



# Labor supply consequences of family taxation: Evidence from the Czech Republic<sup>☆</sup>



Klára Kalíšková<sup>\*</sup>

CERGE-EI, a joint workplace of Charles University and the Economics Institute of the Academy of Sciences of the Czech Republic, Politických veznu 7, 111 21 Prague, Czech Republic

## HIGHLIGHTS

- New evidence on the labor supply effects of joint taxation of married couples.
- Joint taxation was introduced in the Czech Republic in 2005.
- The employment rate of married women with children dropped by 3 percentage points.
- The response was twice as large among women with tertiary-educated husbands.
- There was no effect on the employment probability of husbands.

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## ABSTRACT

While joint taxation is fairly widespread across European countries, the evidence of its labor supply effects is scarce due to a lack of recent policy changes. This study makes use of the introduction of joint taxation in the Czech Republic in 2005 to estimate its effect on married couples' labor supply. Results based on difference-in-differences and on triple differences with several alternative control groups suggest that the introduction of joint taxation lead to a decline of about 3 percentage points in the employment rate of married women with children. Participation declines are twice as large when the tax work disincentives are highest—among women with tertiary-educated husbands. The introduction of joint taxation did not affect the employment probability of married men with children.

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## 1. Introduction

The choice of an appropriate family tax treatment is an important part of an optimal tax design. While individual taxation systems tax each individual's income separately, systems of joint taxation either tax the sum of the family income as a whole or tax each spouse individually based on half of the total income (Stephens and Ward-Batts,

2004). Joint taxation meets the requirement for equal treatment of households with the same total income—the tax liability of a married couple is the same regardless of how income is divided between spouses (Cigno et al., 2011). However, joint taxation equalizes the marginal tax rates of the spouses and thereby decreases the marginal tax rates of primary earners (usually men) and increases the marginal tax rates of secondary earners (usually women). The effect of joint taxation on the labor supply of married men is ambiguous, because the substitutions and income effects work in opposite directions, but the theoretical effect on the labor supply of married women is unambiguously negative. This study is concerned with the empirical investigation of these labor supply aspects of family tax treatment.

Countries are not unified in their choice of tax unit. Even though individual taxation is in force in the majority of EU countries, a tax law often contains features that provide incentives similar to those of a joint taxation system, and tax systems based on joint taxation

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<sup>\*</sup> Tel.: +420 224 005 228.

E-mail address: [klara.kaliskova@cerge-ei.cz](mailto:klara.kaliskova@cerge-ei.cz).

are not exceptional either.<sup>1</sup> Fig. 1 shows that, indeed, countries with systems of (truly) individual taxation (Sweden, Denmark, Finland, the United Kingdom, etc.) tend to have higher female employment rates (for a given level of male employment) than countries with joint taxation systems or systems with ‘joint’ features.

Although economic theory predicts a negative female labor supply effect of joint taxation, there is little empirical evidence as a result of the lack of recent policy changes with respect to family taxation. Two studies have estimated the impact of joint taxation on the labor supply of married women using family taxation reforms: LaLumia (2008) and Selin (2009). Although both studies provide a comprehensive analysis of the changes in the tax treatment of families in the U.S. and Sweden respectively, their results are based on tax reforms that are more than 40 years old. Among others, Blau and Kahn (2007) show that the female labor supply elasticities and behavioral responses to tax reforms have changed significantly since the 1980s, pointing to the need for more up-to-date evidence.

This paper exploits the most recent family taxation reform, the introduction of joint taxation in the Czech Republic in 2005, to estimate the labor supply effect of joint taxation.<sup>2</sup> From January 1, 2005, married couples raising at least one child could have taken the opportunity for joint taxation in the Czech Republic. Since the actual usage of joint taxation among eligible couples is unknown, what I estimate here is the intention-to-treat effect of this reform.<sup>3</sup>

I apply a difference-in-differences approach with several alternative treatment and control groups to evaluate the effect of joint taxation on the married women’s and married men’s labor supply. The whole analysis is conducted separately by gender. First, I compare married individuals with children (all eligible) with unmarried individuals and married individuals without children (all ineligible). Next, I use the discontinuity in the eligibility rule—children are defined by a strict age threshold in the Czech tax code, which is 18 years, or 26 years in the case of full-time students. Therefore, I focus on a more homogeneous subset of the sample and compare married individuals with children aged 10–17/25 and married individuals with children aged 18–26–30. Furthermore, I apply a local difference-in-differences estimation around the two age thresholds—comparing married individuals with children aged 16–17 vs. those aged 18–19 (not in education), and married individuals with children aged 24–25 (in education) vs. those aged 26–27. Finally, I provide several robustness checks including the triple differences estimation (with an additional control group of Slovak married individuals with children)<sup>4</sup> and two placebo tests to check the validity of the estimation approach.

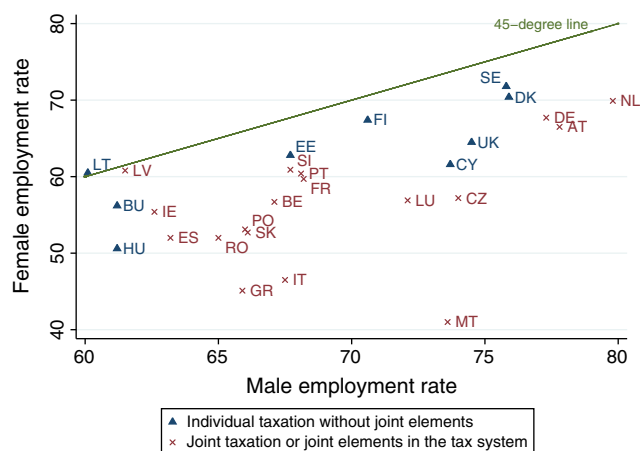
This project sheds new light on the effect of the family tax treatment on the labor supply of married men and women with children. The estimates show that joint taxation decreases the labor supply of married women with children—it is associated with a decline of 2.9 percentage points in their employment rate. Moreover, I show that those women who experienced the highest decline in work incentives did indeed respond with the largest decrease in employment probability (by 5.5 percentage points).

<sup>1</sup> Among others, Crossley and Jeon (2006) argue that ‘joint’ elements in the individual taxation systems (mainly tax deductions for single-earner couples) provide incentives similar to joint taxation. About one third of EU countries have individual taxation systems with these ‘joint’ elements, and about one third have joint taxation systems (see note below Fig. 1).

<sup>2</sup> The second most recent tax reform concerning family taxation was in the UK in 1990 (the abolition of joint taxation).

<sup>3</sup> The voluntary nature of joint taxation is not uncommon in the European tax systems. It is actually used in the majority of countries that have joint taxation (Germany, Ireland, Malta, Poland, Portugal, and Spain). The intention-to-treat might thus be the main parameter of interest for policy makers. Nevertheless, I show in Section 3 that the intention-to-treat effect estimated in this study (the effect of having the joint filing option) provides a lower bound for the effect of mandatory joint taxation.

<sup>4</sup> This is motivated by a common history of the Czech and Slovak Republics and by the fact that labor supply decisions in these countries have many common features even today (Bičáková, 2010).



**Fig. 1.** Female and male employment rates by taxation systems in the EU. Note: The graph shows employment rates (15 to 64 years) in 2011. Joint elements in the individual taxation systems are tax deductions for single-earner couples. Individual taxation systems without joint elements: BU, CY, DK, EE, FI, HU, LT, SE, UK; individual taxation systems with joint elements: AT, CZ, EL, IT, LV, NL, RO, SI, SK; and joint taxation countries: BE, DE, ES, FR, IE, LU, MT, PO, PT.

Source: Eurostat LFS employment statistics and EUROMOD country reports 2007–2010: <http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics>; <https://www.iser.essex.ac.uk/euromod/resources-for-euromod-users/country-reports>.

The estimated effect for married men is largely insignificant at the extensive margin, supporting the findings of LaLumia (2008), who also did not find any effect of joint taxation on the labor supply of married men. The effect of joint taxation on hours worked by married men is negative and significant in most specifications, but of a very small magnitude, which is consistent with the income effect slightly outweighing the substitution effect.

The remainder of the paper is organized as follows. The next section reviews the relevant literature, then the institutional background of the Czech reform analyzed in this paper is introduced, with an ensuing discussion of the methodology and identifying assumptions of the chosen approach. Finally, the paper presents the results and concludes.

## 2. Literature review

Recently, there has been an expansion in the literature that simulates the effect of a switch from joint to individual taxation on female labor supply (among others, see Steiner and Wrohlich, 2004; or Haan, 2010). However, these microsimulation studies face common problems connected to the estimation of labor supply effects. Blundell et al. (1998) argue that the “[l]abor supply effects have been notoriously difficult to estimate in a robust and generally accepted way” (p. 827). The main reason is the presence of severe simultaneity problems with wages and other income. However, Blundell et al. (1998) point out that these estimation problems can be solved if researchers correctly exploit the variation induced by tax reforms. Tax reforms provide us with an exogenous variation in the after-tax wages and enable the observation of behavioral responses to the tax reforms.

This study is highly motivated by these considerations, and I thus base my analysis on the actual policy change. To my knowledge, there are only two studies that use policy reforms in estimating the labor supply effect of joint taxation, and they are based on tax reforms that are more than 40 years old.<sup>5</sup> LaLumia (2008) uses the difference-in-differences strategy at the state level taking advantage of the U.S. tax reform which introduced joint taxation in 1948. Selin (2009) studies the abolition of joint taxation in Sweden in 1971. Both studies have

<sup>5</sup> There is a related literature focusing on the labor supply effects of more recent tax reforms that introduced flat taxation in Russia and some European countries (see e.g. Duncan and Peter, 2010).

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