

# Households, gender, and agglomeration economies

## 1 Introduction

Do women benefit from agglomeration in the same way as men? Does marital status affect agglomeration gains? An ample literature has demonstrated the existence in many countries of an urban wage premium: workers earn more on average in larger cities (Glaeser et al., 2001 in the US; Combes et al., 2008 in France; De la Roca et al., 2017 in Spain; Carlsen et al., 2016 in Norway...). Yet the few studies which have investigated gender differences in agglomeration economies have not found conclusive evidence (Phimister, 2005, Hirsch et al., 2013).

There are many potential mechanisms through which gender could interact with agglomeration. Higher wages, or better access to services such as childcare could increase women's participation rate. Women also tend to have fractioned careers and a lower job search radius (Le Barbanchon et al., 2021) which would make the better job matching in large cities more beneficial to them. On the other hand, fractioned careers could attenuate the effects of learning spillovers on wage growth.

Furthermore, the literature on agglomeration gains usually relies on wages to estimate gains to individuals. Yet, in practice location decisions are made by households and the decisions of whether and where to move are likely discussed between household members. This intra-household bargaining in location choices suggests an additional way through which women could benefit differently from agglomeration than men. Gemici (2007) and Venator (2020) have shown that married women are more likely to be the tied movers in their relationships, meaning they move due to the gains of their spouses, even if it is not in their direct interest. This would make the improved matching in large cities even more valuable to them.

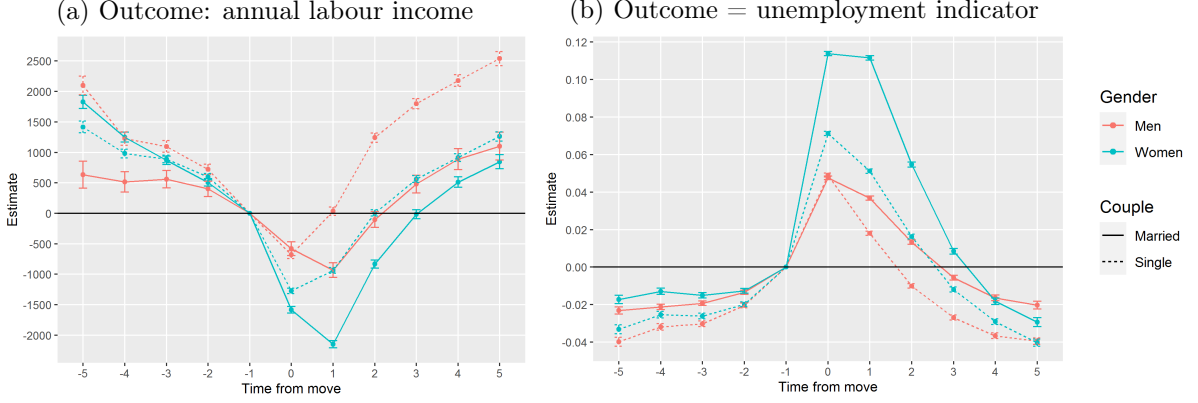
In this project, I use French administrative data and an event study setting to document patterns in wages and unemployment after a move which are consistent with married women being tied movers. I then estimate urban wage premium by gender and marital status, and find that, once accounting for sorting, women benefit more than men from agglomeration.

## 2 Data

To investigate these questions, I leverage the Housing and Individual Demographic Files (FIDELI). This administrative dataset originates from the combination of several tax sources and follows the universe of French residents from 2014 to 2019. For each French resident it provides a number of individual characteristics, including age, gender, and annual income from various sources (wages; unemployment insurance; retirement pension; agricultural, industrial, commercial and non-commercial profit; social benefits).

The FIDELI data also matches people by household: couples who are married or in a civil union and their dependent children are linked together, allowing me to observe both marital status and the presence and age of children. Finally the data includes the exact address of residence of each household on the first of January of each year. From this I can observe whether a household moved during a given calendar year, but not the exact date of the move.

I keep in my sample people between 25 and 60 years old, living in an urban area in mainland France every year I observe them. This leaves me with a panel of around 26 million individuals.



The figure shows event time coefficients  $\alpha^g$  estimated from equation (1). Robust standard errors are included around each estimate. Number of observations: Single men = 2,073,703; Single women = 2,147,512; Married men = 1,711,678; Married women = 1,652,057

Figure 1: Labor market outcomes after a move, by gender and marital status

### 3 Event study method and results

I first use an event study setting to explore how long distance moves impacts the labour market outcomes of men and women, by marital status. I restrict my sample further to people who moved across urban areas exactly once between 2014 and 2019. I then estimate the following event study equation separately by gender and by marital status at the time of the move.

$$Y_{ist}^g = \sum_{j \neq -1} \alpha^g \mathbb{1}[j = t] + \sum_k \lambda^g \mathbb{1}[age_{is} = k] + \sum_s \phi^g \mathbb{1}[year = s] + \sum_{m \in \{0,3,6,10\}} \eta_m^g \mathbb{1}[child \leq m] + \varepsilon_{ist}^g \quad (1)$$

where  $Y_{ist}^g$  is the outcome of interest for individual  $i$  in year  $s$ , in event time  $t$ , of gender and marital status  $g$ . This regression also controls for the presence children in the form of four indicators for having a newborn or at least one child under the age of 3, 6 and 10.

Figure 1 plots the coefficient of interest  $\alpha^g$  for two outcomes, by gender and marital status. Panel (a) uses as outcome annual labour income. It shows that after a move married women experience the largest and most persistent decrease in income out of all groups. In Panel (b), the outcome is an indicator for having received some unemployment benefit during the year. The probability of being (at least partially) unemployed increases the most, and the most persistently for married women after moving. These patterns are consistent with married women being the tied movers in their relationships, which in turn raises a question about increased gains from agglomeration: following a partner to a large city rather than a small one could make it easier to recover from unemployment.

### 4 Agglomeration economies

To explore this question and investigate whether agglomeration economies differ for individuals of different gender and marital status I use a two step approach. First I run on my full sample a standard wage regression, described in equation (2), where  $w_{it}$  is the log annual wage of worker

i,  $\theta_i$  is an individual fixed effect,  $X_{it}$  are individual characteristics including age and its square, and  $\beta_{c(it),g(it)}$  is a fixed effect for each urban area - gender - marital status combination.

$$\log w_{it} = \theta_i + \mathbf{X}_{it}\gamma + \beta_{c(it),g(it)} + \varepsilon_{it} \quad (2)$$

I then regress the estimated  $\hat{\beta}_{c,g}$  on cities' density and area. I also include indicators for gender, marital status, and their interaction with city characteristics. The results are reported in Table 1. In the preferred specification of columns (3) and (4) the  $\hat{\beta}_{c,g}$  are estimated in a first step with individual fixed effects. The results in those columns indicate that women benefit significantly more from density than men, consistent with the mechanisms exposed in the introduction.

Table 1: Second-stage OLS regression results - FIDELI

	$\hat{\beta}_{c,g}$ , from first stage regression			
	(1)	(2)	(3)	(4)
Density	0.125*** (0.014)	0.049*** (0.005)	0.060*** (0.009)	0.025*** (0.004)
Married $\times$ Density	-0.030* (0.017)	-0.013** (0.006)	0.003 (0.013)	0.003 (0.005)
Female $\times$ Density	-0.013 (0.023)	-0.014** (0.007)	0.039** (0.017)	0.020*** (0.006)
Married $\times$ Female $\times$ Density	-0.007 (0.029)	-0.005 (0.009)	-0.006 (0.024)	-0.006 (0.008)
Area		0.056*** (0.003)		0.025*** (0.003)
Married $\times$ Area		-0.012*** (0.004)		0.000 (0.003)
Female $\times$ Area		0.019*** (0.004)		0.014*** (0.004)
Married $\times$ Female $\times$ Area		-0.001 (0.005)		0.000 (0.006)
Married	Yes	Yes	Yes	Yes
Female	Yes	Yes	Yes	Yes
Married $\times$ Female	Yes	Yes	Yes	Yes
Individual FE in 1st stage	No	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
$R^2$	0.765	0.870	0.937	0.955
N	18288	18288	18288	18288

Standard errors in parentheses. Density and area in logarithm.

Coefficients for Married; Female; and Married $\times$ Female not reported for the sake of space.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

However, it does not appear that this is driven by married women specifically. While this result goes against the intuition that tied movers should benefit more from living in large cities, it is worth noting that outcome variable in the first stage -annual labour income- includes both extensive margin (employment status) and intensive margin (wage rate). In the future, I want to disentangle those two channels and explore further the ways that gender and household composition interact with agglomeration to impact individuals' wages and employment.

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