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Female market work, tax regimes, and the rise of the service sector ☆

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ABSTRACT

US regional variation shows a positive correlation between the size of the service economy and female market hours, which is partially driven by different tax regimes. Based on this fact, this paper develops a multi-sector model to: (1) quantify the effect of different tax regimes in incentivizing woman to enter the labor force, and (2) estimate the feedback effect from women entering the labor force on the service sector size. Counterfactual results suggest that tax progressivity has a stronger effect than tax levels on married female market hours and the speed of structural transformation. In addition, married households react more to progressivity increases and single households are more sensitive to level changes. These results highlight that models ignoring tax structures (levels and progressivity) and household heterogeneity (dual versus single earning households) could lead to erroneous policy conclusions.

1. Introduction

A growing service sector provides women with better employment opportunities, both in terms of wages and job openings, while a larger female labor force demands more market produced services (e.g., childcare, elderly care, prepared meals) resulting in a larger service sector. However, the extent to which the growth of the service sector and female employment are related crucially depends on the tax regime, as households can allocate time between taxed market work and untaxed home production. Given the policy debate concerning women's employment rates (OECD, 2015a), this paper estimates the effects of tax structures (levels, progressivity, and dual earning households) on female market hours and, consequently, on the rising service sector in the US.

Using US regional data, I document three facts concerning the service sector, female market hours and taxes: (1) metropolitan statistical areas (MSAs) with larger service sectors have higher female market hours; (2) the rise in service hours and female market hours is positively correlated; however, (3) increases in average income tax rates dampen female

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[1] All errors are mine.

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market hours. Based on these facts, I build a multi-sector model with taxes and structural change to address two questions: (1) how large are the hypothetical costs of introducing high taxes in the US economy, and (2) how important is the feedback effect from (married) women entering the labor market on the service sector size?

The model is based on a standard general equilibrium multi-sector model augmented with an island structure. Islands are useful in modeling (married) women's access to service- versus industry-employment opportunities. Households live on one of two islands, where islands only differ in a female-specific utility cost of finding a service sector job. Households are heterogeneous in family size (married or single, with none or two children) and educational attainment (high school, some college, college, and post-graduate). Households allocate time between the home (production and leisure) and labor market, and choose consumption over three types of goods: market produced services, market produced goods and home-produced services. The model has three key assumptions: (1) men are assumed to have equal productivity across sectors, while women have higher productivity in services; (2) women draw sector-specific utility costs of working, and on average prefer service- over industry-jobs; and (3) households can produce a substitute for market produced services (e.g., childcare, elderly care, meals) using goods and time. Standard structural transformation, in combination with the above three assumptions, incentivize women to enter the labor market and substitute home hours with market-purchased services.

The model is calibrated to the 1977 US labor market. I simulate the calibrated model with exogenous changes in tax schedules, household structures (marital status, children, educational attainment) and relative wages from the late 1970s and 2000s. The baseline model can account for the entire rise in both female hours and service-to-industry hours. A decomposition of the female hours trend shows that the model generates the rise in hours through the typical channels, i.e., a closing gender wage gap, increasing educational attainment coupled with higher returns to education, and structural transformation. The decomposition of the sectoral hour trend shows that a fall in industry-to-service hours is partially driven by women's improved labor market opportunities.

To quantitatively address the two proposed research questions, I simulate counterfactual experiments with three different tax regimes: (1) a high tax regime (HTR), higher both in levels and progressivity; (2) a tax regime with the same higher average tax burden, but with a flat tax (no progressivity); and (3) a flat tax with the same average tax burden as the benchmark economy. I focus on two outcomes for each of the three hypothetical tax regimes: (1) changes in male- and female-hours compared to the benchmark, and (2) changes in the size of the service sector due to changing household time allocations and consumption patterns.

Compared against the benchmark, high taxes with progressivity lead to lower hours worked in the market and an increase in home- and leisure-hours. In contrast, a regime with the same tax burden, but a flat tax structure, leads to a much smaller fall in market hours, a fall in leisure hours and an increase in home hours. These opposing results in the allocation of hours between market/home and leisure across the two tax structures is driven by the different reaction of married- and single-households. Married households decrease hours when progressivity increases, shifting to both home production and leisure by taking advantage of specialization across spouses. With a flat tax structure, married households do not face the additional marginal tax effect from higher progressivity and react less. In contrast, (poorer) single women (and mothers) shift hours to market- and home-production to compensate for any loss in consumption of goods and services due to a higher average taxes burden.

In the second part of the counterfactual exercise, I decompose the fall in industry-to-service hours into multiple components. The sectoral hours ratio in the model is driven by firms demanding machines for production, and consumers demanding goods and services. In turn, these two demand components are also affected by exogenous technological change. Thus, in the spirit of an Oaxaca-Blinder decomposition, I decompose the fall in industry-to-service hours into four components, changes in firm/household demand given average technology, and changes in technology given average firm/household demand. In the benchmark, over one-third of the fall in the sectoral hours ratio is explained by changes in consumer demand for market services. The explanatory power of changing consumer demand falls by 17 percentage points for the high-progressive tax regime, but falls by only 7 percentage points for the high-flat tax regime. In contrast, it increases by 4 percentage points for the flat US tax regime. In addition, to determine the feedback of women on the size of the service sector, I further decompose changing household demand by household type (married, single females and males). This decomposition shows that married households can account for a much larger share of the change compared to single households. This is again due to the greater specialization potential of married households. These results highlight that models ignoring tax structures (levels and progressivity) and household heterogeneity (dual versus single earning households) could lead to erroneous policy conclusions.

2. Literature review

The importance of taxes and structural transformation has been highlighted in multiple cross-country studies of aggregate hours worked (Prescott, 2004; Rogerson, 2008). Subsequent research points to a lack of the *marketization of services*, a term coined by Freeman and Schettkat (2005), as a cause for low aggregate hours worked. For example, Ragan (2013) and Olovsson (2009) show that higher European tax rates (compared to the US) motivate individuals to shift hours from the market to the home (or leisure). Duernecker and Herrendorf (2015) show that differences between the US and France stem from a rise in leisure time. This literature models the household as a single representative agent facing different tax levels, while Fang and McDaniel (2017) find that market work and home production vary, to a large extent, when disaggregated by sex. Olivetti and Petrongolo (2014) further show that countries with smaller service sectors have less female employment.

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