Financial Skills and Search in the Mortgage Market

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Questions

1. Are financially unskilled borrowers disadvantaged in the mortgage market?
2. How do financial skill differences translate into consumption inequality?
3. How effective is financial education in reducing fin. skill-based consumption gap?
4. What are the implications of mortgage accessibility for financial education?

Answers - two step approach

1. **financially unskilled lose in the mortgage market**
2. **mortgage search framework with endogenous financial skills and search intensity**
   - fin. unskilled secure higher rates, have fewer resources
   - fin. education incentivizes better-performing mortgages
   - financial education mitigates the adverse effect of accessible mortgages on delinquency rates

New U.S. data - stochastic record linkage

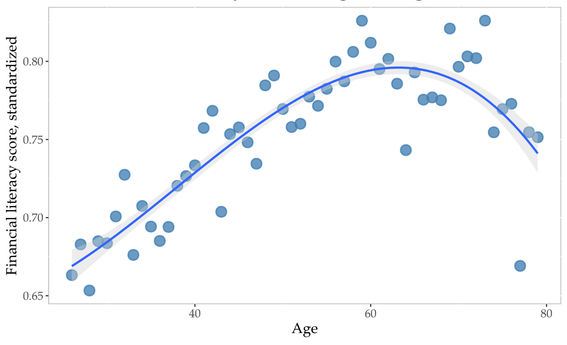
- mortgage data (the **N**ational **S**urvey of **M**ortgage **O**riginations) $\sim$ the **S**urvey of **C**onsumer **F**inances $\implies$ **NSMO+**
- estimates the distribution of financial skills for every borrower in the NSMO
- Bayesian weights used in inference robust to imputation bias (Enamorado et al., 2019)

Financial skills, search effort and the mortgage

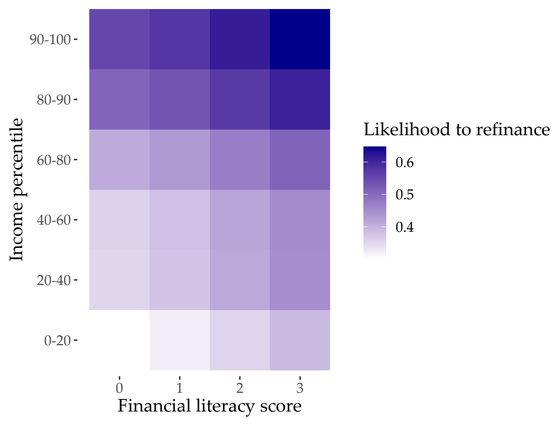
1. three questions-based financial literacy score (Lusardi et al., 2017), standardized
2. Number of lenders considered **prior** to formal application for the mortgage
3. A rich set of mortgage specifics - secured rate, duration, amount, etc.

Key evidence from the SCF

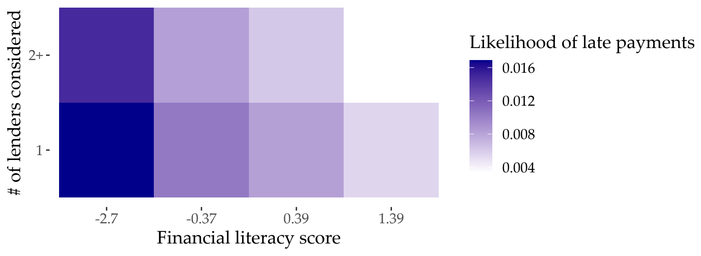
- financial skills vary with age, cognitive decline



- financially savvy borrowers are 30% more likely to refinance their mortgage



- financially unskilled borrowers are 12-16% more likely to become delinquent



NSMO+ findings

- **savvy borrowers are 5% more likely to consider one more lender**
- financially skilled borrowers secure at 13.4 b.p. lower rates - effective search

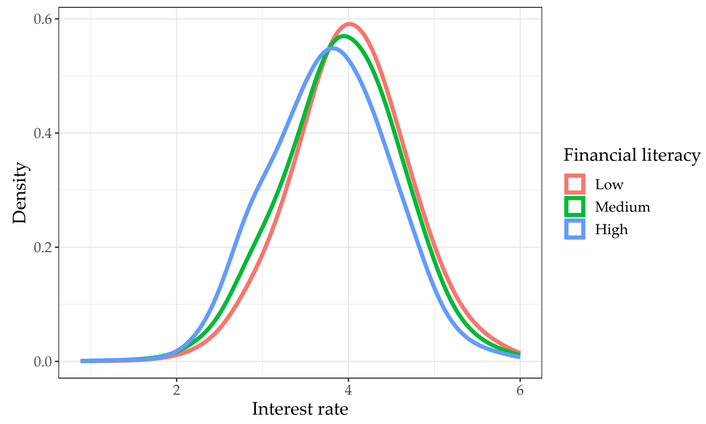


Figure 1. Mortgage rate dispersion across financial skill levels.

- back-of-the-envelope estimates - for a $\$100,000$ loan, **financially unskilled borrowers lose at least $\$9,329$ in mortgage overpayments over the mortgage term**

Structural search framework

- leverages the current way borrowers search for a mortgage
- borrowers invest in financial skills i_t and choose search intensity s_t; face **cognitive costs** c^f **and** c^s
- **skill accumulation** $\dot{f}_t = \frac{\mu}{\eta}(i_t f_t)^\eta - \delta f_t$
- secure mortgage repayment Mr_t **conditional on search effort and financial skills**, consume and save
- face expense shocks at a rate $p(f, a)$

$$\max_{\{c_t, s_t, i_t\}} \mathbb{E}_0 \int_0^\infty e^{-\rho t}[u(c_t) \underbrace{-c^f(i_t, z_t)}_{\text{investing in skills}} \underbrace{-c^m(s_t, f_t)}_{\text{cognitive cost of search}}]dt, \text{ s.t.}$$

$$\dot{a}_t = Ra_t + wz_t - \mathbf{1}_{\{\text{own}\}} Mr_t - \mathbf{1}_{\{\text{rent}\}}\kappa - c_t,$$
$$\dot{f}_t = \frac{\mu}{\eta}(i_t f_t)^\eta - \delta f_t \quad \text{financial skill accumulation},$$
$$h \to r \text{ with intensity } p(f, a),$$
$$z_t \text{ is a Poisson process with intensities } \omega_1 \text{ and } \omega_2$$

Consumption growth decomposition - three channels

1. time preference (standard)
2. high mortgage payees dissave due to expected mortgage rate change
3. precautionary saving due to expense shock, strongest at lowest mortgage rates

Untargeted solution patterns

- financially savvy borrowers are 5% more likely to search more and 30% more likely to refinance
- financially unskilled secure higher mortgage rates
- aligns with consumption inequality estimates
- mortgage repayments $\implies$ consumption inequality

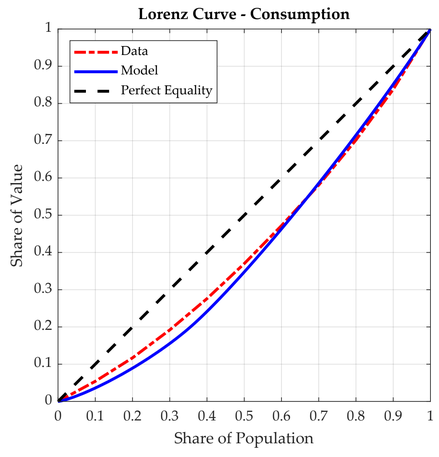
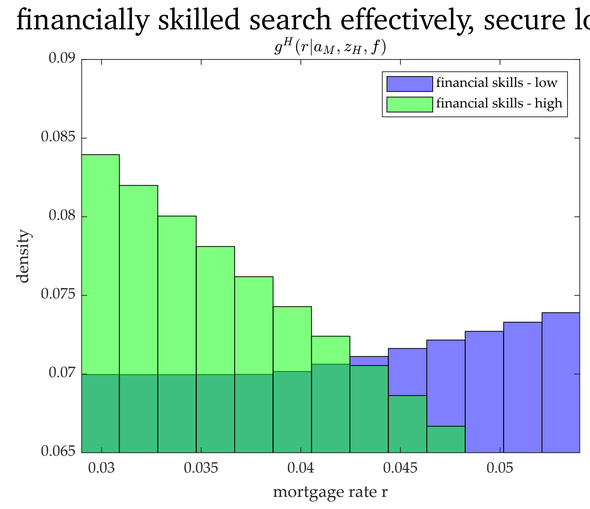


Figure 2. Model-based Lorenz curve for consumption, compared to BLS data.

Financial skills-based consumption inequality

- financially skilled search effectively, secure low rates



- mortgage rate variation - **effective search**

	explained variance ω^2
Financial skills (f)	1.3073%
Assets (a)	0.3332%
Productivity: (z_H)	0.0486%
Search intensity (s)	55.8971%
Financial skills $\times$ search int. $(f \times s)$	9.9925%

Table 1. Variance decomposition of the mortgage interest rate in the model equilibrium.

Model experiments

1. Accessible mortgages incentivize unskilled mortgage take up

- average delinquency rate increases, insignificant effect on skill accumulation

2. Financial education accommodates the increase in mortgage accessibility

- fin. unskilled renters take up mortgages when accessible, delinquency rate ↑
- lower search costs reinforce skill accumulation, larger effect of education

Measure	Benchmark	Accessible mort.
av. search renters	↗ 0.4%	↗ 0.3%
av. search homeown.	-	↗ 2.7%
consumption gini	↘ 1.4%	↘ 1.5%
assets gini	↘ 1.5%	↘ 1.3%
share of homeowners	↗ 1.5%	↗ 1.5%
av. financial skills	↗ 9%	↗ 9.4%
av. delinquency rate	↘ 2.8%	↘ 0.36%

3. Lower mortgage rates benefit financially savvy homeowners

- savvy homeowners refinance; face lower housing costs
- renters refrain from taking up mortgages, pay relatively higher rent
- fin. skill-based consumption gap deepens

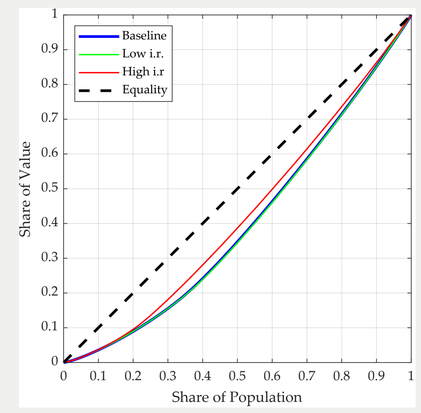


Figure 3. Average mortgage rate shifts and changes in inequality.

References

Enamorado, T., Fifield, B., and Imai, K. (2019). Using a probabilistic model to assist merging of large-scale administrative records. *American Political Science Review*, 113(2):353–371.

Lusardi, A., Michaud, P.-C., and Mitchell, O. S. (2017). Optimal Financial Knowledge and Wealth Inequality. *Journal of Political Economy*, 125(2):431–477.