Families' Career Investments and Firms' Promotion Decisions

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Context & Insights

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▶ Firm training is important for human capital accumulation.

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▶ We argue: two key decision margins matter for explaining these gaps

    1. Firms select workers for managerial training and promotions based on workers' characteristics, which may or may not include the family type.

    2. Households jointly determine career investments of spouses. Who marries whom (the marriage market, MM) affects workers' investments in human capital.

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   2. Households jointly determine career investments of spouses. Who marries whom (the marriage market, MM) affects workers' investments in human capital.

▶ Our insight: MM equilibrium, households' choices, and firms' policies interplay.

$\rightarrow$ Gender gaps in fam's career investments and firm's training reinforce each other.

This paper: marriage and the labor markets interplay
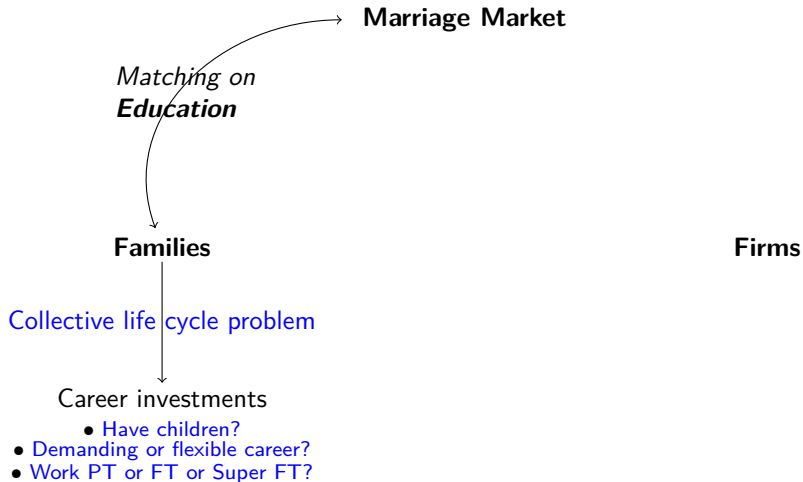
Marriage Market

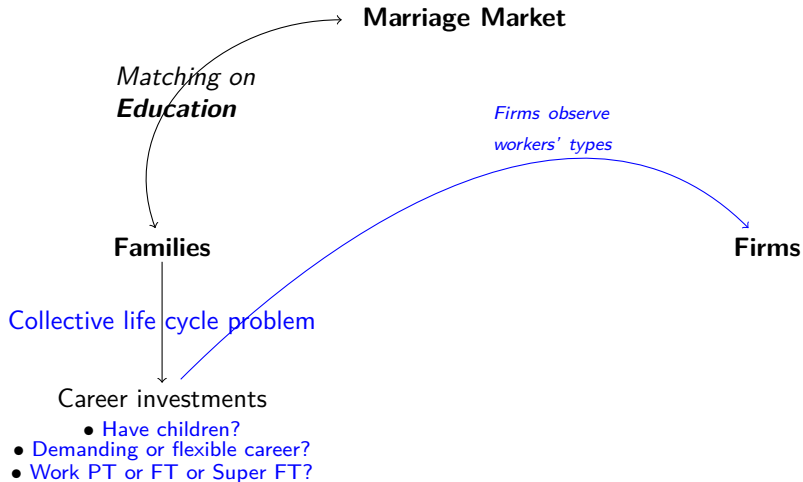**Families**   **Firms**

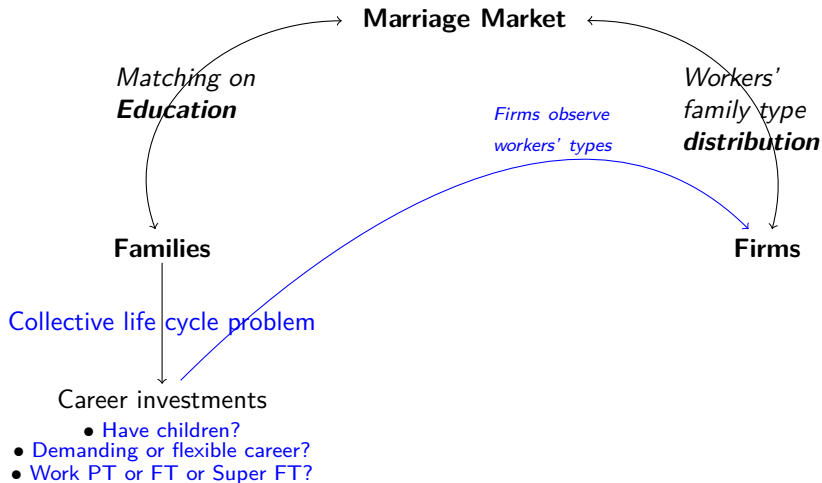# This paper: marriage and the labor markets interplay

Marriage Market

Matching on
Education

Families   **Firms**

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Collective life cycle problem

Career investments
- Have children?
- Demanding or flexible career?
- Work PT or FT or Super FT?

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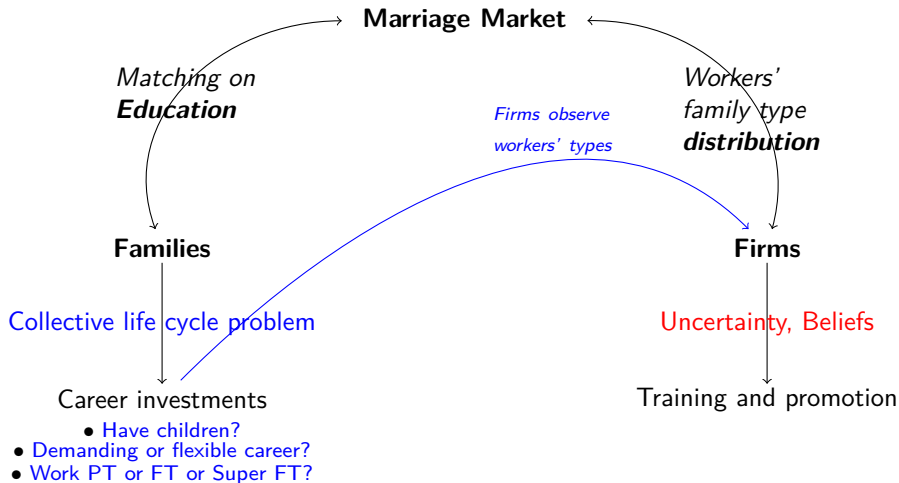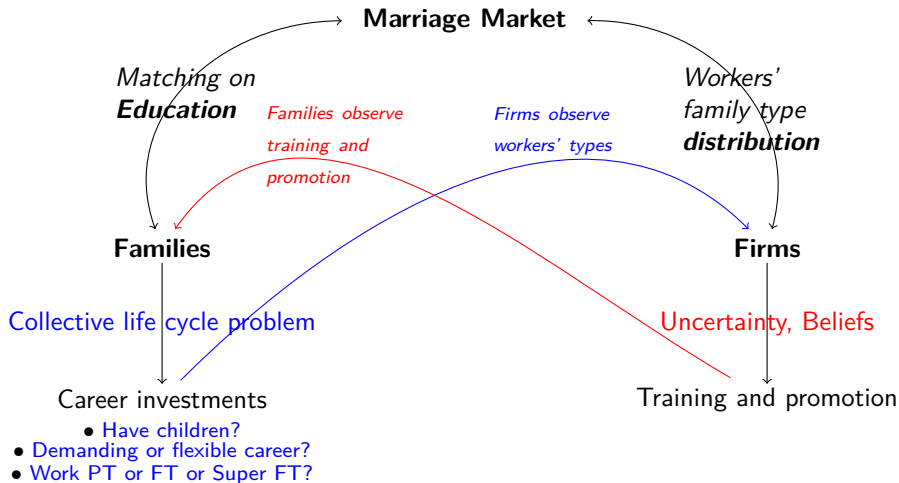- Have children?
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Uncertainty, Beliefs

Training and promotion

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2. Specify and estimate quantitative equilibrium model of this interaction.

   ▶ Marriage market: spouses match based on initial human capital (ambition).

   ▶ Family: labor supply, fertility, public good, and initial advantage of women.

   ▶ Firm: capacity constraints for trainees and managers and uncertainty about workers' family types and their future performance.

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3. Evaluate policies to promote families' and firms' investments in women.

   ▶ Focus on policies being discussed and implemented in different regions.

   ▶ Quantify heterogeneous effects by gender, education, and type of couple.

   ▶ Provide a unified framework for policy evaluation.

▶ Contribution to the literature

Roadmap

Data: follow families and firms across cohort's life cycle

▶ Danish register data:

   → education, family history, and labor market history for the full population.

   → labor force survey: detailed work hours (weekly, overtime, evening, weekend).

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▶ Dataset of ∼120K households and all of their employers observed for ∼25 years.

▶ Measurement of key variables: ambition types, career ladders, management promotions, firms' managerial training, labor supply status super-full-time.

▸ Ambition Details ▸ Ladder Details ▸ Promotion Details ▸ Training Details ▸ SFT Details

Roadmap

Environment I: General

- Three periods, t.

- Two markets: The Marriage market and the Labor market.

- A representative firm with:

  - Two ladders (or career paths), $L = \{L_1, L_2\}$

  - Two production technologies, producer or manager, $J = \{p, mg\}$

- Equal mass of women and men, $i = \{m, f\}$, of gender $\mathcal{G}_i = \{\mathcal{X}, \mathcal{Y}\}$

- Distinguished by their career ambition (*initial* human capital), θ_i

  - relevant for matching in the marriage market, and
  - sorting into *career paths*.

- Market human capital (η_{it}) accumulation depends on ambition type as well as labor supply, career ladder, and training choices.

Environment II: The Family

▶ Flow individual utility: $u_{it} = c_{it} Q_t \chi^u_{(children)}$

▶ Labor supply choices: $l_i = \{NP, PT, FT, SFT\} = \{0, \frac{1}{3}, \frac{2}{3}, 1\}$, no leisure.

▶ Ladder choices: $L_i = \{L_1, L_2\}$.

▶ Fertility choice: remain childless or have first child in periods t_1 or t_2.

▶ The public good produced with private goods and time:
$$Q_t = c_{Qt} + \phi_{ft}(1 - l_{ft}) + \phi_{mt}(1 - l_{mt}) - \chi^Q_{(children)}$$

  ▶ Complementarity between time and goods: Welfare cost if both spouses choose super-full-time.

▶ ϕ_i: spouse i's *family* human capital.

  ▶ Individuals in household h draw a common initial shock, $\bar{\phi}_h$
  ▶ Married women have an initial advantage: $\phi_f = \bar{\phi}_h \cdot \kappa$
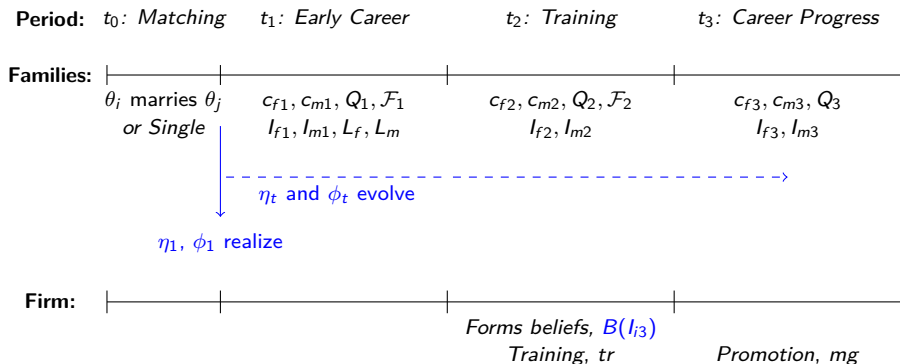 ▶ Family hk and the advantage of women depreciate over time.

Environment III: The Representative Firm

▶ Two jobs *J* on each ladder *L*, producer and manager.

▶ Output *per unit of time* in job *J* and ladder *L* is parameterized as follows:

$$y_{L_i,J_i}(\eta_{it}) = a_{L_i,J_i} + b_{L_i,J_i}\eta_{it}.$$

▶ Manager promotion requires leadership training and super-full-time work.

 ▶ Firms are selective due to capacity constraints: convex cost of training and fixed slots for managers.

▶ To decide training policy, firm forms beliefs about labor supply in the final period and profits with and without training.

 ▶ Over unknown *family type* and *family shock*.

▶ Wages:

 ▶ Workers are paid a wage rate equal to their productivity per unit of time.

 ▶ Firms cannot write long-term contracts that condition on future choices.

 ▶ Firms pay for the training and share the rents from the additional future output.

The life cycle of individual θ_i and the representative firm

Period: t_0: *Matching* t_1: *Early Career* t_2: *Training* t_3: *Career Progress*

Families:

θ_i marries θ_j $c_{f1}, c_{m1}, Q_1, \mathcal{F}_1$ $c_{f2}, c_{m2}, Q_2, \mathcal{F}_2$ c_{f3}, c_{m3}, Q_3

or Single I_{f1}, I_{m1}, L_f, L_m I_{f2}, I_{m2} I_{f3}, I_{m3}

η_t and ϕ_t evolve

η_1, ϕ_1 realize

Firm:

Forms beliefs, $B(I_{i3})$

Training, tr *Promotion,* mg

- ▶ Periods in our model correspond to life cycle stages ⟨▸ in the data⟩
- ▶ Market Human Capital Evolves over Time ⟨▸ Details⟩
- ▶ Family Human Capital Evolves over Time ⟨▸ Details⟩
- ▶ Worker type vs. family type ⟨▸ Details⟩
- ▶ The Firm's Training and Promotion Problem ⟨▸ Details⟩
- ▶ Characterization of Equilibrium ⟨▸ Details⟩

Taking stock: how do endogenous gender gaps arise?

▶ Key mechanisms include behind gaps in training and promotion:

    ▶ women's initial advantage at home and

    ▶ selective leadership training by firms.

▶ Families invest less in women $\leftrightarrow$ firms invest less in women.

▶ Small initial differences can get amplified into large gender gaps.

▶ We estimate the model using the Danish register data. ▸ Estimation ▸ Untargeted Fit

▶ How do these forces and mechanisms interact with policies?

▶ Can policies that incentivize training eradicate the "bad" equilibrium?

Roadmap

Policy Analysis: Overview

▶ We use the model as a laboratory to evaluate the *equilibrium* effects of policies.

▶ Long run vs. short run: fix the marriage market equilibrium.

▶ Stylized examples of two alternative sets of policies:

1. Paid and mandatory parental leave for ~ 8 months

   ▶ Part-time equivalent replacement rate for women only

   ▶ Part-time equivalent replacement for both men and women

   ▶ Note! A small fraction of a model period (10%).

2. 50% Quota for female managers (with qualifications!)

   ▶ Note: "non-patronizing" by design.

Parental leave for mothers only increases gender gaps
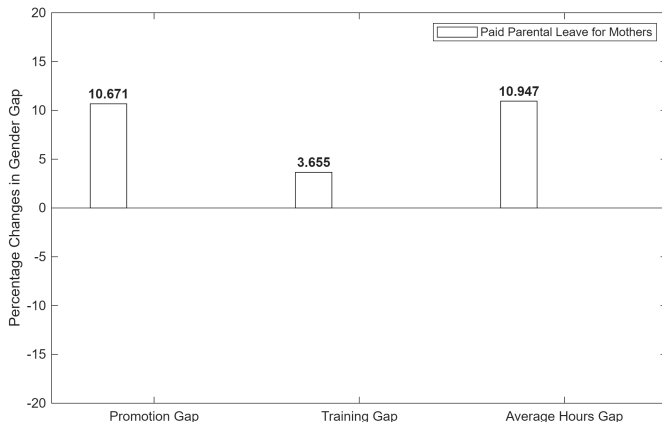
- ▶ Both families and firms increase investment in men (in levels, compared to baseline) and reduce investment in women. ▸ Details

- ▶ Results in a widening of promotion gap by over 10%.

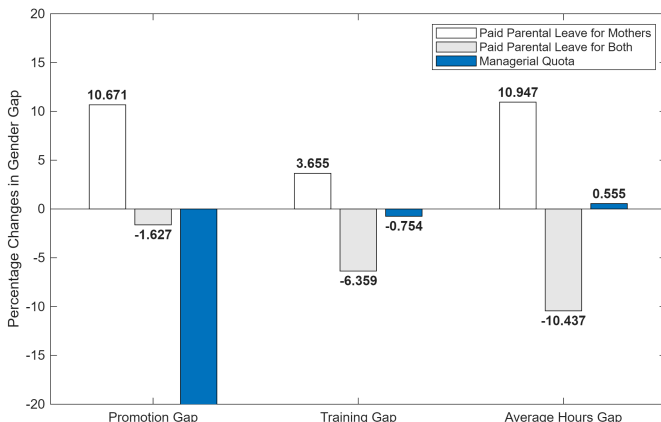# Parental leave for both mothers & fathers reduces all gaps
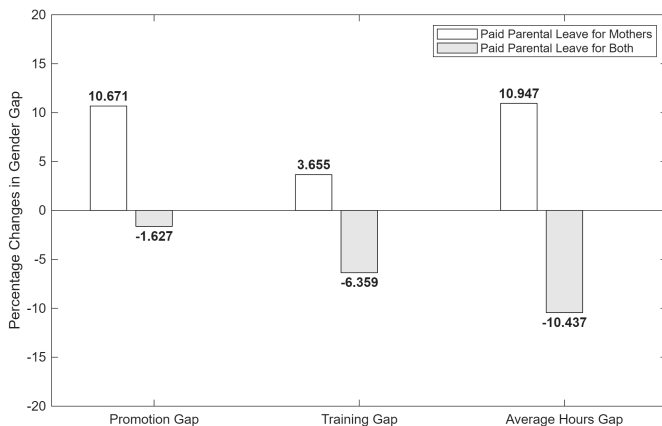
▶ Families increase labor supply, but more so for women.

▶ Firms train more women and fewer men relative to the baseline. (▸ Details)

▶ Helps women in equal couples, harms women who marry-up (▸ By couple)

# Managerial quotas induce more equal firm-side investments

- ▶ Promotion gap almost disappears by design.
- ▶ Firms respond by training more workers overall, especially women.
- ▶ Families increase investments in men who face more competition. `▶ Details`
- ▶ Helps especially women in power couples, and women who marry-up `▶ By couple`

Fixing marriage choices amplifies gender inequalities
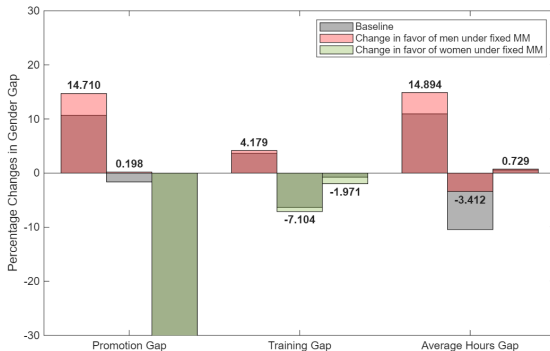
▶ Fixing the marriage market tilts family-side investment gaps in favor of men. (▸ Details)

▶ Partner choice is an important mechanism for the impact of family policy.

Welfare effects vary across couple types

Table: Consumption-equivalence approach for each policy compared to baseline

	Paid parental leave				Managerial quota	
	mothers		mothers and fathers			
Panel A. Family human capital:	low $\bar{\phi}$	high $\bar{\phi}$	low $\bar{\phi}$	high $\bar{\phi}$	low $\bar{\phi}$	high $\bar{\phi}$
Power Couples, (θ_4, θ_4)	-9.628	-7.529	-10.459	-7.218	0.773	0.198
Equal Ambition, $\theta_f = \theta_m$	-7.850	-4.757	-8.419	-4.418	0.265	0.093
Husband highest, $(\theta_{i\leq 3}, \theta_4)$	-11.928	-7.581	-11.680	-6.982	-1.505	-1.232
Wife highest, $(\theta_4, \theta_{i\leq 3})$	-10.114	-7.491	-11.623	-6.746	0.157	1.362
Panel B. Market human capital:	low η_{1h}	high η_{1h}	low η_{1h}	high η_{1h}	low η_{1h}	high η_{1h}
Power Couples, (θ_4, θ_4)	-8.708	-8.152	-7.992	-8.325	1.029	0.345
Equal Ambition, $\theta_f = \theta_m$	0.034	-6.177	0.622	-6.163	0.871	0.073
Husband highest, $(\theta_{i\leq 3}, \theta_4)$	-5.804	-9.224	-5.193	-8.914	0.348	-1.442
Wife highest, $(\theta_4, \theta_{i\leq 3})$	-4.740	-8.722	-4.389	-8.836	1.224	0.993

▶ Leave for mothers (both parents) reduces average household utility by 1.052% (3.387%). The managerial quota increases household utility by 0.011%.

▶ Welfare costs of leave are higher for families with low family hk or high market hk — especially for equal couples. Driven by foregone skill accumulation, distorted marriage and fertility choices.

▶ Quota works mostly through the firm side. Benefits asymmetric couples with highly ambitious women and harms asymmetric couples with highly ambitious husband.

Roadmap

Conclusion

▶ New facts on heterogeneity in firm-side investments by households types.

▶ Rich Danish data $\rightarrow$ follow households and their employers over life cycle.

▶ Build an equilibrium model in which who marries whom affects the link between workers' investments and firms' investments.
  ▶ lifecycle collective household model with fertility and
  ▶ career progression within the firm.

▶ The MM serves as an important transmission mechanism for the policy impacts.

  ▶ Overall, paid leave to both spouses can reduce gender gaps in promotions, but some groups may lose.
  ▶ Management quota shifts the focus of households on career investments for ambitious women, but to different extent.
  ▶ Blanket policies conceal important heterogeneous effects.

▶ Highlights importance of considering interactions with the MM.

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Roadmap

A unified framework for policy evaluation

▶ Build on literature on the career cost of workers' choices.
  ▶ Adda, Dustmann, Stevens (2017); Kleven, Landais, Søgaard (2019); Angelov, Johansson, Lindahl (2016); Goldin (2014); Cortes & Pan (2019).

▶ We incorporate Marriage Market (MM) and Firm-side investments. ▶ Details

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▶ We add to the literature on how different policies affect women's careers,
  ▶ Parental leave policies
  → Thomas (2021); Xiao (2021); Bailey, Byker, Patel, Ramnath (2019).
  ▶ Manager quotas by firms
  → Bertrand, Black, Jensen, Lleras-Muney (2018).

  by accounting for endogenous responses by families and firms in *equilibrium*.

▸ Back

We combine three strands in a unified framework

- ▶ MM: workers' investments depend on who they marry.
  - ▶ Chiappori, Costa-Dias, Meghir (2018); Gayle & Shephard (2019); Reynoso (2022); Calvo (2022).

- ▶ Firms have limited manager slots and invest in more attractive workers.
  - ▶ Training matters: Blundell, Costa-Dias, Goll, Meghir (2021).
  - ▶ firms expectations about workers' performance: Gayle & Golan (2012).
  - ▶ job assignment/ promotions: Friedrich (2020), Gibbons and Waldman (1999).

- ▶ Extend literature on Marriage and Labor Markets interactions
  - ▶ Dynamic framework with fertility, on-the-job training, managerial promotions.
  - ▶ Calvo, Lindenlaub, Reynoso (2022); Holzner & Schulz (2023), Philossoph & Wee (2023), AFRSV (2023).

▶ Back

Ambition types (AFRSV, 2023), θ_i

Educational level, all programs

Educational ambition, all programs

- ▶ Programs matter for marital sorting (Wiswal and Zafar, 2021),

- ▶ and differ in initial conditions and long-term outcomes (Altonji, Kahn, Speer, 2014, 2016; Kirkeboen, Leuven, Mogstad, 2016)

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Classification of most frequent programs (AFRSV, 2023)

Educational ambition, all programs
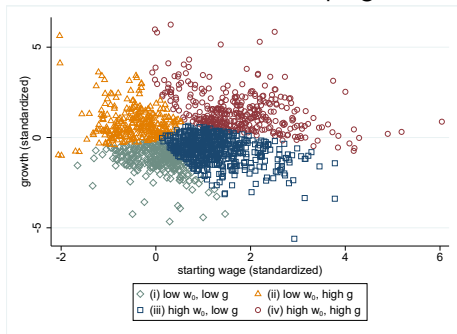
Examples
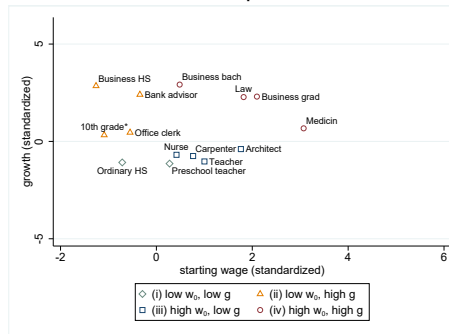
▶ Our method groups programs based on labor market starting conditions and progress.

▶ Successful measure to differentiate tertiary degrees
    ▶ e.g.: Architecture $\neq$ Business; Nurse $\neq$ Doctor.

▶ Back

Ambition types and hours worked

▶ Higher ambition types work longer and more irregular hours, often requiring working at home and in the evenings.

Career ladders

▶ We aim to measure career path choices based on occupational choice and firm at labor market entry

▶ We distinguish *steep* and *flat* career ladder for tractability

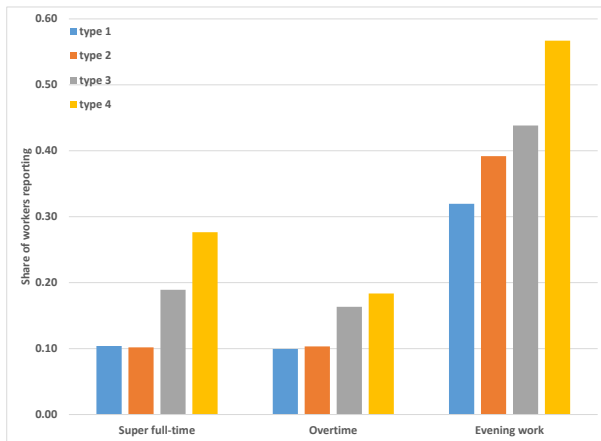 ▶ Steep is defined as the top 20% occupation-firm pairs with highest hourly wage growth over first 10 years.

  ▶ Calculate average growth based on coworkers.

  ▶ Coarsen comparison group if necessary to avoid small-cells issues.

▶ Ambition type is about earnings potential ex ante, ladder choice is about the career path that individuals enter in the labor market.

  $\rightarrow$ Law graduate decides to work at a private law firm or in public sector administration.

▶ Back

Promotion to manager

▶ Managers are workers with occupations coded "1: Management Work."

    ▶ Categories include "Top management," "Management within administration," "Management within production," and "Management within services."

    ▶ Examples: Manager in production company (132100), manager of internal IT (133020), top manager in public company (111200) etc.

▶ Promotion means transition to these occupation codes for the first time.

▶ Significant pay increase

    ▶ Managers make 40% more than non managers, conditional on training.

On-the-job training

▶ Direct measure of firm investment: data on individuals' participation in management training programs (paid by firm while on the job).

  → 45% of program participants are subsequently promoted to managers.

  → 10% of all managers previously received this management training.

▶ Another type of firm investment: lateral moves across occupations within a firm

  → Returns to specialization vs preparing for management

▶ Predictive model to identify workers who receive training based on both sources:

  → classifies 85.75% of individuals correctly (managers with training and non-managers without training).

  → 12.92% of trainees are subsequently promoted to managers.

  → 50.3% of all managers previously received training.

▶ Back

Super-full-time work

▶ We distinguish between four labor supply states at the yearly level: nonparticipation, part-time, full-time, and super-full-time.

▶ Nonparticipation refers to not being employed by the end of November in a given year.

▶ Those who are employed by the end of November in a given year are characterized as either part-time or full-time depending on the hours worked per week, e.g., less or more than 32 hours.

▶ The Danish standard full-time working week has 37 hours.

▶ The super-full-time status is constructed based on information from the Danish LFS. We classify a worker as working super-full-time in the following cases:
  1. reports working 38 hours or more per week
  2. reports working 37 hours and, additionally, irregular hours, e.g., in the evening, weekends, etc.

▶ Back

Gender gaps in training and promotion
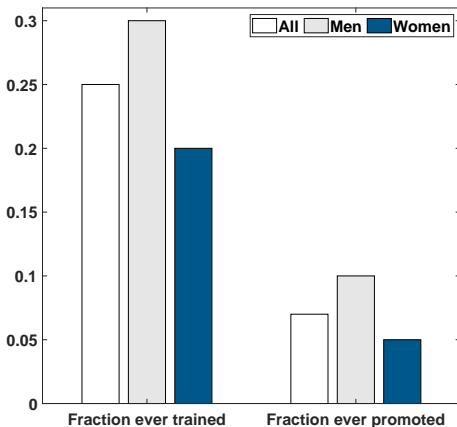
- Gender gap in training is 33%, increases to 50% at the promotion stage.
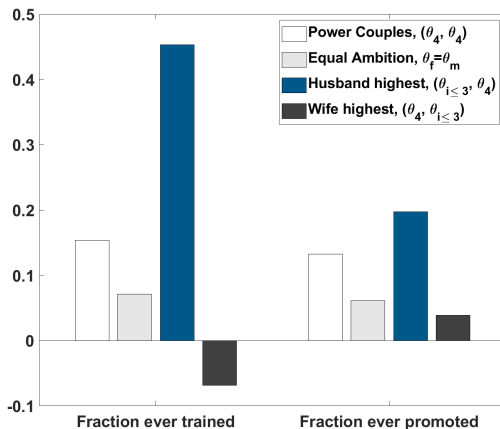
- Big and significant even with firm-occupation fixed effects. ▶ Regression

▶ Go back

Gender gaps in firm-side investments vary with worker's family type

Difference in men's and women's outcome

- ▶ Interestingly, gaps positive within power couples.
- ▶ Depend on own and spousal type. ▸ Go back

Firm-side investments vary with worker's family type

$$mg_{ijt} = \beta_0 + \beta_1 \cdot F_i + \beta_2 \cdot \theta_{i,\geq 3} + \beta_3 \cdot \theta_{i,\geq 3} \cdot F_i + \beta_3 \cdot \theta_{j,\geq 3} + \beta_4 \cdot \theta_{j,\geq 3} \cdot F_i + X'\gamma + \epsilon$$

	(1)	(2)	(3)	(4)
	Training		Manager	
female	-0.0287***		-0.0090***	
	(0.002)		(0.001)	
high-ambition	0.4302***		0.0475***	
	(0.005)		(0.002)	
high-ambition * female	-0.0738***		-0.0150***	
	(0.007)		(0.002)	
high-ambition spouse	0.1318***		0.0386***	
	(0.007)		(0.003)	
high-ambition spouse * female	-0.0652***		-0.0326***	
	(0.008)		(0.003)	
Observations	1,860,063		1,860,063	
R-squared	0.199		0.020	

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

▶ Gender gaps widen for ambitious women and for women with ambitious spouses.

▶ The role of the spouse declines conditional on labor market choices.

▶ Back

Firm-side investments vary with worker's family type

$$mg_{ijt} = \beta_0 + \beta_1 \cdot F_i + \beta_2 \cdot \theta_{i,\geq 3} + \beta_3 \cdot \theta_{i,\geq 3} \cdot F_i + \beta_3 \cdot \theta_{j,\geq 3} + \beta_4 \cdot \theta_{j,\geq 3} \cdot F_i + X'\gamma + \epsilon$$

	(1)	(2)	(3)	(4)
	Training		Manager	
female	-0.0287***	-0.0150***	-0.0090***	-0.0043***
	(0.002)	(0.003)	(0.001)	(0.001)
high-ambition	0.4302***	0.2992***	0.0475***	0.0401***
	(0.005)	(0.005)	(0.002)	(0.002)
high-ambition * female	-0.0738***	-0.0628***	-0.0150***	-0.0140***
	(0.007)	(0.007)	(0.002)	(0.002)
high-ambition spouse	0.1318***	0.0824***	0.0386***	0.0322***
	(0.007)	(0.007)	(0.003)	(0.003)
high-ambition spouse * female	-0.0652***	-0.0372***	-0.0326***	-0.0256***
	(0.008)	(0.008)	(0.003)	(0.003)
FE for Firm-Ladder, Age, LS History	No	Yes	No	Yes
Observations	1,860,063	1,827,942	1,860,063	1,827,942
R-squared	0.199	0.428	0.020	0.245

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

▶ Gender gaps widen for ambitious women and for women with ambitious spouses.

▶ The role of the spouse declines conditional on labor market choices.

▶ Back

Firm-side investments vary with worker's family type

Fraction trained in couple-type (Women)

Legend: θ_1=(low w_0, low g), θ_3=(low w_0, high g), θ_2=(high w_0, low g), θ_4=(high w_0, high g)

Fraction trained in couple-type (Men)

Legend: θ_1=(low w_0, low g), θ_3=(low w_0, high g), θ_2=(high w_0, low g), θ_4=(high w_0, high g)
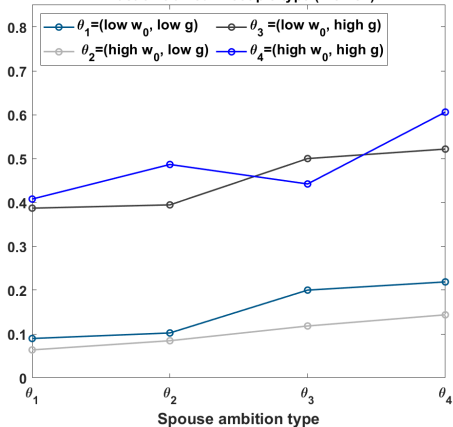
Spouse ambition type

▶ Probability of receiving training ↑ with own and spouse's ambition
   ▶ but more so for men. ▶ Back

Firm-side investments vary with worker's family type

Fraction promoted in couple-type (Women)

Fraction promoted in couple-type (Men)

θ_1=(low w_0, low g) θ_3 =(low w_0, high g)
θ_2=(high w_0, low g) θ_4 =(high w_0, high g)

Spouse ambition type
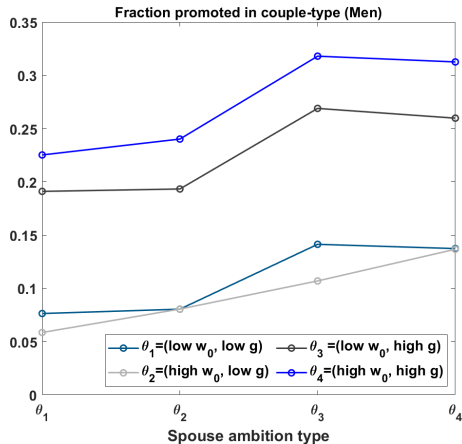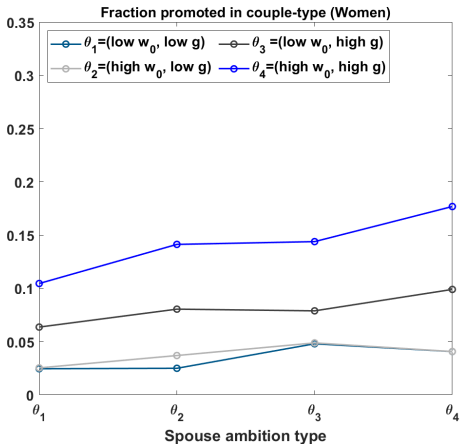
▶ Probability of reaching managerial position ↑ with spouse's ambition

▶ but more so for men. ▶ Back

Gender gaps in training and promotion

$$mg_{ift} = \beta_0 + \beta_1 \cdot F_i + \delta_{f,L} + \theta_i + \delta_{\{l_i\}_t} + \epsilon$$

	(1)	(2)	(3)	(4)	(5)	(6)
		Training			Manager Promotion	
female	-0.0819***	-0.0579***	-0.0285***	-0.0192***	-0.0190***	-0.0096***
	(0.002)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)
Firm-Ladder FE	No	Yes	Yes	No	Yes	Yes
Worker Ambition FE	No	No	Yes	No	No	Yes
Worker Exp FE	No	No	Yes	No	No	Yes
Observations	2,340,453	2,340,453	2,304,425	2,340,453	2,340,453	2,304,425
R-squared	0.010	0.347	0.412	0.003	0.199	0.231

Robust standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

▶ Gender gaps big and significant even with firms and ladders.

▶ Decline conditional on labor market choices.

▶ Back

When the husband is a manager

Difference in men's and women's outcome
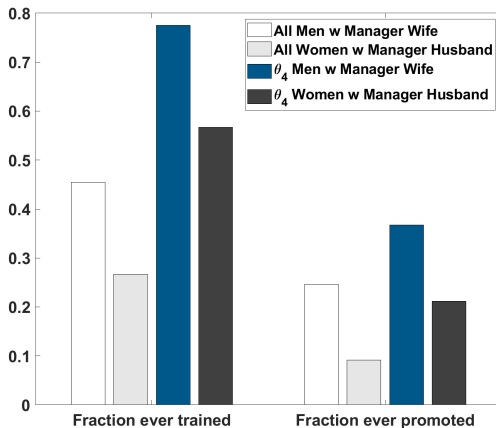
- Most ambitious women who marry a manager 42.51% less likely to become managers than men married to managers.
  - Might be behind the higher gaps among power couples. ▸ Back

Time allocation after arrival of children
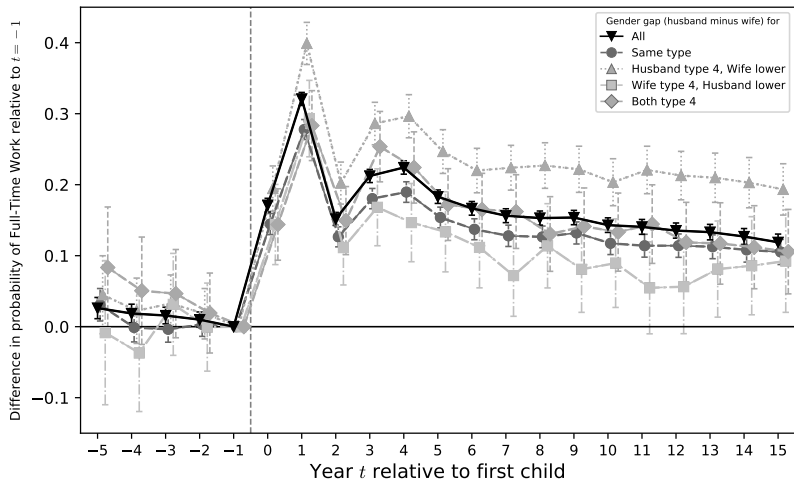
▶ Large and persistent child penalty even for women with highest ambition.

▶ Women married to more ambitious spouse show a more persistent penalty. ▸ Back

More ambitious women delay fertility significantly more

Fraction of women having a first child within age interval, by θ_f

Legend:
- First child at age ≤ 28
- First child at age $\in (28,38]$
- First child after age 38

X-axis: Married woman's ambition type
- $\theta_1 = (\text{low } w_0, \text{ low } g)$
- $\theta_2 = (\text{high } w_0, \text{ low } g)$
- $\theta_3 = (\text{low } w_0, \text{ high } g)$
- $\theta_4 = (\text{high } w_0, \text{ high } g)$
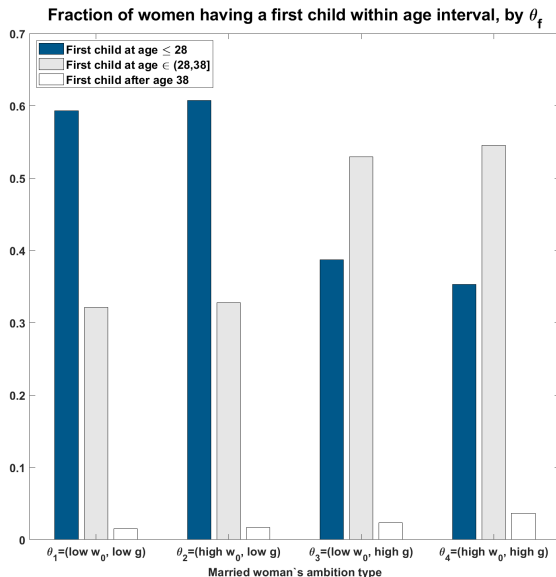
Model Periods and the life cycle of individuals in the data

Periods:	t_0: Matching & t_1: Early Career	t_2: Training	t_3: Career Progress
Age cuttoffs:	$\overline{a_{12i}} = max\{entry_i + 3, 28\}$	$\overline{a_{23i}} = max\{\overline{a_{12i}} + 3, 38\}$	

Sample:

85.1% young couples → marry
46.3% females → first child

37.85% females → first child
59.25% trainees → trained

99.36% managers
→ promoted

▸ Back.

Worker Type vs. Family Type at a given time t

▶ A *worker type* consists of their gender, *ambition type*, *initial hk*, *ladder*, *LS history*, and *training*:

$$\omega_{it} = (\underbrace{\mathcal{G}_i, \theta_i, \eta_{1i}}_{\text{exogenous traits}}, \underbrace{\{L_i\}_{\forall t \geq 1}, \{I_{ir}\}_{r=1}^t, \{tr_i\}_{t=t_3}}_{\text{history of endogenous choices}}), \quad \omega_{it} \in \Omega_t$$

▶ A *family type* consists of *own worker type*, *own family hk*, *spouse's worker type*, and *spouse's family hk*:

$$\varphi_{ht} =$$
$$(\underbrace{\mathcal{G}_i, \theta_i, \eta_{1i}, \{L_i\}_{\forall t \geq 1}, \{I_{ir}\}_{r=1}^t, \{tr_i\}_{t=t_3}}_{\omega_{it}}, \underbrace{\mathcal{G}_j, \theta_j, \eta_{1j}, \{L_j\}_{\forall t \geq 1}, \{I_{jr}\}_{r=1}^t, \{tr_j\}_{t=t_3}}_{\omega_{jt}}, \bar{\phi}_h)$$

▶ Back

Firm's training and promotion problem

▶ At $t = t_2$ the firm takes as given:

    ▶ Matching in the MM, $\Gamma(\theta_f, \theta_m)$;

    ▶ Distribution of worker types decided by families, $\{\omega_{i2}\}$;
       $\rightarrow N_\omega$

▶ Forms beliefs about $I_{i3} \mid \omega_{i2}$ and profits with and without training

    ▶ Over unknown *family type* and *family shock*.

▶ Chooses fraction of the N_ω to train—$tr(\omega)$—and promote—$mg(\omega)$ to maximize expected profits from training.

▶ Wages:

    ▶ Workers are paid a wage rate equal to their productivity per unit of time.

    ▶ Firms cannot write long-term contracts that condition on future choices.

    ▶ Firms pay for the training and share the rents from the additional future output.

▶ Back

Equilibrium

A competitive equilibrium is a set of assignments, prices, and probabilities:

- ▶ In the marriage market: (▸ MM Details)
  - ▶ An assignment of women's types θ_f to men's type θ_m, $\Gamma(\theta_f, \theta_m)$.

- ▶ In the household: (▸ HH Details)
  - ▶ career trajectories, fertility, and consumption, for all households type (θ_f, θ_m), and
  - ▶ distribution of worker types, $N_\omega \ \forall t, \forall \omega \in \Omega_t$.

- ▶ In the labor market: (▸ Firm Details)
  - ▶ wage rates, $w_{L,J}(\omega_{it-1}) \ \forall t, \forall \omega \in \Omega_t$ and beliefs, $B_3(I \mid \omega_2)$;
  - ▶ training policy $tr(\omega_2) \in \{0, 1\}$;
  - ▶ promotion policy $mg(\omega_2) \in \{0, 1\}$;

such that:

- ▶ The marriage market is in equilibrium,
- ▶ individuals and households maximize life-time utility,
- ▶ the firm's beliefs are consistent with household behavior,
- ▶ and the firm maximizes expected profits.

(▸ Back)

Market Human Capital Evolves over Time

▶ Initial human capital depends on ambition type:

$$\eta_{1i}(\theta_i) \overset{\text{iid}}{\sim} F^\eta(\mu^\eta_{\theta_i}, \sigma^\eta) \quad \forall \theta_i \in \Theta = \{\theta_1, \theta_2, \theta_3, \theta_4\}.$$

▶ *Beginning-of-t* η_t depends on past LS, ambition type, and ladder:

Market Human Capital Evolves over Time

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$$\eta_{1i}(\theta_i) \overset{\text{iid}}{\sim} F^{\eta}(\mu^{\eta}_{\theta_i}, \sigma^{\eta}) \quad \forall \theta_i \in \Theta = \{\theta_1, \theta_2, \theta_3, \theta_4\}.$$

▶ *Beginning-of-t η_t depends on past LS, ambition type, and ladder:*

$$\eta_{it} = [\eta_{it-1} + \alpha_{L_i, \theta_i}$$

Market Human Capital Evolves over Time

▶ Initial human capital depends on ambition type:

$$\eta_{1i}(\theta_i) \overset{\text{iid}}{\sim} F^\eta(\mu^\eta_{\theta_i}, \sigma^\eta) \quad \forall \theta_i \in \Theta = \{\theta_1, \theta_2, \theta_3, \theta_4\}.$$

▶ *Beginning-of-t η_t depends on past LS, ambition type, and ladder:*

$$\eta_{it} = [\eta_{it-1} + \alpha_{L_i,\theta_i} + \delta^S_{L_i} \mathbb{1}_{\{l_{it-1}=SFT\}}$$

Market Human Capital Evolves over Time

▶ Initial human capital depends on ambition type:

$$\eta_{1i}(\theta_i) \overset{\text{iid}}{\sim} F^\eta(\mu^\eta_{\theta_i}, \sigma^\eta) \quad \forall \theta_i \in \Theta = \{\theta_1, \theta_2, \theta_3, \theta_4\}.$$

▶ *Beginning-of-t* η_t *depends on past LS, ambition type, and ladder:*

$$\eta_{it} = [\eta_{it-1} + \alpha_{L_i, \theta_i} + \delta^S_{L_i} \mathbb{1}_{\{I_{it-1} = SFT\}} - \delta^P_{L_i} \mathbb{1}_{\{I_{it-1} = PT\}}$$

Market Human Capital Evolves over Time

▶ Initial human capital depends on ambition type:

$$\eta_{1i}(\theta_i) \overset{\text{iid}}{\sim} F^\eta(\mu_{\theta_i}^\eta, \sigma^\eta) \quad \forall \theta_i \in \Theta = \{\theta_1, \theta_2, \theta_3, \theta_4\}.$$

▶ *Beginning-of-t η_t depends on past LS, ambition type, and ladder:*

$$\eta_{it} = [\eta_{it-1} + \alpha_{L_i, \theta_i} + \delta_{L_i}^S \mathbb{1}_{\{l_{it-1} = SFT\}} - \delta_{L_i}^P \mathbb{1}_{\{l_{it-1} = PT\}} - \delta_{L_i}^N \mathbb{1}_{\{l_{it-1} = NP\}}]$$

Market Human Capital Evolves over Time

- Initial human capital depends on ambition type:

$$\eta_{1i}(\theta_i) \overset{\text{iid}}{\sim} F^\eta(\mu_{\theta_i}^\eta, \sigma^\eta) \quad \forall \theta_i \in \Theta = \{\theta_1, \theta_2, \theta_3, \theta_4\}.$$

- *Beginning-of-t* η_t depends on past LS, ambition type, and ladder:

$$\eta_{it} = [\eta_{it-1} + \alpha_{L_i,\theta_i} + \delta_{L_i}^S \mathbb{1}_{\{l_{it-1}=SFT\}} - \delta_{L_i}^P \mathbb{1}_{\{l_{it-1}=PT\}} - \delta_{L_i}^N \mathbb{1}_{\{l_{it-1}=NP\}}]\tau$$

- τ: Training boost in human capital reaped at the beginning of $t = 3$:

$$\tau \begin{cases} = 1 & \text{if } t = \{t_0, t_1, t_2\} \\ > 1 & \text{if } t = t_3 \& tr = 1 \end{cases}$$

Market Human Capital Evolves over Time

▶ Initial human capital depends on ambition type:

$$\eta_{1i}(\theta_i) \overset{\text{iid}}{\sim} F^{\eta}(\mu_{\theta_i}^{\eta}, \sigma^{\eta}) \quad \forall \theta_i \in \Theta = \{\theta_1, \theta_2, \theta_3, \theta_4\}.$$

▶ *Beginning-of-t* η_t depends on past LS, ambition type, and ladder:

$$\eta_{it} = \left[\eta_{it-1} + \alpha_{L_i, \theta_i} + \delta_{L_i}^S \mathbb{1}_{\{I_{it-1}=SFT\}} - \delta_{L_i}^P \mathbb{1}_{\{I_{it-1}=PT\}} - \delta_{L_i}^N \mathbb{1}_{\{I_{it-1}=NP\}}\right]\tau$$

▶ τ: Training boost in human capital reaped at the beginning of $t = 3$:

$$\tau \begin{cases} = 1 & \text{if } t = \{t_0, t_1, t_2\} \\ > 1 & \text{if } t = t_3 \& tr = 1 \end{cases}$$

▶ Evolves due to family's and firm's investments:

    ▶ Returns to experience; skill-depreciation when out-of-work.

    ▶ L choice matters: L_1 rewards experience less but penalizes time-out-of-work less.

    ▶ Training boosts human capital.

Family Human Capital Evolves over Time

▶ Initial random family shock of individual i in household $h = (f, m)$ is common to both spouses, and

▶ married women have an initial advantage:

$$\phi_{i1} = \begin{cases} \bar{\phi}_h \kappa & \text{if } i = f \ \& \ married \\ \bar{\phi}_h & \text{if } i = m \vee (i = f \ \& \ single) \end{cases}$$

with $\bar{\phi}_h \overset{\text{iid}}{\sim} F^\phi(\mu^\phi, \sigma^\phi)$.

▶ Skills at home depreciate (relative to private goods):
$$\phi_{it} = \phi_{it-1} \gamma$$

where $\gamma > 0$.

▶ Initial advantage of women persists over time.

▶ Back

Firm's training and promotion problem

$$\max_{\substack{\{tr(\omega), \\ mg(\omega)\} \\ \forall \omega(L) \in \Omega_2}} \Pi^L_{tr} = \sum_{\omega(L)} \Big(tr(\omega) N_\omega \big[mg(\omega) E[\pi_{mg}(\omega)] + (1 - mg(\omega)) E[\pi_p(\omega)] \big] \Big) - C^L_{OJT}(N^L_{tr})$$

$$s.t. \quad N^L_{tr} = \sum_{\omega(L) \in \Omega_2} tr(\omega) N_\omega$$

$$N^L_{mg} \geq \sum_{\omega(L) \in \Omega_2} tr(\omega) N_\omega \cdot mg(\omega) \cdot B_3(SFT \mid tr, \, \omega).$$

▶ Optimal firm behavior determines training and promotion policies, $tr(\omega_2)$ and $mg(\omega_2)$;

▶ wage rates, $w_{L,J}(\omega_{it-1})$, and beliefs $B_3(SFT \mid \omega_2)$.

▶ Back

Families' problem

- Households (θ_f, θ_m) that formed in the MM <u>take as given</u>:

    - Matching in the MM, $\Gamma(\theta_f, \theta_m)$, and women's utility prices, $\overline{U}_{\mathcal{X}}^{\theta_f \theta_m}$;

    - wage rates, $w(\omega_i)$;

    - firm's training and promotion policies, $tr(\omega_2) \in \{0, 1\}$ and $mg(\omega_2) \in \{0, 1\}$

- choose a contingent contract of career trajectories, fertility, and consumption,

$$x(\varphi) = \left\{ x_t(\varphi_h, \tilde{\varphi}_{ht-1}) \right\}_{t=1}^{3} =$$
$$\left\{ L_f(\varphi_{ht-1}), L_m(\varphi_{ht-1}), \mathcal{F}_t(\varphi_{ht-1}), I_{ft}(\varphi_{ht-1}), I_{mt}(\varphi_{ht-1}), c_{ft}(\varphi_{ht-1}), c_{mt}(\varphi_{ht-1}), c_{Qt}(\varphi_{ht-1}) \right\}_{t=1}^{3}.$$

so as to solve their collective life cycle problem

$$\overline{U}_{\mathcal{Y}}^{\theta_f \theta_m} = \max_{x(\varphi)} \qquad E_{\varphi_h} \sum_{t=1}^{T=3} \rho^{t-1} \left\{ u_m(x_t(\varphi_{ht-1})) \right\}$$

$$s.t. \qquad E_{\varphi_h} \sum_{t=1}^{T=3} \rho^{t-1} \left\{ u_f(x_t(\varphi_{ht-1})) \right\} \geq \overline{U}_{\mathcal{X}}^{\theta_f \theta_m}$$

$$\forall t > 0, \forall \varphi_{ht}: \qquad c_{ft} + c_{mt} + c_{Qt} = w_{L_f, J_{ft}}(\omega_{ft-1}) I_{ft} + w_{L_m, J_{mt}}(\omega_{mt-1}) I_{mt}$$

- Optimal household behavior determines distribution of worker types, $\{\omega_{it}\}$ and N_{ω}

Marriage Market

▶ Potential partners in the MM <u>take as given</u>:

    ▶ Idiosyncratic taste shocks, $\beta^{\theta_i \theta_j}$

    ▶ wage rates, $w(\omega_i)$;

    ▶ firm's training and promotion policies, $tr(\omega_2) \in \{0,1\}$ and $mg(\omega_2) \in \{0,1\}$

        ▶ Anticipate $\overline{U}_{\mathcal{Y}}^{\theta_f \theta_m}(\overline{U}_{\mathcal{X}}^{\theta_f \theta_m})$ $\rightarrow$ value of any potential household

▶ Male θ_m <u>partner-choice problem</u> is to choose the type $\theta_f \cup \emptyset$ that maximizes:

$$\max\left\{ \underbrace{\overline{U}_{\mathcal{Y}}^{\emptyset \theta_m} + \beta_m^{\emptyset \theta_m}}_{single}, \underbrace{\{\overline{U}_{\mathcal{Y}}^{\theta_f \theta_m} + \beta_m^{\theta_f \theta_m}\}}_{marry\ \theta_f} \right\}$$

▶ Competitive equilibrium in the MM pins down <u>outputs</u>:

    ▶ MM matching function $\Gamma(\theta_f, \theta_m)$ $\rightarrow$ who marries whom,

    ▶ Indirect Expected Utilities $(\overline{U}_{\mathcal{X}}^{\theta_f \theta_m}, \overline{U}_{\mathcal{Y}}^{\theta_f \theta_m})$ $\rightarrow$ why. `▸ Back`

Endogenous gender gaps in promotion

▶ Initial women's advantage at home imply women tend to stay at home more.

▶ Firms tend to see women as workers with lower market human capital, η.

▶ Firms tend to expect women to work less in $t = 3$.

▶ Training is offered relatively more to men.

▶ Expecting this bias, families tend to invest even more in husbands.

▶ In equilibrium, gender gaps in training and promotion arise.

▶ How do these forces and mechanisms interact with policies?

Parental leave for both mothers & fathers by type of couple

Back
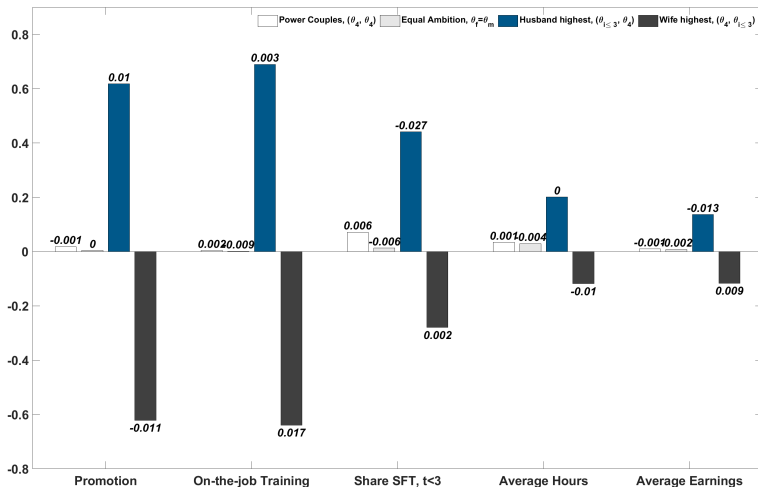
Managerial quotas by type of couple

Back
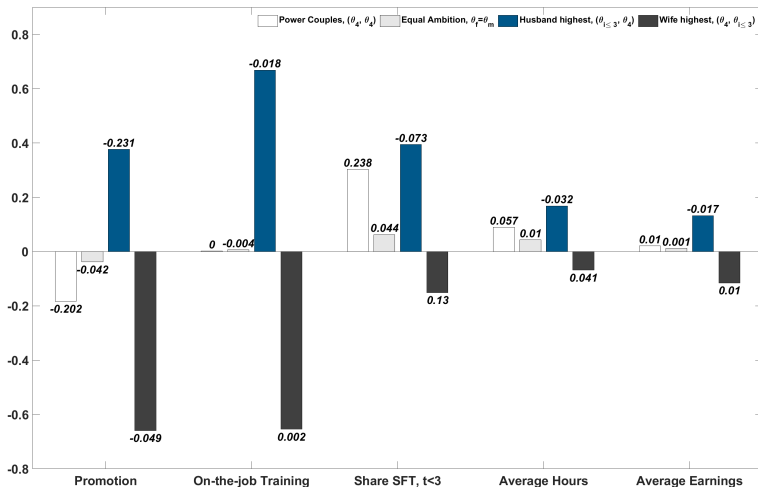
Estimation

▶ We estimate the model using simulated method of moments.

▶ The full list of parameters is

  ▶ production parameters $a_{L,J}$ and $b_{L,J}$
  ▶ initial level of market human capital by ambition type $\mu_{\eta,\theta}$ and dispersion σ_η
  ▶ market human capital accumulation $\alpha_{L,\theta}$ and depreciation rates δ_L^P and δ_L^N
  ▶ training skill boost τ and quadratic training cost parameter c
  ▶ initial level of family human capital μ_ϕ and dispersion σ_ϕ
  ▶ biological advantage of women κ and persistence of family human capital γ
  ▶ utility boost χ^u and household cost χ^Q from having children
  ▶ dispersion of marriage market shocks σ_β

▶ 38 structural parameters

▶ disciplined by 56 moments relating to earnings, labor supply, marriage patterns, fertility, on-the-job training, promotions.

Untargeted gender gaps in model (and data)
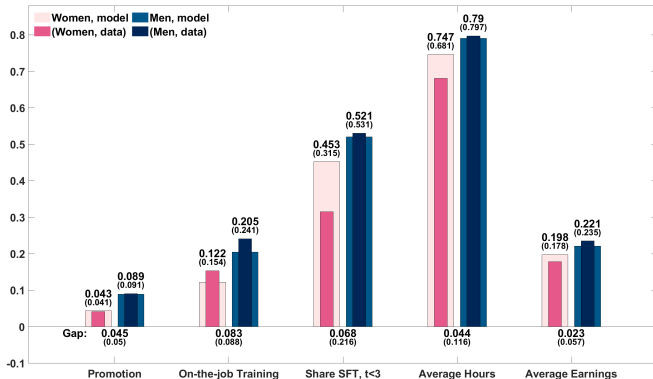
▶ At baseline, both firms and families invest relatively more in men than in women.

▶ Firms train 20.5% of men and only 12.2% of women on-the-job.

▶ Women 6.8 pp less likely to work SFT than men.

▶ Men devoting 4.4% more of their total lifetime to their careers.

▶ Implies women are half as likely as men to be promoted to managers.

▶ Untargeted (the role of the family)   ▶ Go back

Moments I: Earnings Process (EP)

Label	Description	Model	Data
EP1	Mean earnings of $\theta_i = 1$ in L_1 and $t = 1$	0.15	0.16
EP2	Mean earnings of $\theta_i = 2$ in L_1 and $t = 1$	0.16	0.18
EP3	Mean earnings of $\theta_i = 3$ in L_1 and $t = 1$	0.15	0.16
EP4	Mean earnings of $\theta_i = 4$ in L_1 and $t = 1$	0.18	0.19
EP5	Mean earnings of $\theta_i = 1$ in L_2 and $t = 1$	0.23	0.16
EP6	Mean earnings of $\theta_i = 2$ in L_2 and $t = 1$	0.25	0.18
EP7	Mean earnings of $\theta_i = 3$ in L_2 and $t = 1$	0.16	0.18
EP8	Mean earnings of $\theta_i = 4$ in L_2 and $t = 1$	0.21	0.20
EP9	Earnings growth of FT workers in L_1	0.05	0.06
EP10	Earnings growth of FT workers in L_2	0.07	0.13
EP11	Earnings growth of $\theta_i = 1$ FT workers in L_1	0.02	0.05
EP12	Earnings growth of $\theta_i = 2$ FT workers in L_1	0.04	0.05
EP13	Earnings growth of $\theta_i = 3$ FT workers in L_1	0.09	0.09
EP14	Earnings growth of $\theta_i = 4$ FT workers in L_1	0.12	0.13
EP15	Earnings growth of $\theta_i = 1$ FT workers in L_2	0.03	0.07
EP16	Earnings growth of $\theta_i = 2$ FT workers in L_2	0.06	0.08
EP17	Earnings growth of $\theta_i = 3$ FT workers in L_2	0.13	0.13
EP18	Earnings growth of $\theta_i = 4$ FT workers in L_2	0.12	0.17
EP19	Earnings difference FT vs NT at $t = 2$ in L_1	0.06	0.08
EP20	Earnings difference FT vs NT at $t = 2$ in L_1	0.10	0.11
EP21	Earnings growth without training	0.07	0.05
EP22	Earnings growth with training	0.16	0.09
EP23	Mean earnings of $\theta_i = 3$ managers in L_1	0.54	0.42
EP24	Mean earnings of $\theta_i = 4$ managers in L_1	0.57	0.56
EP25	Mean earnings of $\theta_i = 3$ managers in L_2	0.59	0.62
EP26	Mean earnings of $\theta_i = 4$ managers in L_2	0.64	0.74
EP27	Earnings difference SFT vs FT at $t = 2$ in L_1	0.07	0.04
EP28	Earnings difference SFT vs FT at $t = 2$ in L_2	0.09	0.06

Moments II: Marriage Patterns (MM)

Label	Description	Model	Data
MM1	Fraction $\theta_f = \theta_m$	0.39	0.42
MM2	Fraction $(\theta_f = 4, \theta_m = 4)$	0.08	0.04
MM3	Fraction $(\theta_f \leq 3, \theta_m = 4)$	0.10	0.12
MM4	Fraction $(\theta_f = 4, \theta_m \leq 3)$	0.03	0.03
MM5	Fraction single men $\theta_m = 1$	0.37	0.41
MM6	Fraction single men $\theta_m = 2$	0.37	0.27
MM7	Fraction single men $\theta_m = 3$	0.40	0.36
MM8	Fraction single men $\theta_m = 4$	0.26	0.27

Moments III: Fertility Patterns (FP)

Label	Description	Model	Data
FP1	Fraction $\theta_f = 1$ having first child in $t = 1$	0.38	0.57
FP2	Fraction $\theta_f = 4$ having first child in $t = 1$	0.36	0.31
FP3	Fraction $\theta_f = 1$ having first child in $t = 2$	0.31	0.37
FP4	Fraction $\theta_f = 4$ having first child in $t = 2$	0.64	0.60

Moments IV: Labor Supply (LS)

Label	Description	Model	Data
LS1	Participation rate of men $\theta_m = 1$	0.74	0.85
LS2	Participation rate of men $\theta_m = 2$	0.81	0.91
LS3	Participation rate of men $\theta_m = 3$	0.76	0.91
LS4	Participation rate of men $\theta_m = 4$	0.96	0.98
LS5	Variance of men's labor supply	0.15	0.10
LS6	Participation gap in homogamous couples	0.05	0.04
LS7	Women's probability of re-entry ($t = 1$ to $t = 2$)	0.61	0.49
LS8	Women's probability of re-entry ($t = 2$ to $t = 3$)	0.38	0.37
LS9	Share working PT in $t = 1$ and $t = 2$ in L_1	0.09	0.04
LS10	Share working PT in $t = 1$ and $t = 2$ in L_2	0.11	0.02

▶ Go back

Moments V: Firm's Investments (FI)

Label	Description	Model	Data
FI1	Share of men trained in L_1	0.16	0.19
FI2	Share of women trained in L_1	0.09	0.11
FI3	Share of men trained in L_2	0.32	0.47
FI4	Share of women trained in L_2	0.21	0.35
FI5	Promotion gender gap in L_1	0.03	0.03
FI6	Promotion gender gap in L_2	0.07	0.09

▸ Go back

Firm's Production Function Parameters

Symbol	Description	Par.	s.e.	Sensitivity Moments		
$b_{L_1,p}$	**Slope (producers) in L_1**	0.020	0.000	EP1	MM4	MM3
$a_{L_1,mg}$	**Intercept (managers) in L_1**	0.110	0.019	EP11	EP24	EP19
$b_{L_1,mg}$	**Slope (managers) in L_1**	0.022	0.000	EP4	EP19	EP17
$a_{L_2,p}$	**Intercept (producers) in L_2**	-0.070	0.001	EP13	MM4	EP11
$b_{L_2,p}$	**Slope (producers) in L_2**	0.025	0.000	MM4	EP1	MM3
$a_{L_2,mg}$	**Intercept (managers) in L_2**	0.000	0.051	EP26	EP22	EP19
$b_{L_2,mg}$	**Slope (managers) in L_2**	0.025	0.000	EP3	LS9	EP22
ζ	**Cost of training**	5.0018e-07	0.000	MM4	LS9	EP17

Market Human Capital Parameters

Symbol	Description	Par.	s.e.	Sensitivity Moments		
μ_1^η	**Mean of initial hk draw of θ_1**	9.909	0.041	LS1	EP1	LS3
μ_2^η	**Mean of initial hk draw of θ_2**	10.504	0.046	EP11	EP6	LS9
μ_3^η	**Mean of initial hk draw of θ_3**	9.360	0.190	EP4	EP7	EP17
μ_4^η	**Mean of initial hk draw of θ_4**	11.200	0.088	MM4	MM1	EP1
σ^η	**Variance of initial hk draw**	4.145	0.203	EP1	EP17	MM4
$\alpha_{L_1,1}$	**Accumulation rate in L_1 for θ_1**	1.199	0.071	EP11	EP1	EP21
$\alpha_{L_1,2}$	**Accumulation rate in L_1 for θ_2**	2.271	0.163	EP6	EP16	EP24
$\alpha_{L_1,3}$	**Accumulation rate in L_1 for θ_3**	4.709	0.216	EP17	EP13	EP25
$\alpha_{L_1,4}$	**Accumulation rate in L_1 for θ_4**	5.446	0.119	EP19	EP18	MM1
$\alpha_{L_2,1}$	**Accumulation rate in L_2 for θ_1**	1.511	0.166	EP15	EP21	EP10
$\alpha_{L_2,2}$	**Accumulation rate in L_2 for θ_2**	2.383	0.035	LS10	MM1	EP3
$\alpha_{L_2,3}$	**Accumulation rate in L_2 for θ_3**	4.714	0.189	EP17	EP13	MM3
$\alpha_{L_2,4}$	**Accumulation rate in L_2 for θ_4**	5.215	0.088	EP19	EP18	MM1
$\delta_{L_1}^P$	**PT Depreciation rate in L_1**	0.200	0.070	LS9	EP28	FI2
$\delta_{L_2}^P$	**PT Depreciation rate in L_2**	0.290	0.034	EP11	EP1	EP21
$\delta_{L_1}^N$	**NT Depreciation rate in L_1**	1.588	0.026	MM4	MM3	EP4
$\delta_{L_2}^N$	**NT Depreciation rate in L_2**	1.402	0.279	EP11	EP1	EP24
$\delta_{L_1}^S$	**Skill boost from working SFT in L_1**	0.002	0.074	FI1	MM4	LS9
$\delta_{L_2}^S$	**Skill boost from working SFT in L_2**	0.002	0.001	FI6	EP24	EP19
τ	**Skill boost from training**	1.235	0.021	MM4	EP5	EP22

Marriage Market and Family Parameters

Symbol	Description	Par.	s.e.	Sensitivity Moments		
Marriage and Fertility Processes						
σ_β	**MM preference shock (scale)**	0.003	0.000	EP6	EP27	EP18
$\chi_{1,2}^{\emptyset}$	**Value of singlehood for θ_1 and θ_2**	1.351	0.002	EP11	EP27	EP18
$\chi_{3,4}^{\emptyset}$	**Value of singlehood for θ_3 and θ_4**	1.441	0.017	MM4	EP4	MM3
χ^u	**Utility boost with children**	1.169	0.003	FP1	MM3	FP4
χ^Q	**Min HP with children**	0.037	0.000	FP1	FP3	EP6
χ^S	**Penalty both SFT**	0.087	0.034	LS9	FI5	MM1
Family Human Capital						
μ^ϕ	**Mean of initial family shock**	0.162	0.001	EP7	EP17	EP1
σ^ϕ	**Variance of initial family shock**	0.030	0.002	EP11	EP1	EP21
κ	**Biological advantage of women**	1.161	0.026	EP11	EP20	EP6
γ	**Depreciation rate**	0.681	0.025	EP1	EP28	EP11

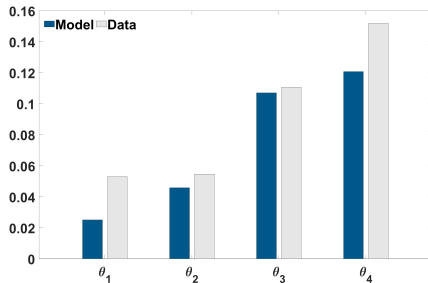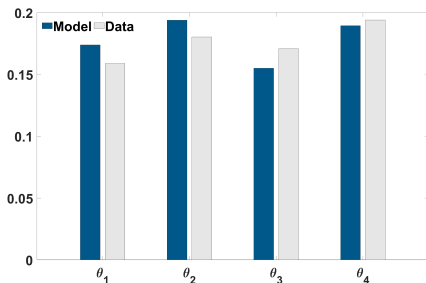▶ Moments and Fit I (EP) ▶ Moments and Fit II (MM) ▶ Moments and Fit III (FP) ▶ Moments and Fit IV (LS)

▶ Moments and Fit V (FI)

Our estimated model captures ambition types very well

Figure: Initial earnings (left) & earnings growth (right) by ambition type

Our model replicates marriage and fertility patterns

Figure: Frequency of couple type (θ_f, θ_m) (left) & Timing of fertility (right)
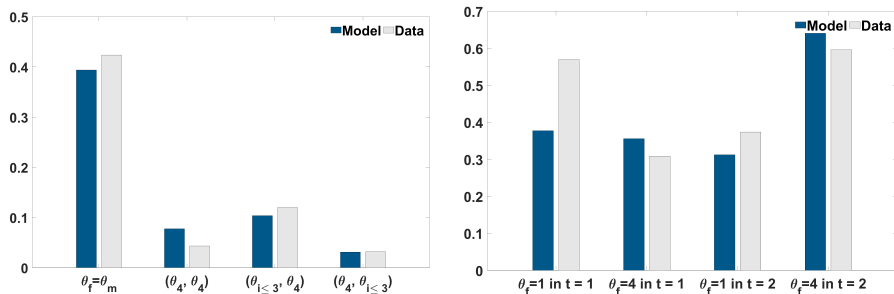
We replicate well gender gaps

- Initial advantage is estimated at $\kappa = 1.1613$.

- Implies a small initial gender gap in participation
  - 0.05 (model)—matching the observed 0.04.

- Initial differences amplify over the life cycle:

Figure: Firm-side investments
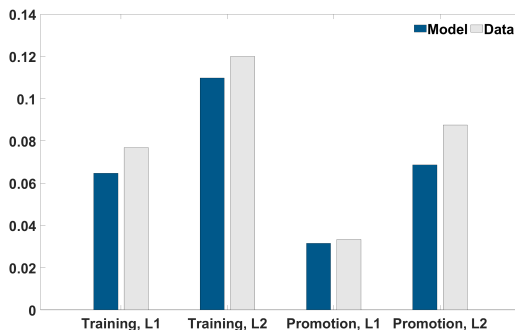
The role of the family
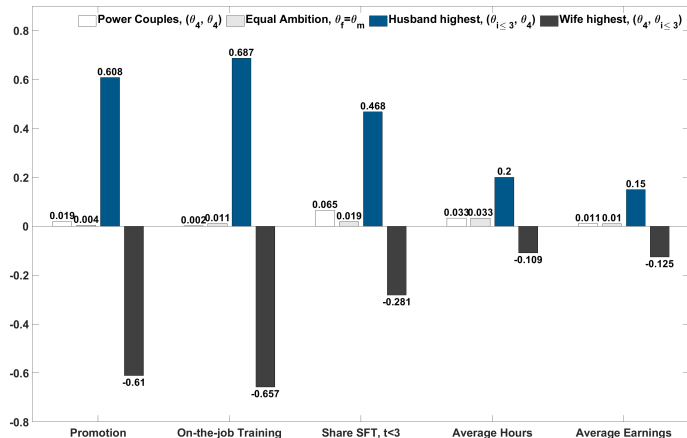
- ▶ As in the data, family-side & firm-side investments interact in interesting ways.
- ▶ Gaps in both highest among people in families in which type-4 men marry down.
- ▶ Still positive among equal-ambition and power couples—matching the data.

Go back

and ladders

▶ Productivity of skills in $J = \{producer, manager\}$ higher in ladder L_2.

▶ Within ladder, managers productivity increase more with skills

▶ L_2 features:
  ▶ higher gains in human capital due to full-time work,
  ▶ a bigger loss of human capital when working part-time, and
  ▶ slightly bigger super-full-time premium.

▶ Therefore we interpret L_2 as the *steep* ladder.

Parental leave only for mothers increases all gaps

Table: Gender gaps in counterfactual policies and their *% change relative to baseline*

	Promotion		On-the-job Training		Fraction sft, $t < 3$		Average hours	
	Value	*%Change*	Value	*%Change*	Value	*%Change*	Value	*%Change*
Panel A. Paid parental leave for mothers								
Men	0.091	*2.756*	0.207	*1.345*	0.536	*2.853*	0.794	*0.413*
Women	0.041	*-5.534*	0.122	*-0.221*	0.446	*-1.347*	0.745	*-0.204*
Gap	0.050	*10.671*	0.086	*3.655*	0.089	*30.702*	0.049	*10.947*
Panel B. Paid parental leave for mothers and fathers								
Men	0.089	*-0.412*	0.203	*-1.036*	0.528	*1.367*	0.791	*0.087*
Women	0.044	*0.860*	0.125	*2.575*	0.472	*4.313*	0.752	*0.704*
Gap	0.045	*-1.627*	0.077	*-6.359*	0.056	*-18.166*	0.039	*-10.437*
Panel C. Managerial quota								
Men	0.067	*-24.384*	0.207	*1.108*	0.523	*0.459*	0.790	*-0.049*
Women	0.065	*50.004*	0.125	*2.370*	0.451	*-0.264*	0.746	*-0.085*
Gap	0.002	*-95.419*	0.082	*-0.754*	0.072	*5.250*	0.044	*0.555*

▶ Both families and firms increase investment in men

▶ and reduce investment in women.

▶ Results in a widening of promotion gap by over 10%.

▶ Back

Parental leave for both mothers & fathers reduces all gaps

Table: Gender gaps in counterfactual policies and their *% change relative to baseline*

| | Promotion | | On-the-job Training | | Fraction sft, $t < 3$ | | Average hours | |
	Value	%Change	Value	%Change	Value	%Change	Value	%Change
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Gap	0.002	*-95.419*	0.082	*-0.754*	0.072	*5.250*	0.044	*0.555*

▶ Families increase labor supply but more so for women.

▶ Firms train more women and less men.

▶ Higher investments in women relative to leave for mothers-only.

▶ Helps women in equal couples, harms women who marry-up ▶ By couple

▶ Back

Managerial quotas induce more equal firm-side investments

Table: Gender gaps in counterfactual policies and their *% change relative to baseline*

| | Promotion | | On-the-job Training | | Fraction sft, $t < 3$ | | Average hours | |
	Value	*%Change*	Value	*%Change*	Value	*%Change*	Value	*%Change*
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Men	0.091	*2.756*	0.207	*1.345*	0.536	*2.853*	0.794	*0.413*
Women	0.041	*-5.534*	0.122	*-0.221*	0.446	*-1.347*	0.745	*-0.204*
Gap	0.050	*10.671*	0.086	*3.655*	0.089	*30.702*	0.049	*10.947*
Panel B. Paid parental leave for mothers and fathers								
Men	0.089	*-0.412*	0.203	*-1.036*	0.528	*1.367*	0.791	*0.087*
Women	0.044	*0.860*	0.125	*2.575*	0.472	*4.313*	0.752	*0.704*
Gap	0.045	*-1.627*	0.077	*-6.359*	0.056	*-18.166*	0.039	*-10.437*
Panel C. Managerial quota								
Men	0.067	*-24.384*	0.207	*1.108*	0.523	*0.459*	0.790	*-0.049*
Women	0.065	*50.004*	0.125	*2.370*	0.451	*-0.264*	0.746	*-0.085*
Gap	0.002	*-95.419*	0.082	*-0.754*	0.072	*5.250*	0.044	*0.555*

▶ Promotion gap almost disappears by design.

▶ Firms respond by training more workers, especially women.

▶ Families increase investments in men who face more competition.

▶ Helps especially women in power couples, and women who marry-up ▶ By couple

▶ Back

Fixing marriage choices amplifies gender inequalities

Table: Policy impacts at *baseline* marriage market equilibrium

	Promotion		On-the-job Training		Share SFT, $t < 3$		Average Hours	
	Value	*%Change*	Value	*%Change*	Value	*%Change*	Value	*%Change*
Panel A. Paid parental leave for mothers								
Men	0.092	*3.884*	0.206	*0.591*	0.533	*2.397*	0.793	*0.334*
Women	0.040	*-7.453*	0.120	*-1.843*	0.441	*-2.579*	0.743	*-0.520*
Gap	0.052	*14.710*	0.086	*4.179*	0.092	*35.388*	0.050	*14.894*
Panel B. Paid parental leave for mothers and fathers								
Men	0.089	*0.064*	0.202	*-1.406*	0.515	*-1.114*	0.788	*-0.341*
Women	0.043	*-0.077*	0.125	*2.460*	0.451	*-0.425*	0.745	*-0.161*
Gap	0.046	*0.198*	0.077	*-7.104*	0.064	*-5.688*	0.042	*-3.412*
Panel C. Managerial quota								
Men	0.067	*-24.812*	0.207	*0.954*	0.523	*0.483*	0.790	*-0.092*
Women	0.065	*50.403*	0.126	*2.939*	0.449	*-0.729*	0.746	*-0.140*
Gap	0.002	*-96.636*	0.081	*-1.971*	0.074	*8.518*	0.044	*0.729*

▶ Fixing the marriage market amplifies family-side investment gaps,

▶ Increment in gender gaps bigger and declines smaller.

▶ Partner choice is an important mechanism for the impact of policies.

▶ Back