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## Taxing women: A macroeconomic analysis

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## ABSTRACT

Based on well-known evidence on labor supply elasticities, several authors have concluded that women should be taxed at lower rates than men. We evaluate the quantitative implications and merits of this proposition. Relative to the current system of taxation, setting a proportional tax rate on married females equal to 4% (8%) increases output and married female labor force participation by about 3.9% (3.4%) and 6.9% (4.0%), respectively. Gender-based taxes improve welfare and are preferred by a majority of households. Nevertheless, welfare gains are higher when the U.S. tax system is replaced by a proportional, gender-neutral income tax.

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## 1. Introduction

Two observations are central to this paper. First, it is well known that the labor supply elasticities of women are larger than those of men, especially when the extensive margin is considered.<sup>1</sup> Second, the current U.S. tax system is biased against women's work in the marketplace. Since the U.S. system taxes the income of households and not the income of individuals, for a married woman who considers entering the labor force, her marginal tax rate depends on her husband's income. Given the current levels of marginal tax rates, this is arguably a substantial impediment to labor force participation.

These observations have motivated work in the theory of optimal taxation. From standard public-finance principles, the higher labor supply elasticities of women suggest that they should be taxed at lower rates than men. [Boskin and Sheshinski \(1983\)](#) were possibly the first to establish this insight. They focused on the optimal linear-income taxation of two-earner households with exogenously given differences in labor supply elasticities between men and women.<sup>2</sup> More recently, [Alesina et al. \(2011\)](#) put forward more forcefully the idea of differential taxation of men and women within a model in which gender differences in labor supply elasticities emerge endogenously. Under parametric restrictions, they conclude that married women should be taxed at lower rates than married men.<sup>3</sup>

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<sup>1</sup> See [Blundell and MaCurdy \(1999\)](#) and [Keane \(2010\)](#) for surveys of estimates. With growing labor force participation of females, the labor supply elasticity of men and women recently became more similar (see [Blau and Kahn, 2007](#); [Heim, 2007](#)). There still exist, however, substantial differences.

<sup>2</sup> In an earlier paper, [Rosen \(1977\)](#) hints at the same issue. [Apps and Rees \(1988\)](#) reach a similar conclusion within a model with home production. See [Apps and Rees \(2010\)](#) for an excellent summary and discussion of these results.

<sup>3</sup> [Kleven et al. \(2009\)](#), following [Mirlees \(1971\)](#), study the optimal taxation of couples in a model economy where the planner does not observe the ability of primary earner or the cost of participation for the secondary earner. As a result, the government faces a multidimensional screening problem. They show that if the participation of the secondary earner is a signal of the couple being better off, the secondary earner faces a tax and this tax is declining in the primary earner's earnings.

Although the above results are attractive for their policy implications, work in this area has been almost exclusively theoretical, and a quantitative evaluation of the relative merits of differential taxation by gender is still missing. It is an open question what are the expected, quantitative effects associated to changing the current structure of taxation in this direction. In this paper, we fill this void. We ask: What are the aggregate effects of taxing married females at lower rates? What are the welfare implications of these lower tax rates? To answer these questions, we use a model able to capture a number of key cross-sectional observations for the problems at hand. We build a life-cycle model populated by heterogeneous single and married agents. Individuals differ in terms of their labor endowments, which differ both initially and how they evolve over the life cycle. In particular, the labor market productivities of females are endogenous and depend on their labor market histories: not working is *costly* for females since if they do not work their human capital depreciates. Married households decide if both or only one member should work, in the presence or absence of (costly) children and the structure of the tax system. In this context, changes in the structure of taxation lead to changes in participation rates and aggregate labor supply, and can have large welfare consequences.

We calibrate our model to the U.S. economy under the current tax system, taking into account the observed heterogeneity in skill endowments, marital segregation by skill, labor-force participation rates as well as the presence of children and their cost. As we explain in detail in Guner et al. (in press), the parameterized environment is capable of jointly reproducing a host of labor supply observations. The model is consistent with the wage-gender gap and its evolution over the life cycle, female labor force participation by educational attainment, and the pattern of participation rates by women with and without children as they age. This makes the model environment an ideal vehicle to evaluate the consequences of differential taxation by gender.

Within the model disciplined by data, we then proceed to study the effects of a tax system that imposes different *proportional taxes* on the labor earnings of married females. Following Alesina et al. (2011), we will refer to these as *gender-based taxes*, albeit their particular implementation will be connected to marital status as we explain below. The gender-based taxes that we consider nest as special cases the equal tax rates on men and women. Hence, a virtue of our analysis is that it allows us to separate the effects of differential taxation of married females, from the effects associated to the elimination or reduction of tax progressivity.

We consider two implementations of gender-based taxes. First, we consider replacing the U.S. tax system by proportional tax rates on labor earnings of married females that are lower than for the rest (married males, singles). We refer to this case as the *broad-base* case, as the reduction in tax rates on married females is financed by all other agents. In our second scenario, we first calculate a revenue-neutral proportional tax applied to all agents independent of their gender. We then assign this tax rate to singles, and reduce the tax rates on the labor earnings of married females increasing only the tax rates on married males. We refer to this case as the *narrow-base* case, as only tax rates on married males are used to achieve revenue neutrality.

We find that a shift to proportional tax rates has substantial effects. Replacing the current tax structure by a proportional income tax at a 10.2% rate increases aggregate hours worked by 3.2% and aggregate output by 3.2% across steady states. As marginal tax rates are reduced for majority of households, married females increase their labor market participation by 2.8%. Taking into account changes in labor supply along the extensive as well as the intensive margin, the overall contribution of married females to changes in hours is substantial and amounts to 48.9%.

The effects of proportional taxes outlined above are amplified when married females are taxed at lower rates. If taxes on married females are lowered to 4% (8%) in our narrow-base case, output increases by 4.0% (3.5%) and aggregate hours increase by 4.2% (3.6%) across steady states. These findings are driven by the much stronger responses of married females; they increase their participation by 6.9% (4.2%), and contribute 65.8% (56.1%) to the overall changes in hours. This is all not surprising, as tax rates are reduced on the group that reacts the most to tax changes. Similar results hold under our broad-base case.

To assess welfare effects from our experiments, we compute transitions between steady states under the assumption of a small-open economy. We find that gender-based taxes lead to a welfare improvement to a majority of households alive at the date when the structure of taxes change. Nevertheless, we find that proportional income tax at a uniform rate dominates gender-based taxes in terms of aggregate welfare gains. While a proportional income tax on all delivers aggregate welfare gains of about 1.1% in consumption terms, a differential tax rate of 4% (8%) on married females implies gains of about 0.4% (0.7%). As we explain in Section 7.1, this result is driven by the effects associated to taxing married men at higher rates as in revenue-neutral tax reforms lower taxes on married females have to be financed by higher taxes on married males. While households where married women have a higher initial labor endowment tend to gain from the shift to gender-based taxes, most married households in our model are those where males have *higher* labor productivity. This is due to the observed marital sorting by skill, and initial wage gaps. Hence, the higher tax rates on males that accompany the lower rates on females have a net detrimental consequence on the welfare of most married households, and thus on aggregate welfare. These conclusions hold in a variety of robustness checks.

Our paper is organized as follows. Section 2 presents a simple example that highlights the effects of differential tax rates on females on labor supply and participation decisions. Sections 3 and 4 present the model economy. Section 3 discusses calibration.<sup>4</sup> In Section 6 we explain in detail the nature of the quantitative experiments that we conduct. Section 7 contains the

<sup>4</sup> The details of the calibration are delegated to an online appendix.

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