

Parental Wealth, Financing Children's College Attendance, and Its Consequences for Indebtedness & Well-Being

V. Joseph Hotz¹ Emily Wiemers² Joshua Rasmussen¹ Kate Maxwell¹

¹Economics & Duke Population Research Institute, Duke University

²Economics, U. of Mass Boston

June 9, 2016

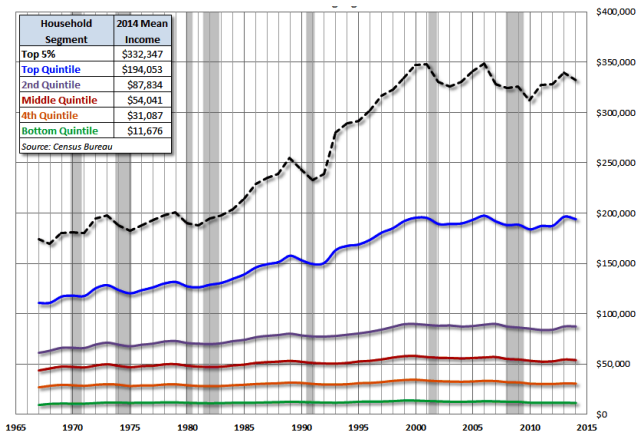
PSID Conference:
*New Directions in Study of Intergenerational Transfers
& Time Use in Later Life*

Acknowledgments

- This research and modules included in 2013 Wave of PSID on Transfers & Family Rosters were funded by grant P01AG029409 from the **National Institute on Aging (NIA)**.

Figure 1: Trend in Income Inequality, 1965-2014

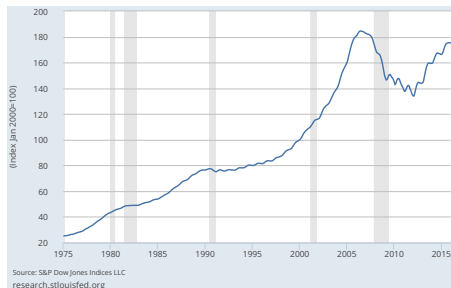
(a) Real Mean Household Income by Quintile & Top 5%



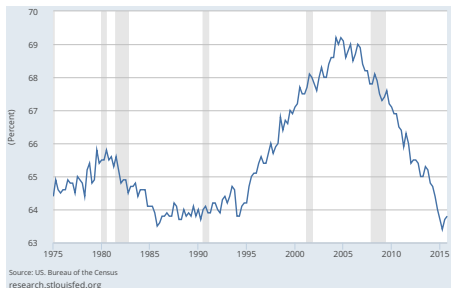
Trends 2

Figure 2: Trends in Home Prices and Homeownership, 1975-2016

(a) Case-Shiller Home Price Index



(b) Homeownership Rates

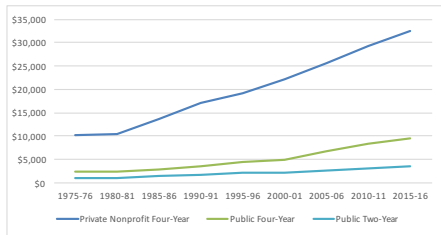


Sources: St. Louis Fed

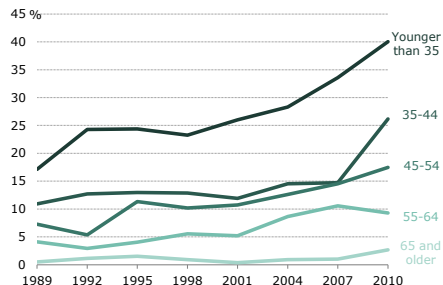
Trends 3

Figure 3: Trends in Costs of College and Student Debt

(a) Average College Costs (2015 \$)



(b) Households with Outstanding Student Debt by Age



Note: Includes education loans that are currently in deferment and loans in scheduled repayment period.

Source: Pew Research Center tabulations of Survey of Consumer Finances data

Sources: The College Board, Annual Survey of Colleges; Pew Research Center, "Record 1-in-5 Households Now Owe Student Loan Debt," 2012.

Research Questions

- What is the influence of **parental wealth** on whether their children **attend college** & whether **parents help finance it**?
- What consequences do **college attendance & financing decisions** have on subsequent:
 - **levels of indebtedness** of parents & their children?
 - **when children leave home**?
 - **consumption & well-being** of parents & children?
- Did these effects differ over time, i.e., **before & after Great Recession**?

Related Literatures 1

- Effects of **parental income & wealth**, particularly **housing wealth**, on:
 - **college attendance** (Lovenheim, 2011).
 - **"quality" of college** attended (Lovenheim and Reynolds, 2013; Cooper and Luengo-Prado, 2015).
 - **child's income in adulthood** (Cooper and Luengo-Prado, 2015).
- College attendance & financing as **parental investments in & transfers to children**:
 - Becker and Tomes (1979) model of **parental altruism & investment in children**
 - Importance of **credit constraints & "insufficient altruism"** (Behrman et al., 1995; Lochner and Monge-Naranjo, 2011, 2012)
 - Possibility of **commitment problems** in intergenerational family interactions (Brown et al., 2012).

Related Literatures 2

- Effects of **wealth on consumption & well-being** of households:
 - Effects of **changes in wealth on consumption** (Skinner, 1996; Case et al., 2005; Campbell and Cocco, 2007; Carroll et al., 2011; Browning et al., 2013; Paiella and Pistaferri, 2015).
 - Effects of **changes in wealth on savings** (Juster et al., 2006).
 - Work focuses on separating effects of **anticipated vs. unanticipated changes** in wealth, especially housing.
 - **In our case:** Does the way children's college education is financed – e.g., by parents with debt or by students with debt – have **lasting effects** on each generation's well-being?
- Effects of **parental resources on home-leaving of younger adults** (Manacorda and Moretti, 2006; Kaplan, 2012; Wiemers, 2014).

Data

- **PSID Annual Survey**

- Parents' family structure, income, education, etc.
- Parents' home ownership, home value & mortgage info (including home equity loans)
- Child's home-leaving status
- Parents' & adult child's consumption (food)

- **PSID Wealth Module**

- Parents' & adult child's non-mortgage debt (credit cards, student loans including co-signed loans, medical debt, etc.)

- **2013 PSID Roster and Transfers Modules** (Schoeni et al., 2015)

- Parent reports educational attainment of each adult child
- Long-term transfers for post-secondary education for each adult child

- All **monetary variables** are expressed as **10K of 2013\$**.

Sample

- In 2013 Roster and Transfers Module, PSID Head/Wives reported on **all of their adult children**.
- We “look back” in PSID waves to find these children **when they were age 18**
 - link in financial & family characteristics of their biological or adopted father & mother
- Then “look forward” in PSID waves for **when child was age 25** and
 - link in financial characteristics, including debt, of parents & child

Sample

- Sample sizes:
 - 8,641 **child-parent(s) pairs** when child age = 18
 - 7,022 **parents** when child age = 25
 - 3,877 **children** who at age = 25 are Heads/Wives & have indebtedness & consumption data.

- We differentiate **three periods** in our analyses:
 - 1975 – 1999 (*Per0*)
 - 2000 – 2007 (*Per1*) pre-Recession **Housing Boom**
 - 2008 – 2013 (*Per2*) **Great Recession** & aftermath

College Attendance & Parental Transfers

Table 1A: College and Financing Choices (% of Sample)

Variable	Definition	<i>Per0</i>	<i>Per1</i>	<i>Per2</i>
<i>EduFin0</i>	Child does not attend	41.0	43.6	47.4
<i>EduFin1</i>	Child attends, parents do not make transfer	40.8	28.9	22.3
<i>EduFin2</i>	Child attends, parents make a transfer	18.2	27.5	30.3
<i>N</i>	Sample Size	4,455	2,738	1,448

Parental Resources, College Attendance & Transfers

Table 1B: Education and Transfers to Children, by Parental Housing Wealth Distribution

	1975 - 2000			2001 - 2008			2009 - 2013		
	% Attend	If Attended, Incidence	Transfer Amt.	% Attend	If Attended, Incidence	Transfer Amt.	% Attend	If Attended, Incidence	Transfer Amt.
Negative Net Equity	0.53	0.37	\$21,904	0.46	0.36	\$6,123	0.52	0.51	\$10,564
Zero Net Equity	0.43	0.23	\$8,873	0.40	0.24	\$12,237	0.34	0.40	\$12,362
Positive Net Equity									
Bottom 3rd	0.52	0.23	\$12,738	0.46	0.33	\$14,208	0.50	0.50	\$10,617
Middle 3rd	0.61	0.30	\$15,207	0.66	0.62	\$29,874	0.65	0.63	\$19,360
Top 3rd	0.78	0.40	\$23,824	0.86	0.67	\$51,234	0.89	0.77	\$35,936

College & Financing Choices

Let $U_{kij,18}$ denote the utility/payoff to choice $EduFink_{ij,18}$, $k = 0, 1, 2, 3$ for j th child of parent i when child is age 18:

$$\begin{aligned} U_{kij,18} = & \lambda_{k00} + \lambda_{k10} NetEquity_{ij,18} + \lambda_{k20} X_{ij,18} \\ & + \sum_{\tau=1}^2 \left[\lambda_{k0\tau} + \lambda_{k1\tau} NetEquity_{ij,18} + \lambda_{k2\tau} X_{ij,18} \right] \cdot Per_{\tau ij,18} \\ & + \zeta_{kij,18}, \end{aligned} \tag{1}$$

where $NetEquity_{ij,18}$ is parents' net housing equity & X_{ij} includes parents' income ($FamInc_{ij,18}$), education ($ParEduc_{ij,18}$), etc.

- Estimate as **multinomial logit**, with choice $k = 0$ be base category.
- Also estimate **linear probability models (LPM)** of **college attendance & financing conditional on attending**, respectively.
 - Use Lovenheim and Reynolds (2013) **IV strategy** – parents' lagged housing value relative to local market – to account for potential **endogeneity** of $NetEquity_{ij,18}$.

College & Financing Choices

Table 2A: **Marginal Effect Estimates** from **Multinomial Logit Model**

Variable	Don't Attend & No Transfer	Attends & No Transfer	Attends & Transfer
<i>NetEquity</i> in <i>Per0</i>	-0.0036	0.0013	0.0024**
<i>NetEquity</i> in <i>Per1</i>	-0.0054***	0.0025	0.0029***
<i>NetEquity</i> in <i>Per2</i>	-0.0038**	0.0025	0.0013

Table 2B: **OLS & IV** Estimates for **LPM** of college attendance & financing

Dependent Variables: Variables	Attended College		Transfer Conditional on Attendance	
	OLS	IV	OLS	IV
<i>NetEquity</i>	0.0032***	0.0102	0.0037**	0.0129
<i>NetEquity</i> × <i>Per1</i>	-0.0005	0.0123***	-0.0007	0.0160***
<i>NetEquity</i> × <i>Per2</i>	-0.0016	-0.0007	-0.0035**	0.0162**

Initial Conclusions on college attendance & financing choices

- Consistent with Lovenheim (2011), exogenous increases in housing wealth during early 2000s increased likelihood of college enrollments.
- However, with subsequent housing bust (& recovery), we did not see symmetric declines in enrollments.
- We also find that exogenous increases in housing wealth increased likelihood of parental transfers conditional on enrollment in both housing boom & bust.
- Effects larger pre-recession (1975-2008) & a bit more pronounced during housing boom period (2001-08).

Parents' & Child's Indebtedness

Whether child goes to college & how college is funded may affect **indebtedness** of **either parent or child**.

- Let $Y_{ij,25}^n$ denote **indebtedness** of person-type n , $n = p$ for parent and $n = c$ for child, respectively, & we measure indebtedness when **child j is age = 25**.
- **For parents**, we analyze:
 - ① mortgage debt
- **For children**, we analyze:
 - ① whether child is PSID Head/Wife of own household
 - ② non-mortgage debt only
- Because of child-age-25 requirement, **only have adequate sample sizes** for *Per0* (1975 – 1999) & *Per1* (2000 – 2007)

Parents' & Child's Indebtedness

Reduced Form (*NetEquity* as collateral):

$$Y_{ij,25}^n = \gamma_{00}^n + \gamma_{10}^n \text{NetEquity}_{ij,18}^p + \gamma_{20}^n X_{ij,25}^n + \left[\gamma_{01}^n + \gamma_{11}^n \text{NetEquity}_{ij,18}^p + \gamma_{21}^n X_{ij,25}^n \right] \cdot \text{Per1}_{ij,18} + \varepsilon_{ij,25}^n \quad (2)$$

Effects of College & Financing Choices:

$$Y_{ij,25}^n = \delta_{00}^n + \delta_{10}^n \text{EduFin1}_{ij,18} + \delta_{20}^n \text{EduFin2}_{ij,18} + \delta_{30}^n X_{ij,25}^n + \left[\delta_{01}^n + \delta_{11}^n \text{EduFin1}_{ij,18} + \delta_{21}^n \text{EduFin2}_{ij,18} + \delta_{31}^n X_{ij,25}^n \right] \cdot \text{Per1}_{ij,18} + \varepsilon_{ij,25}^n \quad (3)$$

Effects of College Attendance & Amount of Transfers:

$$Y_{ij,25}^n = \phi_{00}^n + \phi_{10}^n \text{Coll}_{ij,18}^c + \phi_{20}^n \text{Transfer}_{ij,18} + \phi_{30}^n X_{ij,25}^n + \left[\phi_{01}^n + \phi_{11}^n \text{Coll}_{ij,18}^c + \phi_{21}^n \text{Transfer}_{ij,18} + \phi_{31}^n X_{ij,25}^n \right] \cdot \text{Per1}_{ij,18} + \varepsilon_{ij,25}^n \quad (4)$$

where $\text{Coll}_{ij,18}^c$ is whether child j attended college & $\text{Transfer}_{ij,18}$ is **amount of** parental transfer.

Parents' & Child's Indebtedness

Table 3: Effects of College Attendance & Financing and Other Variables on Parent's & Child's Indebtedness & Child's Homeleaving, at Child Age 25

Variables	Parental Mortgage Debt (\$10K)		Child is Head/Wife at Age 24		Child's Other Debt (\$10K)	
	OLS	IV	OLS	IV	OLS	IV
Reduced Form Estimates Eqn (2):						
<i>NetEquity₁₈</i>	-0.117***	-0.030	0.0027*	-0.0074**	-0.022***	-0.026
<i>NetEquity₁₈ × Per1</i>	0.213***	0.508***	-0.0079***	-0.0057***	0.011	-0.004
Effects of College & Financing Choices Eqn (3):						
<i>EduFin1</i>	-0.388		0.0111		0.435***	
<i>EduFin1 × Per1</i>	1.313***		0.0005		0.988***	
<i>EduFin2</i>	-0.321		0.0591**		0.444***	
<i>EduFin2 × Per1</i>	4.754***		-0.0016*		0.843***	
Effects of College Attendance & Amount of Transfers Eqn (4):						
<i>Coll^c</i>	-0.541**		0.0158		0.421***	
<i>Coll^c × Per1</i>	2.432***		-0.0005		0.989***	
<i>Transfer</i>	0.443***		0.0112		0.068*	
<i>Transfer × Per1</i>	0.132		-0.0081		-0.081**	

NOTES: IV = Use same Instrumental Variables as in Lovenheim and Reynolds (2013). All specifications include location-specific fixed effects.

Parents' & Child's Indebtedness

Initial Conclusions on effects of college financing on indebtedness

- For each **\$1 exogenous increase** in *NetEquity* when child age 18, parents **go \$0.50 further in debt** by when child age 25.
- Parents during **housing boom** (*Per1*), parents who made transfers relative to those who child went to college without transfers had:
 - **\$34,000 of additional mortgage debt.**
- Each additional \$1 of *Transfers* correlated with \$0.44 in additional mortgage debt later.
- **Children whose parents provide transfers** have **more debt** at age 25 (although not in all specifications).
 - Is this because parental & student financing of college are **complements** rather than **substitutes**, e.g., do parents/children use student loans to pay for some of increase in college "quality"?
 - **Caveat:** we have not included children who have not yet formed their own households (TA Sample)
- **IV** estimates suggest that *Transfers* **decrease home leaving** but **OLS** show **positive correlations**.

Parents' & Child's Consumption

Background:

- Using debt to finance children's college education may be **efficient**, if parents or children have **access to capital markets** &/or **can insure against unforeseen changes in wealth/income**.
- But some parents &/or children may not have adequate access to capital markets &/or realize unforeseen shocks to wealth, e.g., housing bust.
- **One way to assess:** Examine impact of financing & debt on **parents' & child's consumption**.

Let $C_{ij,25}^n$ denote **consumption (expenditures in \$10K)** of person n , where $n = p$ for parent & $n = c$ for child, where we measure C^n when **child j is age = 25**.

For both parents & children, two measures of consumption expenditures:

- 1 food eaten at home
- 2 food at restaurants

We estimate same regression specifications as used for indebtedness.

Again, due to child-age-25 requirement, **only have adequate sample sizes** for **Per0** (1975 – 1999) & **Per1** (2000 – 2007)

Parents' & Child's Consumption

Table 4: Effects of College Attendance & Financing and Other Variables on **Parent's & Child's Consumption**, at *Child Age 25*

Variables	Parental Consumption (\$10K)				Child's Consumption (\$10K)				
	Food at Home		Eating at Restaurants		Food at Home		Eating at Restaurants		
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	
Reduced Form Estimates Eqn (2):									
<i>NetEquity</i> ₁₈	-0.002	-0.001	0.001	0.006	-0.009	0.031***	-0.003	0.025*	
<i>NetEquity</i> ₁₈ × <i>Per1</i>	0.017**	0.008	-0.019***	-0.012***	0.012	0.008	0.001	0.009	
Effects of College & Financing Choices Eqn (3):									
<i>EduFin1</i>	-0.037		0.042		-0.193		0.125		
<i>EduFin1</i> × <i>Per1</i>	0.058		0.048		0.151		-0.322*		
<i>EduFin2</i>	-0.035		0.067		-0.065		0.098		
<i>EduFin2</i> × <i>Per1</i>	0.184		-0.253***		0.103		-0.366*		
Effects of College Attendance & Amount of Transfers Eqn (4):									
<i>Coll</i> ^c	-0.019		0.030		-0.209		0.117		
<i>Coll</i> ^c × <i>Per1</i>	0.014		-0.003		0.203		-0.315*		
<i>Transfer</i>	-0.010		0.062***		0.070		0.010		
<i>Transfer</i> × <i>Per1</i>	0.144***		-0.121***		-0.087		-0.028		

NOTES: IV = Use same Instrumental Variables as in Lovenheim and Reynolds (2013). All specifications include location-specific fixed effects.

Parents' & Child's Consumption

Initial Conclusions on effects of college financing on consumption

- Parents who make *Transfers*, consume **more food at home** and **less food away from home**, especially during housing boom (*Per1*).
- **No differences in parents' consumption** for those whose children attend college but who **do not** provide *Transfers*
- Fewer consistent patterns for **child's consumption**.

Next Steps

- Investigate additional consequences of Financing for Well-Being of Parents
 - Are results we found for effects on consumption really indications of lasting impacts?
 - Does debt financing of college by parents affect **parents' retirement**?
 - Other aspects of parents' later lives?
- Investigate additional consequences of college financing on Well-Being of adult children
 - Are our findings of little effect of college financing affecting adult child really true?
 - Need to look more closely at whether college financing affected life cycle events like **first home purchase**, **age of first marriage**, etc.
 - Are using TA sample & its data to look at these questions.
- Are parents' & children's debt-financing of latter's college **substitutes** or **complements**?

References

- Becker, G. S. and Tomes, N. (1979). An equilibrium theory of the distribution of income and intergenerational mobility. *Journal of Political Economy*, 87(6):1153–89.
- Behrman, J. R., Pollak, R. A., and Taubman, P. (1995). The wealth model: Efficiency in education and the distribution in the family. In Behrman, J., Pollak, R., and Taubman, P., editors, *From Parent to Child: Intrahousehold Allocation and Intertemporal Relations in the United States*, pages 113–138. University of Chicago Press.
- Brown, M., Scholz, J. K., and Seshadri, A. (2012). A new test of borrowing constraints for education. *Review of Economic Studies*, 79:511–538.
- Browning, M., Gørtz, M., and Leth-Petersen, S. (2013). Housing wealth and consumption: a micro panel study. *The Economic Journal*, 123(568):401–428.
- Campbell, J. Y. and Cocco, J. F. (2007). How do house prices affect consumption? evidence from micro data. *Journal of Monetary Economics*, 54(3):591–621.
- Carroll, C. D., Otsuka, M., and Slacalek, J. (2011). How large are housing and financial wealth effects? a new approach. *Journal of Money, Credit and Banking*, 43(1):55–79.
- Case, K. E., Quigley, J. M., and Shiller, R. J. (2005). Comparing wealth effects: the stock market versus the housing market. *advances in Macroeconomics*, 5(1).
- Cooper, D. and Luengo-Prado, M. J. (2015). House price growth when children are teenagers: A path to higher earnings? *Journal of Urban Economics*, 86:54–72.
- Juster, F. T., Lupton, J. P., Smith, J. P., and Stafford, F. (2006). The decline in household saving and the wealth effect. *Review of Economics and Statistics*, 88(1):20–27.
- Kaplan, G. (2012). Moving back home: Insurance against labor market risk. *Journal of Political Economy*, 120(3):446–512.

- Lochner, L. and Monge-Naranjo, A. (2012). Credit constraints in education. *Annual Review of Economics*, 4(1):225–256.
- Lochner, L. J. and Monge-Naranjo, A. (2011). The nature of credit constraints and human capital. *American Economic Review*, 101(6):2487–2529.
- Lovenheim, M. F. (2011). The effect of liquid housing wealth on college enrollment. *Journal of Labor Economics*, 29(4):741–771.
- Lovenheim, M. F. and Reynolds, C. L. (2013). The effect of housing wealth on college choice: Evidence from the housing boom. *Journal of Human Resources*, 48(1):1–35.
- Manacorda, M. and Moretti, E. (2006). Why do most Italian youths live with their parents? Intergenerational transfers and household structure. *Journal of the European Economic Association*, 4(4):800–829.
- Paiella, M. and Pistaferri, L. (2015). Decomposing the wealth effect on consumption. Stanford University working paper.
- Schoeni, R. F., Bianchi, S. M., Hotz, V. J., Seltzer, J. A., and Wiemers, E. E. (2015). Intergenerational transfers and rosters of the extended family: A new substudy of the panel study of income dynamics. *Longitudinal and life course studies*, 6(3):319–330.
- Skinner, J. S. (1996). Is housing wealth a sideshow? In Wise, D. A., editor, *Advances in the Economics of Aging*, pages 241 – 272. University of Chicago Press.
- Wiemers, E. E. (2014). The effect of unemployment on household composition and doubling up. *Demography*, 51(6):2155–2178.