

Spouses, Children and Entrepreneurship

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Question

- *Does having a spouse affect the decision to start a firm? How does it affect the outcome of the firm?*
- **Yes!**
- Being in a couple \Rightarrow **decreases the probability to start a firm**
- and when starting a firm
 - Hire **more workers**

Motivation

- ***Why do we care if spouses influence entrepreneurship?***
- ***Key to understanding how recent changes in household composition affect job creation.***
- **Marriage rate decreased from 62% in 1990 to 55% in 2013 in the US.**
- Need model to help us identify effect of spouses on entrepreneurship! ⇒ Use model to derive empirical specification and conditions for identification.

Mechanism

- Model of entrepreneurial choice, with endogenous marriage.
- Spouses are simplified to static problem of how many hours to work given their wage and income of main earner and whether or not to work.
- Main earners draw business opportunities and decide to implement them or not.
- Differences in firm outcomes due to differences in selectivity on business projects between married and unmarried individuals.

Mechanism

- Three channels via which selectivity on business projects between married and unmarried can differ :
 - Spouse works more hours in case of business failure (**Spousal Insurance Effect**).
 - Higher profits of firm partially offset by spouse working less (**Spousal Sharing Effect**).
 - Having spouse associated to children. Children increase cost of failure, decrease benefit to entrepreneurship and opportunity cost to entrepreneurship (**Offspring Effect**).

Identification Strategy

- Use confidential tax data from Canada with entire universe of tax filers.
- Use city/country of origin level variation in marriage rates, entry rates into entrepreneurship and average size of firms.
- Use model to derive instrument for marriage rates and conditions for validity.
- Our instrument for marriage rates is the gender ratio for that particular city/country of origin.
- Intuition : More women relative to men \Rightarrow easier for men to find women to marry.
- *Key identifying assumption : We are able to control for the direct effect of gender ratio on entrepreneurship by controlling for female labour participation.*

Identification Strategy

- The key for identification is that the only direct channel gender ratio affects entrepreneurship is via changes in income sharing within household.
- If these changes in intra household income sharings gives rise to changes in female labour participation then we can control for it by controlling for changes in female labour force participation.
- Then, the only endogeneity left is due to demand shocks.
- Finally, the gender ratio by city/country of origin needs to be uncorrelated to demand shocks at the city level.

Previous Literature

- *Literature on entrepreneurship*
- Lucas (1978), Fonseca et al. (2001), Cagetti and De Nardi (2006), Adamopoulos and Restuccia (2014), Levine and Rubinstein (2017) Poschke (2017), etc.
- *Literature on insurance value of spouses*
- Lundberg (1985), Stephens (2002), Gallipoli and Turner (2009), Blundell et al. (2016), Wu and Krueger (2018), etc.
- *Literature using model to derive linear specifications and their corresponding instruments*
- Beaudry, Green and Sand (2012, 2018), Tschopp (2015), Sand and Bidner (2016).
- *Literature on Gender Ratio as predictor of Marriage Rate*
- Grossbard-Shechtman (1985), Grossbard-Shechtman (1993), Angrist (2002)

Model

- Start description taking marriage as given, then explain endogenous decision to marry.
- Individual consume their income.
- Two types of households : Couples (one main earner and one spouse) and singles (one main earner).

Model

- A one-person household earning I income has utility

$$u(I) \equiv \frac{I^{1-\sigma}}{1-\sigma} \quad (1)$$

Model

- A couples household assigns weight μ to utility of the spouse and $1 - \mu$ to utility of the main earner.
- Spouses can only be workers.
- A couple with spouse working h hours has a cost ϕh associated to the spouse working.
- Individuals share income when in a couple.
- Let γ represent the share of total household income that is consumed by the spouse.
- Furthermore, consistent with a recent empirical literature (Chiappori et al. (2002) and Angrist (2002)), we allow for the γ to depend on the gender ratio θ_g .
- The gender ratio θ_g varies by group g of the individual.

Model

- Couples have time invariant fixed cost of $\kappa \sim M(\kappa)$ for spouse working.
- Couples make ex-ante choice of whether spouse works or not (pay fixed cost κ) without knowledge of what is going to be the main earner income.
- Couples have children which consume a fixed share k of total household income. (Tractable modelling of children goes a long way)
- Hence, a couple with spouse working h hours and main earner earning I income has utility of

$$U(I, h) = \mu u((1 - k)\gamma(\vartheta_g)(I + wh)) + (1 - \mu)u((1 - k)(1 - \gamma(\vartheta_g))(I + wh)) - \phi h - \kappa \quad (2)$$

where w^s is the wage earned by the spouse and

$$u(x) = \frac{x^{1-\sigma}}{1-\sigma} \quad \forall x. \quad (3)$$

Model

- Conditional on choosing to work, optimal choice for hours of work for the spouse, h^* , by the couple implies

$$h^* = \frac{[\mu\gamma(\vartheta_g)^{-\sigma} + (1-\mu)(1-\gamma(\vartheta_g))^{-\sigma}]^{\frac{1}{\sigma}}}{\phi^{\frac{1}{\sigma}}(1-k)w} - \frac{l}{w} \quad (4)$$

- Key takeaway : Spouses work more if main earner income is lower!

Model - Primary Earner

- Main earners differ in their innate entrepreneurial ability θ .
- Let X^M : value function X for married, X^U : value function X for unmarried.
- Primary earner can be in one of 3 states : Employed and not bankrupt (W^M or W^U), Entrepreneurship (J^M or J^U), Bankrupt and employed (B^M or B^U)
- While Employed and not bankrupt (W), primary earner earns w and draws business opportunities (rate ψ).
- Each business opportunity has productivity $z \sim F(z)$.
- Households choose whether primary earner starts a firm or not (Optimal thresholds $\underline{z}_M(\theta)$ for married and $\underline{z}_U(\theta)$ for unmarried)

Model - Primary Earner

- Period by period, entrepreneur chooses how many individuals to hire

$$\pi^*(z) \equiv \max_n y\theta e^z n^\alpha - wn \quad (5)$$

- y : economy specific productivity
- θ : individual specific innate entrepreneurial ability
- z : business project specific productivity

Model - Primary Earner

- At rate λ business fails and individual transitions to B .
 - **Bankruptcy B identical to W except that**
 - **flow cost of c** \Rightarrow main earner has income $w - c$
 - **individual can't draw business projects**
- At rate p (exogenous) transition from B to W .
- **Side note : Exogenous failure rate consistent with no empirical relationship between marriage and exit from entrepreneurship.**

Model

- **Summary : Ambiguity concerning whether married or unmarried individuals more selective.**
- If (**Spousal Sharing Effect**) stronger than other effects, married households enter less and start larger firms. If the (**Spousal Insurance Effect**) dominates other effects, married households enter more and start smaller firms.
- But regardless of which effects dominate always get ***empirical restriction that effect of spouse on entry should be of opposite sign to that of average size of firm.***
- This prediction comes directly from our selection mechanism driving differences between entrepreneurs of same ability.

Model

- Allow for individuals to choose ex-ante whether to get married or not.
- Probability man meets woman is a function of gender ratio. Once meet choose endogenously to marry or not.
- Individuals choose with knowledge of their θ but before knowing draws of z and κ of potential spouse.
- \Rightarrow Stylized endogenous marriage, one shot decision (No divorce, no remarriage, etc...)
- Let individuals belong to groups $g \in G$ that determine an idiosyncratic utility value of marriage $v_g \sim H(v)$.

Model

- From log-linearization of model and some algebra can derive equations

$$\Delta ER_{c,g,t} = \beta_{1,1} \Delta MR_{c,g,t} + \zeta_{2,1} \Delta \text{Prob}(\text{Work})_{c,g,t} + \zeta_{2,2} \Delta \int Id \mu_{c,t}(l|g) + \beta_{3,1} \Delta y_{c,t} + \zeta_{2,3} \Delta \epsilon_{c,g,t} \quad (6)$$

$$\Delta SY_{c,g,t} = \beta_{1,2} \Delta MR_{c,g,t} + \zeta_{3,1} \Delta \text{Prob}(\text{Work})_{c,g,t} + \zeta_{3,2} \Delta \int Id \mu_{c,t}(l|g) + \beta_{3,2} \Delta y_{c,t} + \zeta_{3,3} \Delta \epsilon_{c,g,t} \quad (7)$$

and

$$\Delta MR_{c,g,t} = C_2 \Delta y_{c,t} + C_3 \Delta \vartheta_{c,g,t} + C_4 \Delta \text{Prob}(\text{Work})_{c,g,t} \quad (8)$$

- Furthermore, the model imposes the restriction that

- ▶ if $\beta_{1,1} < 0$, then, $\beta_{1,2} > 0$ and if $\beta_{1,1} > 0$, then, $\beta_{1,2} < 0$

Data - CEEDD

- Confidential annual tax data from Canada with **universe of tax filers** : 2001-2013, combining
 - T1 files (1040 in US) (individual tax files) - Demographic variables for each individual (age, marital status, immigrant status, gender and labor earnings)
 - T4 files (W-2 in US) (files linking worker to their employer) - Individual identifier and employer firm identifier.
 - Schedule 50 from Corporation Tax Return (Schedule G of Corporate Tax Return in US) linked to LEAP dataset - Link firms to their owners + info on firms
 - T1FF files : Links between individuals and their spouses

Data - CEEDD

- Confidential annual tax data from Canada with **universe of tax filers** : 2001-2013.
- From this dataset construct city/country of origin level variables. (Economic regions \approx commuting zones in the US.)
- ***Definition of business owner : Current owner and founder of a privately owned incorporated firm with employees***
- **Unincorporated entrepreneurs almost never hire \Rightarrow not counted as entrepreneurs**
- Our different groups g are individuals of different countries of birth.
- Marriage rates are constructed using also common-law partners.
- Homophily in Marriage

Results

	OLS	IV	OLS	IV
Dependant Variable	$\Delta ER_{c,g,t}$	$\Delta ER_{c,g,t}$	$\Delta SY_{c,g,t}$	$\Delta SY_{c,g,t}$
$\Delta MR_{c,g,t}$	0.027	-0.197***	-0.043	1.595***
	(0.004)	(0.023)	(0.038)	(0.344)
Significance IV for $\Delta MR_{c,g,t}$	-	Yes	-	Yes
Observations	65783	65783	31593	31593

Notes: Regressions of changes in entry rate (Columns 1 and 2) and average number of employees (Columns 3 and 4) in economic region c , country of origin g and year t , $\Delta ER_{c,t}$, on the change in the marriage rate in economic region c year, group g , year t , $\Delta MR_{c,g,t}$. Our instrument is the gender ratio in that city c , group g , year t . Both specifications include year dummies to capture national trends, control for changes in female labor force among married women and average income among married men. * represents 10% significance, ** represents 5% significance and *** represents 1% significance. Standard errors are clustered at the economic region c , country of origin g level.

First Stage

Results

- Note results are in changes, so any country of origin or city specific effect is controlled for.
- Results are robust to
 - including dummies for country of origin g . (Use changes across same group g in different cities c)
 - including dummies for cities c . (Use changes across different groups g in same city c)
 - to excluding businesses where spouses working for main earner, or jointly owning business with main earner.
 - to excluding high capital industry.
 - to considering women rather than men.
 - to using only immigrants that arrived at age 16 or earlier.

Results - First Stage

	1st Stage for $\Delta ER_{c,g,t}$	1st Stage for $\Delta SY_{c,g,t}$
	$\Delta MR_{c,g,t}$	$\Delta MR_{c,g,t}$
$\Delta \vartheta_{c,g,t}$ (Gender ratio)	0.072*** (0.002)	0.056*** (0.002)
Observations	65783	31593

Notes: 1st Stage Regressions for IV regressions of changes in entry rate on changes in marriage rates (Column 1) and changes in average number of employees on changes in marriage rates (Column 2) in economic region c , country of origin g and year t . Our instrument is the change in log gender ratio. Both specifications include year dummies to capture national trends, control for changes in female labor force among married women and average income among married men. * represents 10% significance, ** represents 5% significance and *** represents 1% significance. Standard errors are clustered at the economic region c , country of origin g level.

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Homophily in Marriage

- Recent Brief by Statistics Canada for 2011 :
 - Among all couples : 85% were between individuals born in the same country.
 - Among immigrant only couples : 83% were between individuals born in the same country.
 - 87.6% of couples have one or more common mother tongues.
 - 90.2% of couples are composed of individuals that either share the same religion or both with no religious affiliation.

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