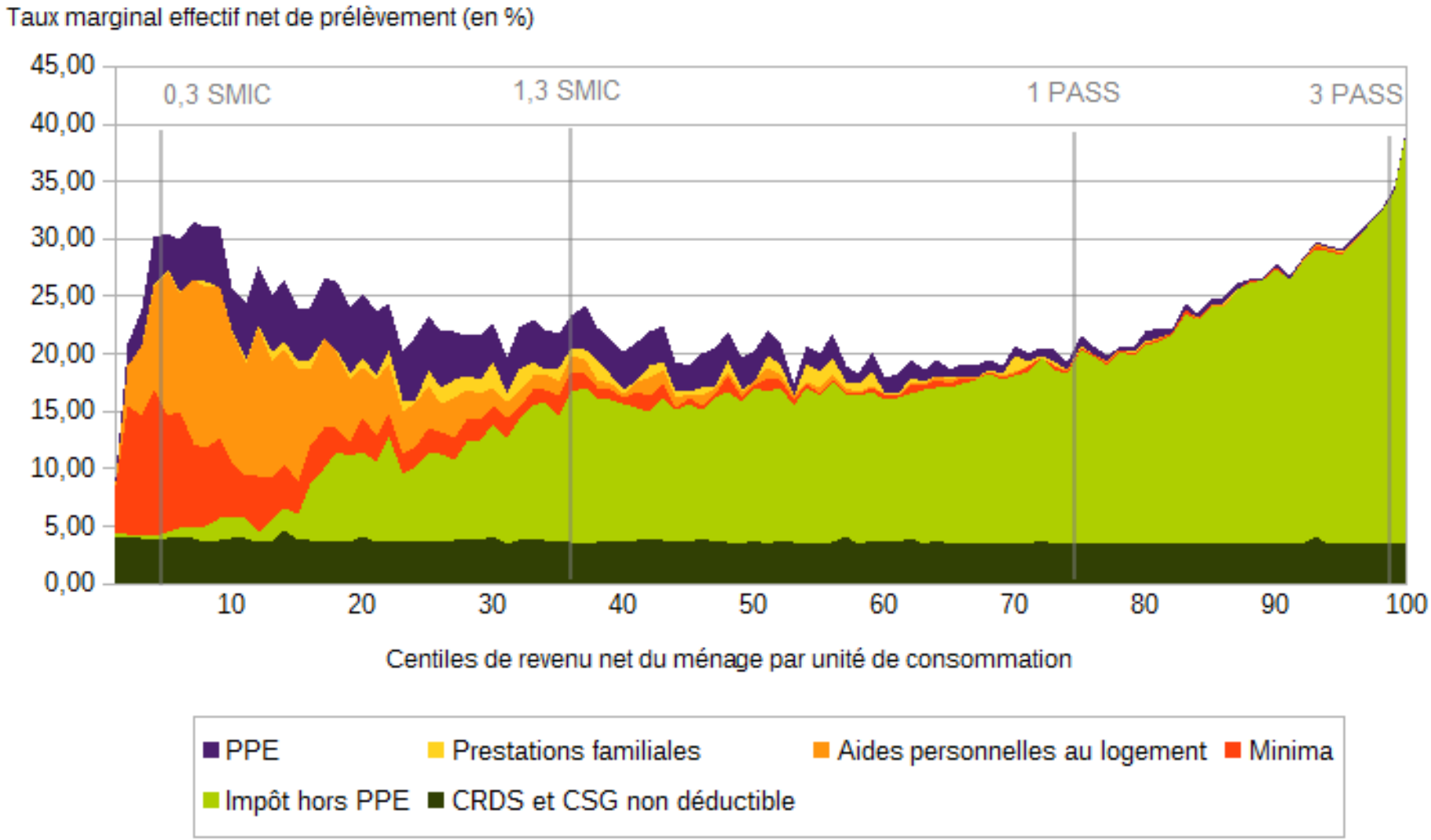
Taux marginaux et taux moyens en fonction du coût du travail



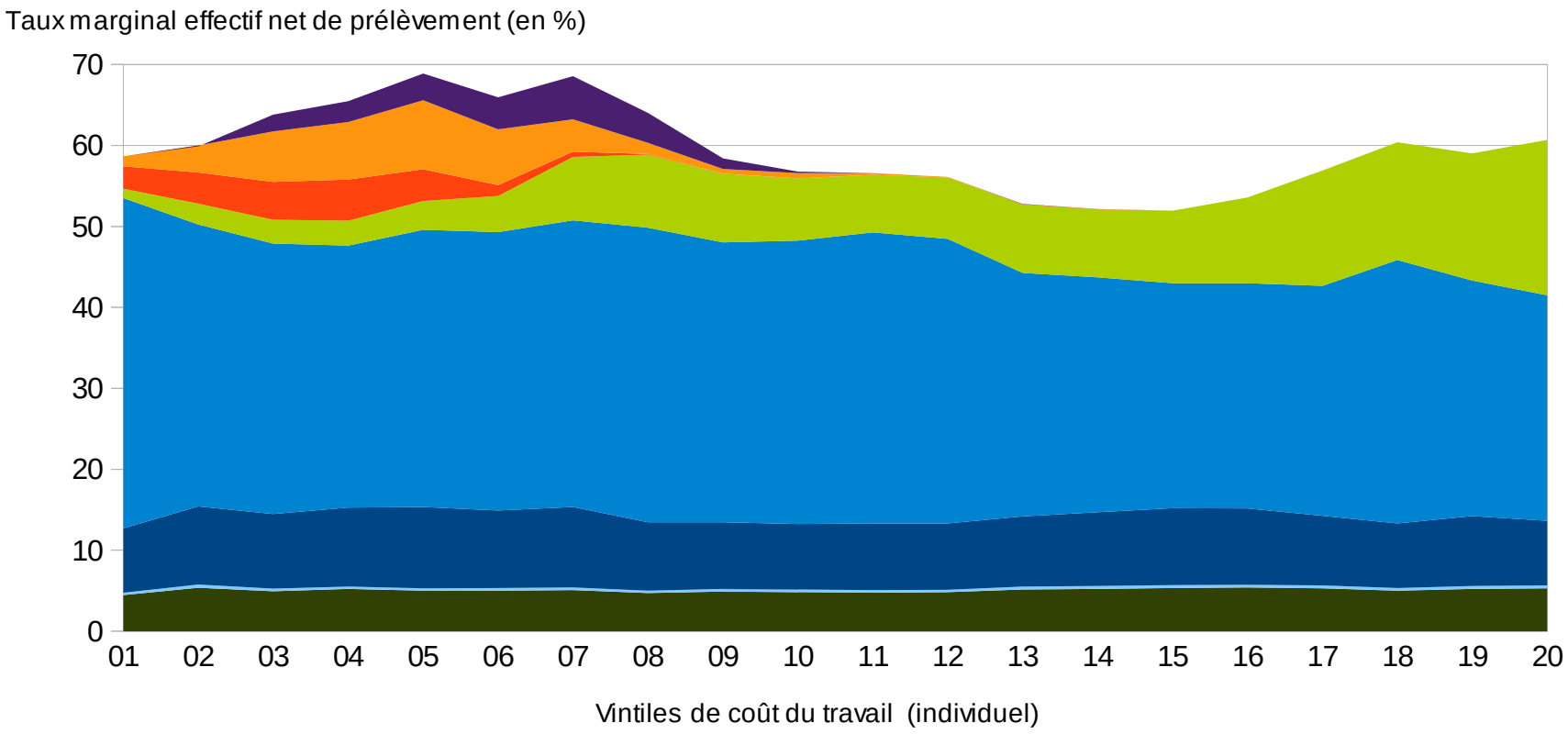
Comparaison 2014-2015 sur cas-type



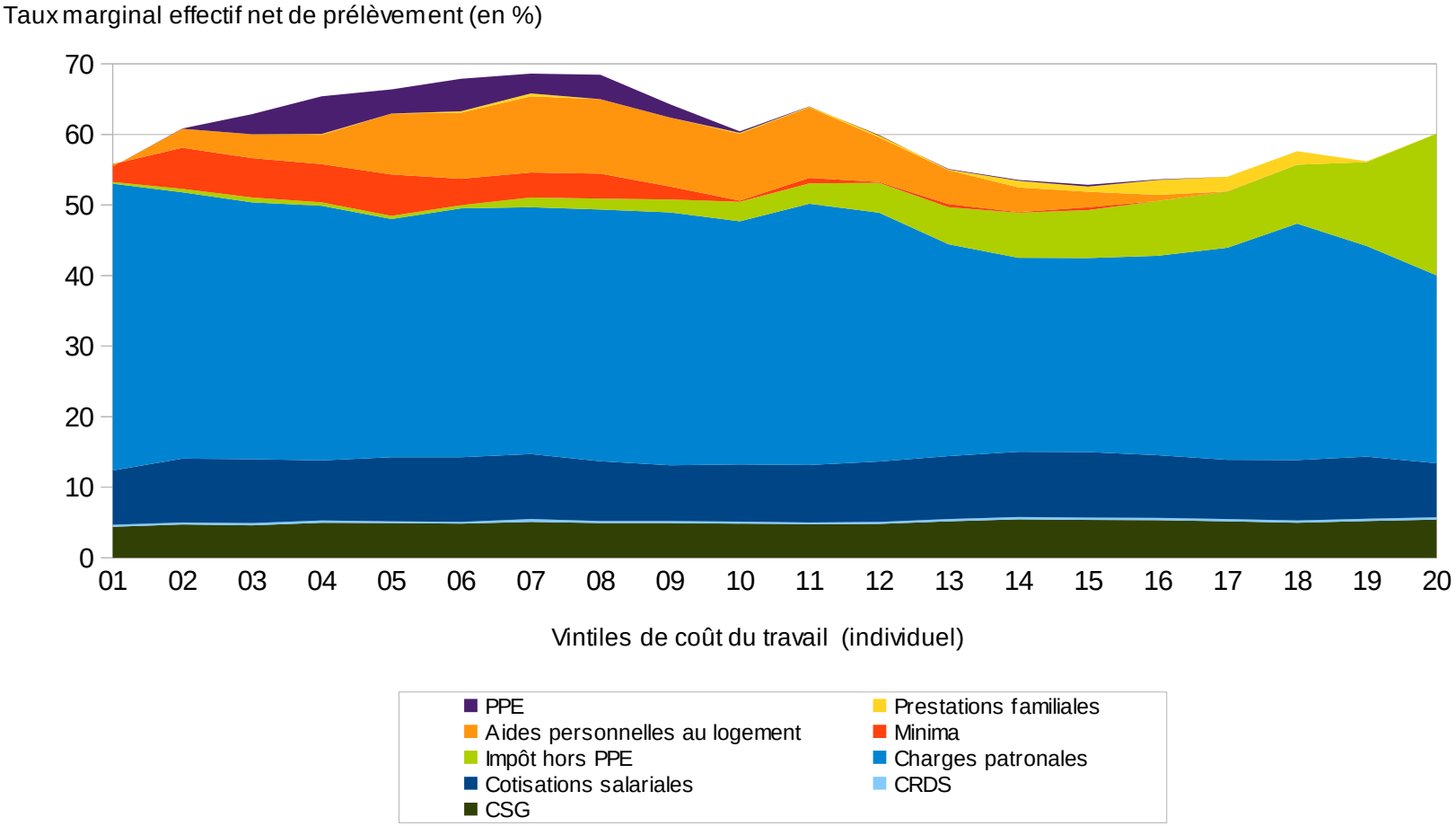
Décomposition des TMENP moyen par type de transfert, en fonction du revenu net par unité de consommation.



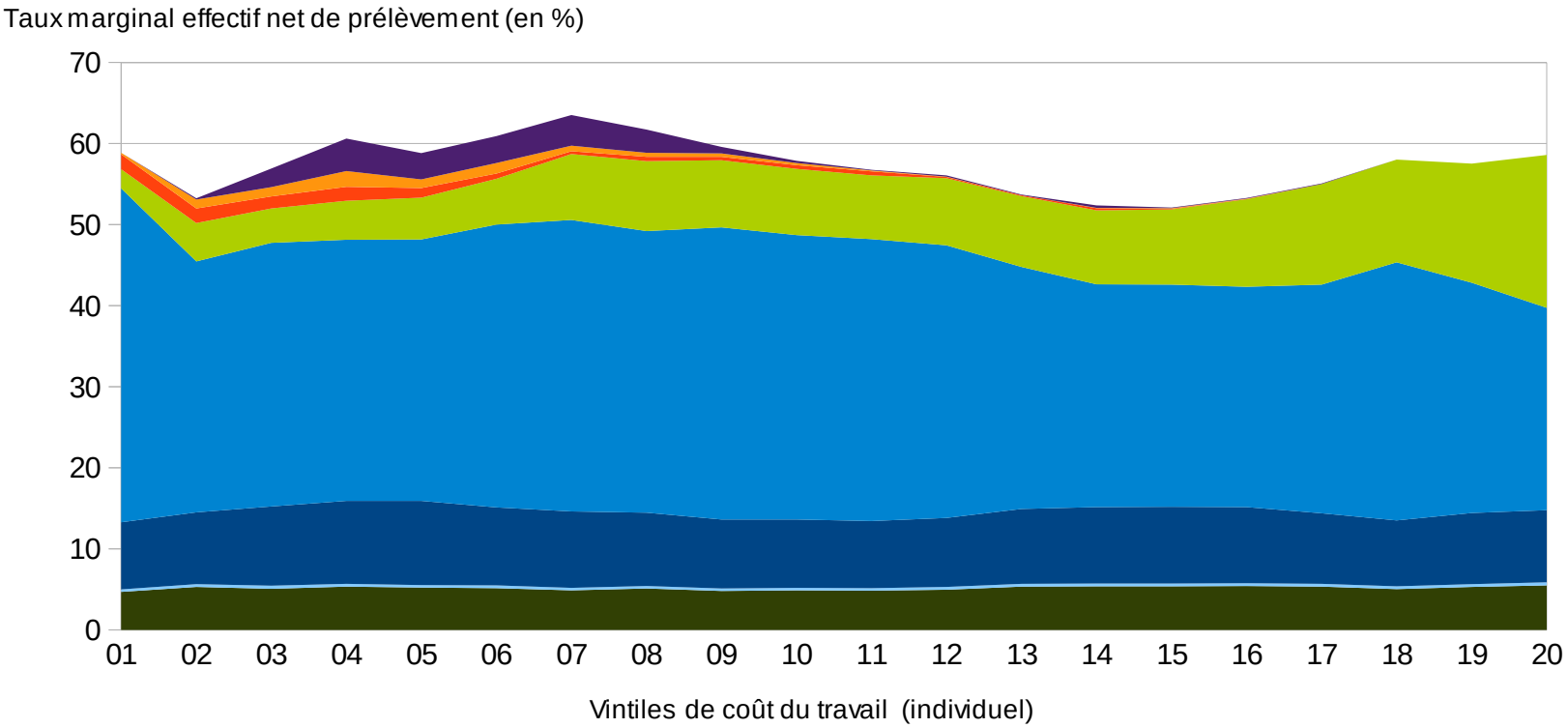
Personnes seules



Familles monoparentales



Individus en couple sans enfants



Individus en couple avec enfants