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Making the switch from joint to individual taxation in Luxembourg: An analysis of the female labor supply response
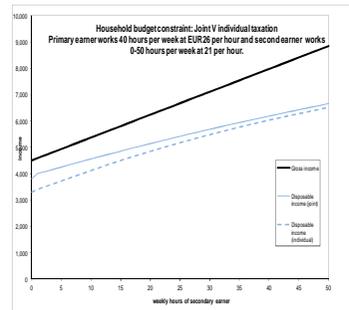
Nizamul Islam
LISER, Luxembourg

Karina Doorley
LISER, Luxembourg

Lennart Flood
University of Gothenburg, Sweden

1. Introduction

Over the last few decades, the general trend in European Union countries has been a move from joint towards individual taxation. However, joint taxation, whereby the income of a couple in a household is fully split between them or aggregated in determining the income tax liability, is still present in the US as well as some EU countries, such as Luxembourg, France and Portugal, despite the fact that this system imposes much higher marginal tax rates for the secondary earner in the couple. This paper contributes to the literature by, estimating, for the first time, the impact of switching from joint to individual taxation on labor supply using a structural model which accounts for the simultaneous nature of labor supply and welfare participation decisions of married couples in Luxembourg. Using micro simulation linked to a discrete choice labor supply model, we evaluate the proposed shift from joint to individual taxation in Luxembourg.

2. Household Budget constraint

Household budget constraint: Joint V individual taxation
Primary earner works 40 hours per week at EUR 26 per hour and second earner works 0-50 hours per week at 21 per hour.
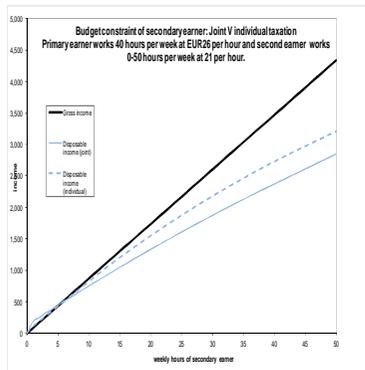
The married households in which the spouses have unequal incomes lose money in the individual taxation regime.

The incentive for the secondary earner to work is larger in the individual taxation than in the joint taxation system.

A little difference of disposable incomes between joint and individual taxation if both spouses are in full-time work. The main difference lies in the situation where the primary earner works full-time and the secondary earner works between 0 and 20 hours per week.

3. Individual Budget constraint

Budget constraint of secondary earner: Joint V individual taxation
Primary earner works 40 hours per week at EUR 26 per hour and second earner works 0-50 hours per week at 21 per hour.

Disposable income increases by more in the individual regime than in the joint regime as the secondary earner has access to her own tax credits and low band rates.

Disposable income increases as the secondary earner provides more hours of work and increases faster in the individual taxation system than in the joint taxation system although the two lines are almost parallel once the secondary earner reaches 40 hours per week, suggesting that she has exhausted her tax credits and access to lower tax bands.

4. Data and Method

• We used 2009 Luxembourg tax-benefit system linked to 2010 (income year 2009) EU-SILC data for Luxembourg.

• The behavioral micro simulation model LuxTaxBen developed by Islam and Flood (2015) simulated the "actual" taxes, social security contributions, benefits and disposable income for each household, given their wage, demographic and other characteristics. With some re-calibration, it simulates the same variables in the hypothetical switch from a system of joint to individual taxation. For cross validation we do similar exercise using micro simulation model EUROMD.

• For behavioral adjustment we used discrete choice labor supply (equation 1) model proposed by Van Soest (1995) and Blundell and Macurdy (1999). We modeled the labor supply of men and women in couples based on their observable characteristics and their disposable income.

$$U(C,l) = \alpha_1 \log C + \alpha_{11} \log C^2 + \alpha_2 \log l_m + \alpha_{22} \log l_m^2 + \alpha_3 \log l_f + \alpha_{33} \log l_f^2 \quad (1)$$
$$\alpha_{12} \log C * \log l_m + \alpha_{13} \log C * \log l_f + \alpha_{23} \log l_m * \log l_f + \alpha_4 P_{SA} - b_{fcm}D_m - b_{fcf}D_f$$

5. Simulation results

Table 1: Change in working hours and participation			
	Joint Taxation	Individual Taxation	Change(%)
Working hours (Male)	123,391,654	123,317,323	-0.06
Working hours (Female)	64,813,975	66,123,746	2.02
Participation of work (Male)	56,954	57,050	0.17
Participation of work (Female)	42,517	43,489	2.29

Table 2: Reform effect on central governmental budget (Millions EURO)					
	No behavioral adjustment			With behavioral adjustment	
	Joint Tax	Individual Tax	Change	Individual Tax	Change
Income and taxes					
-Disposable income	4721.70	4529.16	-192.53	4571.25	-150.45
-Labour income	5296.40	5296.40	00.00	5338.48	42.08
-Pension	12.48	12.48	00.00	12.48	00.00
-Total tax	633.90	826.44	192.53	830.19	196.28
Transfers					
-Unemployment	41.60	41.60	00.00	41.60	00.00
-Social assistance	51.06	51.06	00.00	54.34	3.29
VAT			-28.88		-22.57
Social security	650.12	650.12	00.00	650.24	0.13
Budget effect			163.65		170.55
Changes in tax- revenue due to behavioral response				4%	

6. Cross Validation

Table 3: Comparing simulation results of policy reform in the LuxTaxBen software to findings from the same exercise using EUROMOD		
	LuxTaxBen	EUROMOD
Male hours	-0.06	-0.09
Female hours	2.02	1.15
Total effect	-3.22	-2.61
1st round effect	-4.10	-3.08
2nd round effect	.92	.48

7. Main findings

• The male participation rate increased by 0.17 % while the female participation rate increased by around 2.29% due to the tax reform. Working hours increased by 2% for women while -0.06% for men.

• Without behavioral adjustment the reform decreases disposable income and thus decreases tax revenues from VAT. The net result is a surplus of EURO 164 million. With labor supply (behavioral adjustment), the increase in labor earnings creates higher disposable income as well as higher VAT revenues which actually makes the total central governmental budget is a surplus of EURO 171 million (4% larger than the total central governmental budget when behavioral effect is not taken into account).

• A decrease in total household disposable income of almost 3% in both software (LuxTaxBen and EUROMD). The first round effect (the change of disposable income due to reform) is -3 to -4% while the second round effect (the change of disposable income due to labor supply response) is less than 1%.

8. References

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Blundell, R. and Macurdy, T, "Labor supply: A review of alternative approaches. In Ashenfelter, O. and Card, D., editors, Handbook of Labor Economics, volume 3 of Handbook of Labor Economics, chapter 27, pages 1559–1695. Elsevier (1999)".

9. Contact information

LISER , 11, Porte des Sciences, L-4366 Esch-sur-Alzette , Luxembourg
Tel.: +352 58 58 55 507, E-mail: Nizamul.Islam@liser.lu