

Mortgage Amortization and Wealth Accumulation

Asaf Bernstein Peter Koudijs

Discussion by

Anthony A. DeFusco
Northwestern University

NBER Summer Institute
July 2020

Overview

Research question

- How does mortgage contract design affect household wealth accumulation?

Why Is This Important?

Table 1

Balance Sheets for Households Aged 65–69 in 2008

<i>Asset category</i>	<i>Percent of households with positive balance</i>	<i>Mean holding (dollars)</i>	<i>Share of total wealth (percent)</i>
All households			
Net worth	99.4	1,049,228	100.0
Social Security	88.2	341,556	32.6
Defined benefit pension	42.1	140,176	13.4
Non-annuitized wealth	90.8	567,496	54.1
Financial assets	86.7	132,484	12.6
Personal retirement accounts	52.2	121,137	11.5
Housing and other real estate	81.3	271,605	25.9

Source: Poterba, Venti, and Wise (2011)

Why Is This Important?

Table 1

Balance Sheets for Households Aged 65–69 in 2008

<i>Asset category</i>	<i>Percent of households with positive balance</i>	<i>Mean holding (dollars)</i>	<i>Share of total wealth (percent)</i>
All households			
Net worth	99.4	1,049,228	100.0
Social Security	88.2	341,556	32.6
Defined benefit pension	42.1	140,176	13.4
Non-annuitized wealth	90.8	567,496	54.1
Financial assets	86.7	132,484	12.6
Personal retirement accounts	52.2	121,137	11.5
Housing and other real estate	81.3	271,605	25.9

Source: Poterba, Venti, and Wise (2011)

Why Is This Important?

Table 1

Balance Sheets for Households Aged 65–69 in 2008

<i>Asset category</i>	<i>Percent of households with positive balance</i>	<i>Mean holding (dollars)</i>	<i>Share of total wealth (percent)</i>
All households			
Net worth	99.4	1,049,228	100.0
Social Security	88.2	341,556	32.6
Defined benefit pension	42.1	140,176	13.4
Non-annuitized wealth	90.8	567,496	54.1
Financial assets	86.7	132,484	12.6
Personal retirement accounts	52.2	121,137	11.5
Housing and other real estate	81.3	271,605	25.9

Source: Poterba, Venti, and Wise (2011)

Why Is This Important?

- **Retirement account design and wealth accumulation**

Engen, Gale, and Scholz (1996)

Poterba, Venti, and Wise (1995, 1996)

Madrian and Shea (2001)

Choi, Laibson, Madrian, and Metrick (2004, 2006)

Thaler and Benartzi (2004)

Engelhardt and Kumar (2007)

Beshears, Choi, Laibson, and Madrian (2009)

Choi, Laibson, and Madrian (2009)

Gelber (2011)

Chetty, Friedman, Leth-Petersen, Nielsen, and Olsen (2014)

Beshears, Choi, Laibson, Madrian, Skimmyhorn (2018)

Choukhmane (2019)

and many, many more...

Why Is This Important?

- **Retirement account design and wealth accumulation**

Engen, Gale, and Scholz (1996)

Poterba, Venti, and Wise (1995, 1996)

Madrian and Shea (2001)

Choi, Laibson, Madrian, and Metrick (2004, 2006)

Thaler and Benartzi (2004)

Engelhardt and Kumar (2007)

Beshears, Choi, Laibson, and Madrian (2009)

Choi, Laibson, and Madrian (2009)

Gelber (2011)

Chetty, Friedman, Leth-Petersen, Nielsen, and Olsen (2014)

Beshears, Choi, Laibson, Madrian, Skimmyhorn (2018)

Choukhmane (2019)

and many, many more...

- **Mortgage contract design and wealth accumulation**

Bernstein and Koudijs (2020)

and hopefully more to come...

Overview

Research question

- How does mortgage contract design affect household wealth accumulation?

Overview

Research question

- How does mortgage contract design affect household wealth accumulation?

Empirical approach

- Exploit 2013 change in amortization requirements on Dutch mortgages
- Compare wealth accumulation for cohorts buying before-vs-after

Overview

Research question

- How does mortgage contract design affect household wealth accumulation?

Empirical approach

- Exploit 2013 change in amortization requirements on Dutch mortgages
- Compare wealth accumulation for cohorts buying before-vs-after

Key findings

- Forced amortization has **no offsetting effect** on non-housing wealth accumulation
- Net \uparrow savings financed by \uparrow **labor supply** (1/3) and \downarrow **expenditures** (2/3)
- Effects are **broad-based** and homogeneous

Overview

Research question

- How does mortgage contract design affect household wealth accumulation?

Empirical approach

- Exploit 2013 change in amortization requirements on Dutch mortgages
- Compare wealth accumulation for cohorts buying before-vs-after

Key findings

- Forced amortization has **no offsetting effect** on non-housing wealth accumulation
- Net \uparrow savings financed by \uparrow **labor supply** (1/3) and \downarrow **expenditures** (2/3)
- Effects are **broad-based** and homogeneous

Broader implications

- Homeownership + amortizing mortgage = key driver of wealth accumulation
- Policies that encourage fast amortization don't come at cost of household liquidity

Focus of My Comments

Research question

- How does mortgage contract design affect household wealth accumulation?

Empirical approach

- Exploit 2013 change in amortization requirements on Dutch mortgages
- Compare wealth accumulation for cohorts buying before-vs-after

Key findings

- Forced amortization has **no offsetting effect** on non-housing wealth accumulation
- Net \uparrow savings financed by \uparrow **labor supply** (1/3) and \downarrow **expenditures** (2/3)
- Effects are **broad-based** and homogeneous

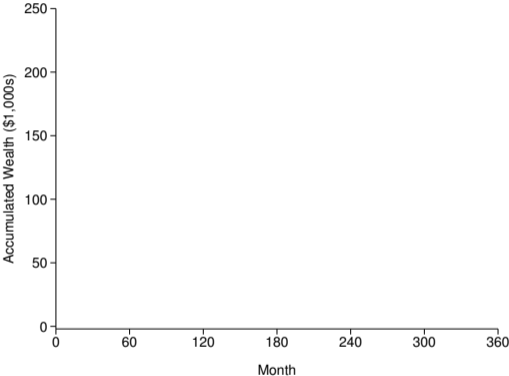
Broader implications

- Homeownership + amortizing mortgage = key driver of wealth accumulation
- Policies that encourage fast amortization don't come at cost of household liquidity

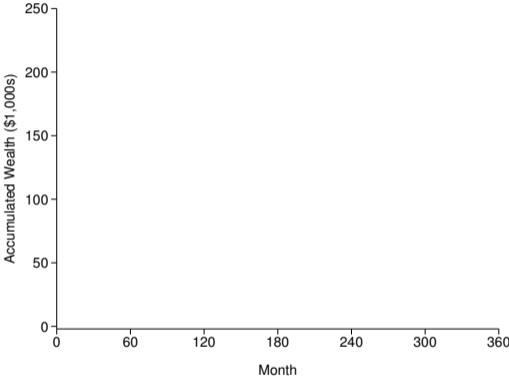
The Ideal Experiment

The Ideal Experiment

Amortization



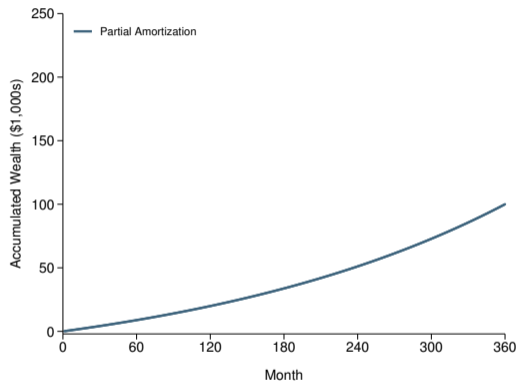
Savings



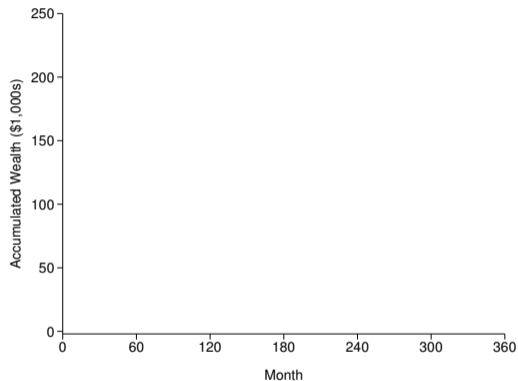
Two identical homebuyers each borrowing \$200K at 4.5%

The Ideal Experiment

Amortization



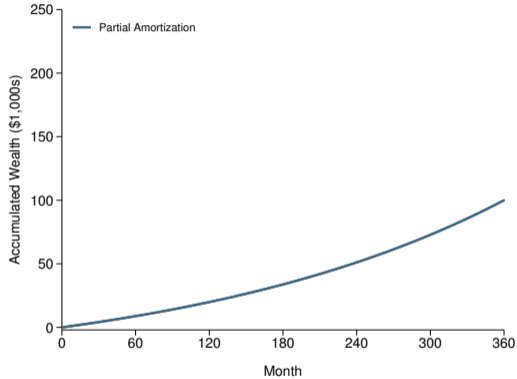
Savings



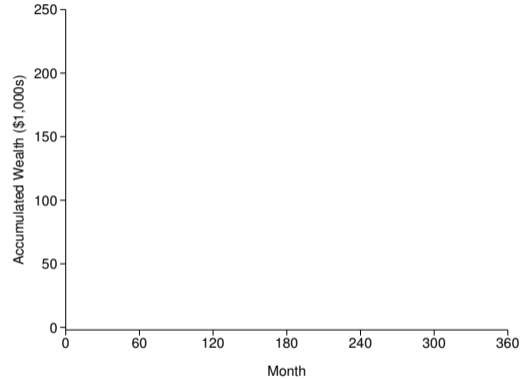
Buyer 1: buys at 11:59pm on 12/31/12 → defaulted into **50% amortizing** loan

The Ideal Experiment

Amortization



Savings

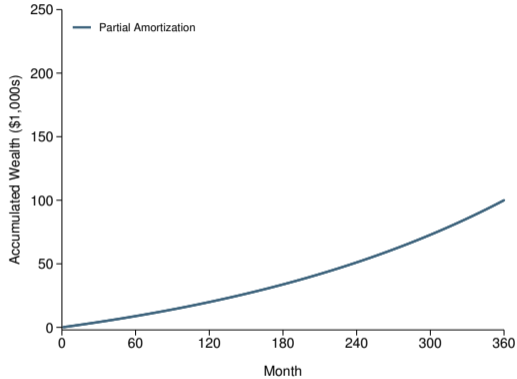


$$\text{Wealth Accumulation} = \text{Amortization} + \text{Savings}$$

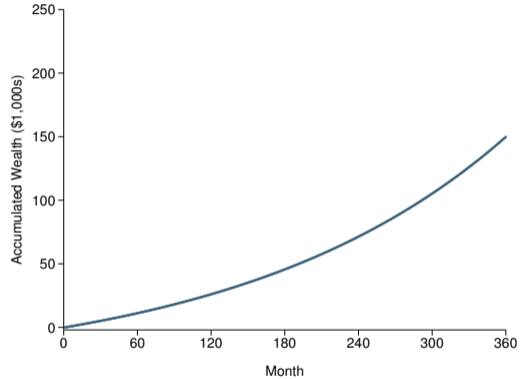
100

The Ideal Experiment

Amortization



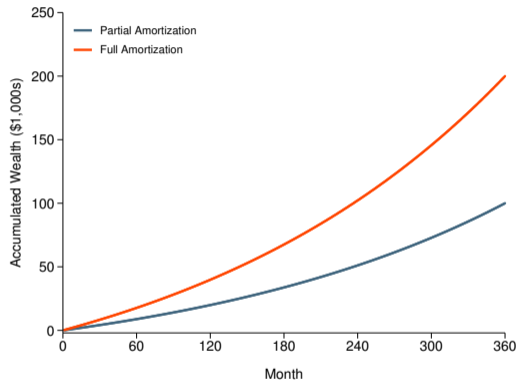
Savings



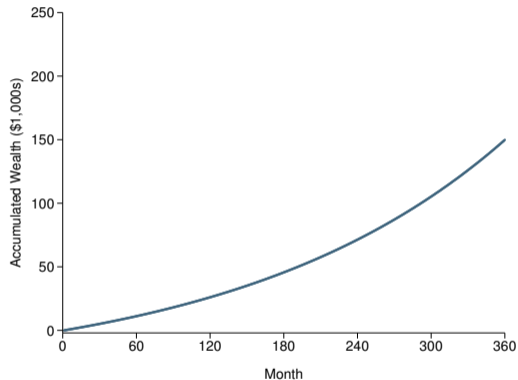
$$\begin{array}{rcccl} \text{Wealth Accumulation} & = & \text{Amortization} & + & \text{Savings} \\ 250 & = & 100 & + & 150 \end{array}$$

The Ideal Experiment

Amortization



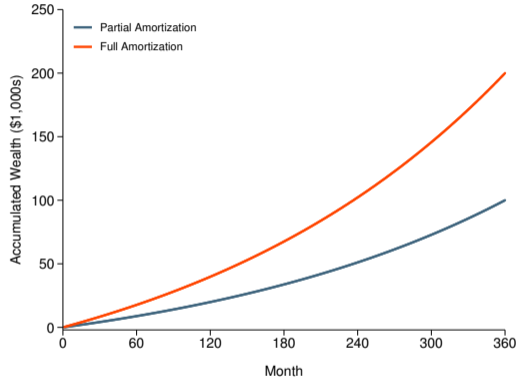
Savings



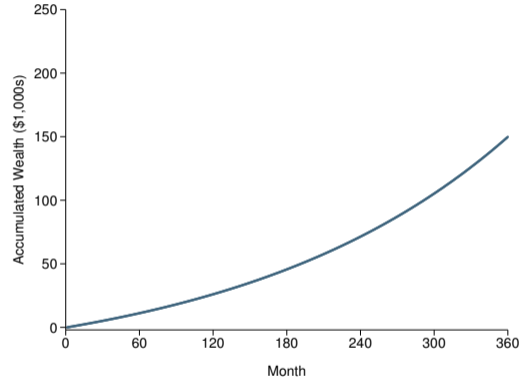
Buyer 2: buys at 12:00am on 01/01/13 → defaulted into **fully amortizing** loan

The Ideal Experiment

Amortization



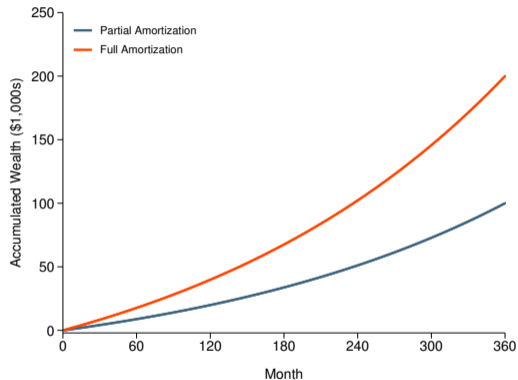
Savings



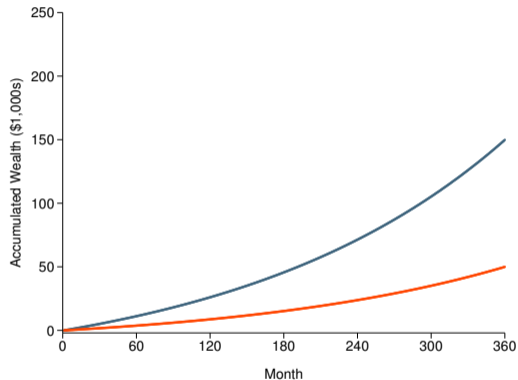
$$\begin{array}{rcccl} \text{Wealth Accumulation} & = & \text{Amortization} & + & \text{Savings} \\ 250 & = & 100 & + & 150 \\ & & 200 & & \end{array}$$

The Ideal Experiment

Amortization



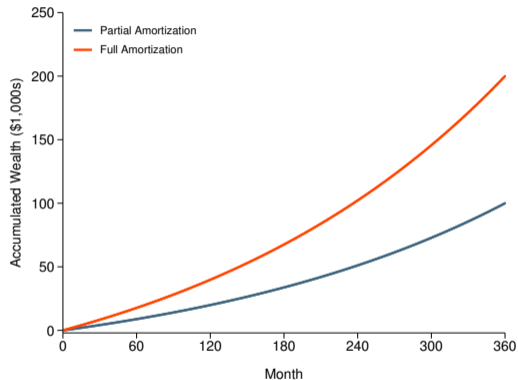
Savings



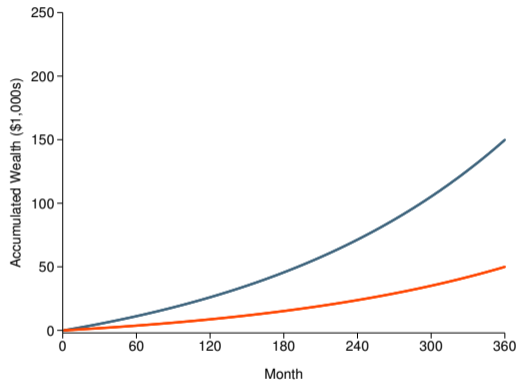
Wealth Accumulation	=	Amortization	+	Savings
250	=	100	+	150
250	=	200	+	50

The Ideal Experiment

Amortization



Savings

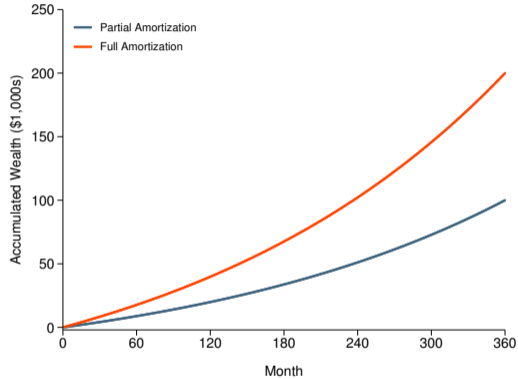


$$\begin{array}{rclcl} \Delta \text{Wealth Accumulation} & = & \Delta \text{Amortization} & + & \Delta \text{Savings} \\ 0 & = & 100 & - & 100 \end{array}$$

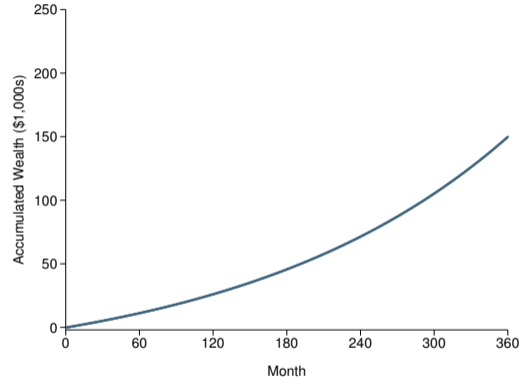
$$\rightarrow \Delta W / \Delta A = 0$$

The Ideal Experiment

Amortization



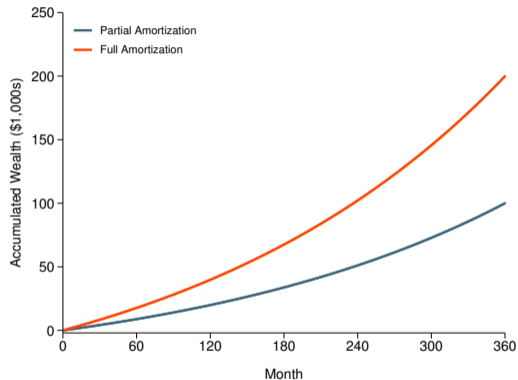
Savings



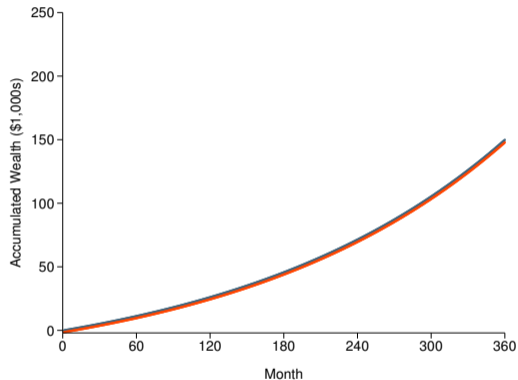
$$\begin{array}{rcccl} \text{Wealth Accumulation} & = & \text{Amortization} & + & \text{Savings} \\ 250 & = & 100 & + & 150 \\ & & 200 & & \end{array}$$

The Ideal Experiment

Amortization



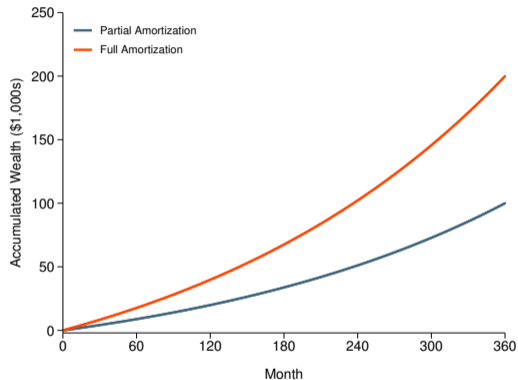
Savings



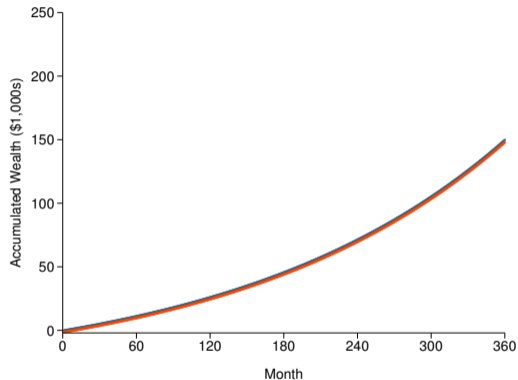
Wealth Accumulation	=	Amortization	+	Savings
250	=	100	+	150
350	=	200	+	150

The Ideal Experiment

Amortization



Savings



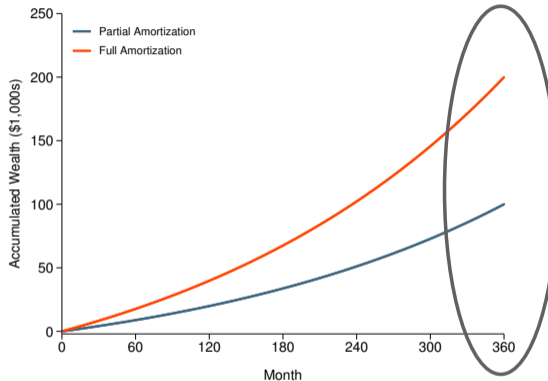
$$\begin{array}{rclcl} \Delta \text{Wealth Accumulation} & = & \Delta \text{Amortization} & + & \Delta \text{Savings} \\ 100 & = & 100 & + & 0 \end{array}$$

$$\rightarrow \Delta W / \Delta A = 1$$

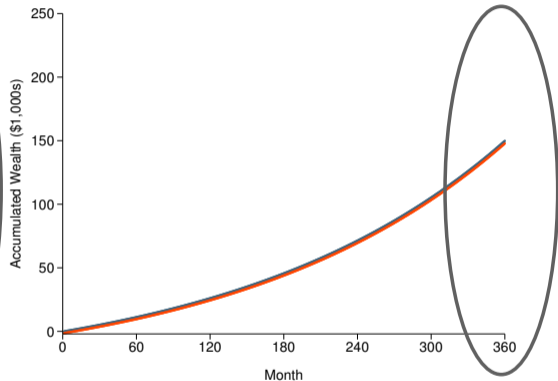
An Approximation to the Ideal Experiment

Problem: We Can't Observe the Outcome (Yet)

Amortization



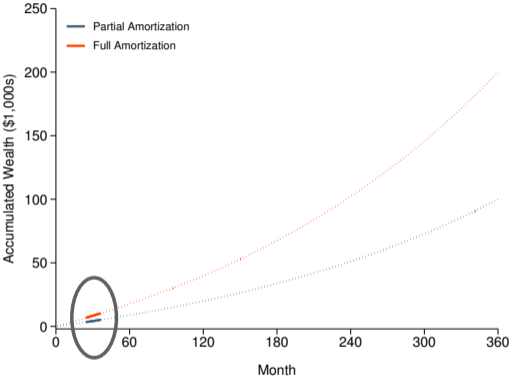
Savings



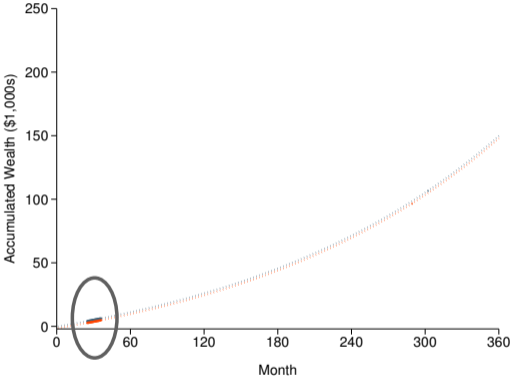
Wealth Accumulation	=	Amortization	+	Savings
250	=	100	+	150
350	=	200	+	150

Solution: Look at Year-over-Year Changes

Amortization



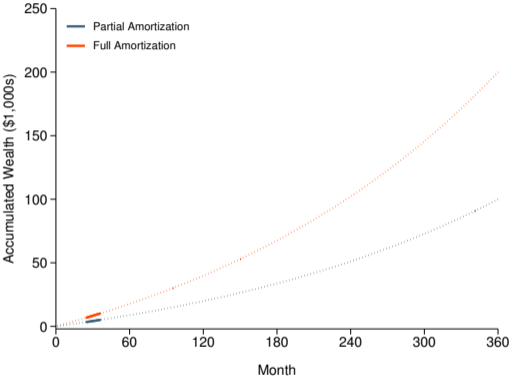
Savings



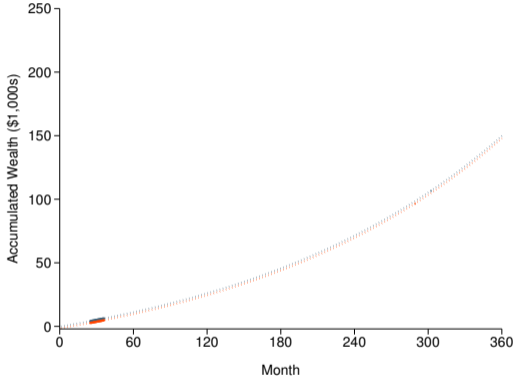
Wealth Accumulation_t	=	Amortization_t	+	Savings_t
4	=	1.5	+	2.5
6	=	3.5	+	2.5

Solution: Look at Year-over-Year Changes

Amortization



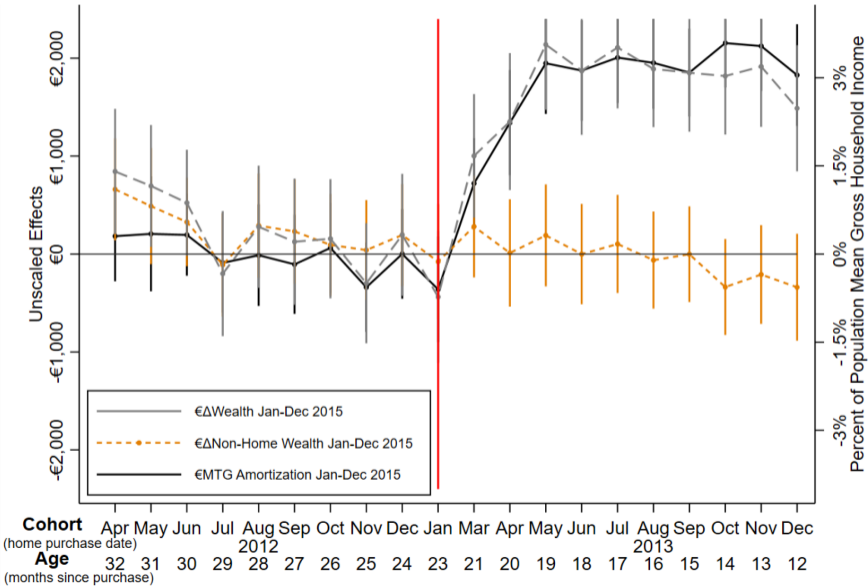
Savings



$$\Delta \text{Wealth Accumulation}_t = \Delta \text{Amortization}_t + \Delta \text{Savings}_t$$
$$2 = 2 + 0$$

$\rightarrow \Delta W / \Delta A = 1$

This is Exactly What the Paper Finds → Zero Fungibility in 2015



Surprising, but Consistent with the Classics

- **Retirement account design and wealth accumulation**

Engen, Gale, and Scholz (1996)

Poterba, Venti, and Wise (1995, 1996)

Madrian and Shea (2001)

Choi, Laibson, Madrian, and Metrick (2004, 2006)

Thaler and Benartzi (2004)

Engelhardt and Kumar (2007)

Beshears, Choi, Laibson, and Madrian (2009)

Choi, Laibson, and Madrian (2009)

Gelber (2011)

Chetty, Friedman, Leth-Petersen, Nielsen, and Olsen (2014)

Beshears, Choi, Laibson, Madrian, Skimmyhorn (2018)

Choukhmane (2019)

and many, many more...

- **Mortgage contract design and wealth accumulation**

Bernstein and Koudijs (2020)

and hopefully more to come...

Surprising, but Consistent with the Classics

- **Retirement account design and wealth accumulation**

Engen, Gale, and Scholz (1996)

Poterba, Venti, and Wise (1995, 1996)

Madrian and Shea (2001)

Choi, Laibson, Madrian, and Metrick (2004, 2006)

Thaler and Benartzi (2004)

Engelhardt and Kumar (2007)

Beshears, Choi, Laibson, and Madrian (2009)

Choi, Laibson, and Madrian (2009)

Gelber (2011)

Chetty, Friedman, Leth-Petersen, Nielsen, and Olsen (2014)

Beshears, Choi, Laibson, Madrian, Skimmyhorn (2018)

Choukhmane (2019)

and many, many more...

- **Mortgage contract design and wealth accumulation**

Bernstein and Koudijs (2020)

and hopefully more to come...

Near-Zero Crowdout of 401(k) Contributions on non-401(k) Savings

Table 3

Conditional median asset balances by 401(k) eligibility and income

Asset category and eligibility status	Income						
	<10	10-20	20-30	30-40	40-50	50-75	>75
<i>(a) Results for 1991 (1991 \$s)</i>							
Total financial assets							
Eligible for a 401(k)	2,033	4,045*	5,499*	8,683*	14,470*	26,093*	51,080*
Not eligible for a 401(k)	1,378	1,997	2,558	3,256	6,206	10,080	29,842
Non-IRA-401(k) assets							
Eligible for a 401(k)	538	1,138	1,500	2,835*	4,724	8,699*	18,188*
Not eligible for a 401(k)	663	1,063	1,411	2,052	4,250	5,437	17,000
401(k) Assets							
Eligible for a 401(k)	1,171	1,008	1,211	2,092	3,073*	4,833*	14,300*
Not eligible for a 401(k)	0	0	0	0	0	0	0

Source: Poterba, Venti, and Wise (1995)

Large Effect of Automatic Enrollment on Savings in Subsequent Year

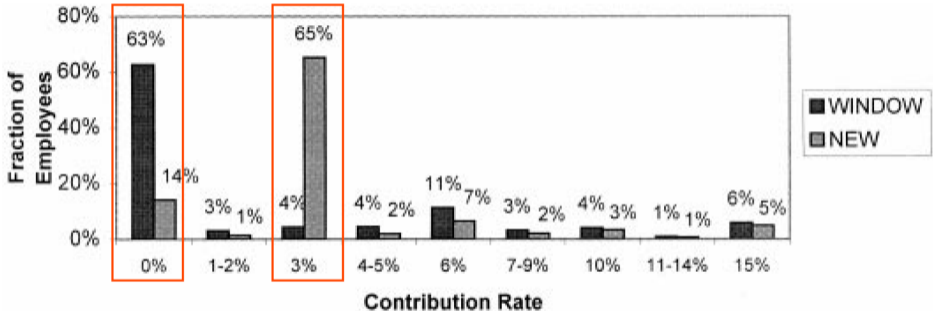


FIGURE IIc

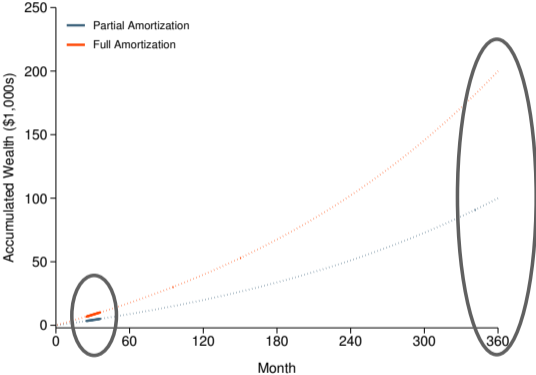
Distribution of 401(k) Contribution Rates for the WINDOW and NEW Cohorts Including Nonparticipation

Source: Madrian and Shea (2001)

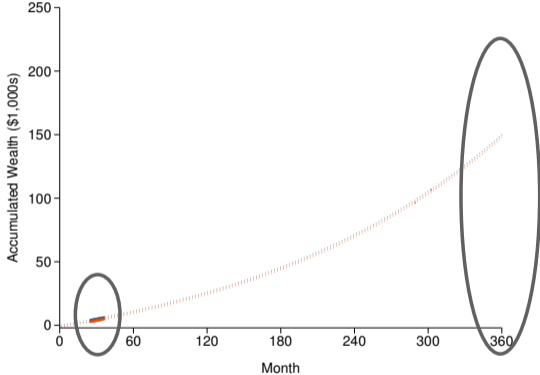
When Might the Approximation Fail?

Solution: Look at Year-over-Year Changes

Amortization



Savings



$$\begin{aligned} \Delta \text{Wealth Accumulation}_t &= \Delta \text{Amortization}_t + \Delta \text{Savings}_t \\ 2 &= 2 + 0 \quad \rightarrow \Delta W / \Delta A = 1 \end{aligned}$$

Potential Sources of Long-Run Convergence

Partially amortizing borrower catches up

- Increasing future non-housing savings
 - Monthly payment \approx \$130 less under partial amortization
 - Saving this amount starting in year 4 at 5.5% \rightarrow full catch-up by year 30
- Prepayment of the partially amortizing loan

Potential Sources of Long-Run Convergence

Partially amortizing borrower catches up

- Increasing future non-housing savings
 - Monthly payment \approx \$130 less under partial amortization
 - Saving this amount starting in year 4 at 5.5% \rightarrow full catch-up by year 30
- Prepayment of the partially amortizing loan

Fully amortizing borrower falls behind

- Re-levering on the next purchase \rightarrow average LTV in the Netherlands = 100%!
- Cash-out refinances/home equity loans
- Decreasing future non-housing savings

The jury is out on how important these things might end up being...

Recent Evidence from Retirement Savings May Be Informative

- **Retirement account design and wealth accumulation**

Engen, Gale, and Scholz (1996)

Poterba, Venti, and Wise (1995, 1996)

Madrian and Shea (2001)

Choi, Laibson, Madrian, and Metrick (2004, 2006)

Thaler and Benartzi (2004)

Engelhardt and Kumar (2007)

Beshears, Choi, Laibson, and Madrian (2009)

Choi, Laibson, and Madrian (2009)

Gelber (2011)

Chetty, Friedman, Leth-Petersen, Nielsen, and Olsen (2014)

Beshears, Choi, Laibson, Madrian, Skimmyhorn (2018)

Choukhmane (2019)

and many, many more...

- **Mortgage contract design and wealth accumulation**

Bernstein and Koudijs (2020)

and hopefully more to come...

Recent Evidence from Retirement Savings May Be Informative

- **Retirement account design and wealth accumulation**

Engen, Gale, and Scholz (1996)

Poterba, Venti, and Wise (1995, 1996)

Madrian and Shea (2001)

Choi, Laibson, Madrian, and Metrick (2004, 2006)

Thaler and Benartzi (2004)

Engelhardt and Kumar (2007)

Beshears, Choi, Laibson, and Madrian (2009)

Choi, Laibson, and Madrian (2009)

Gelber (2011)

Chetty, Friedman, Leth-Petersen, Nielsen, and Olsen (2014)

Beshears, Choi, Laibson, Madrian, Skimmyhorn (2018)

Choukhmane (2019)

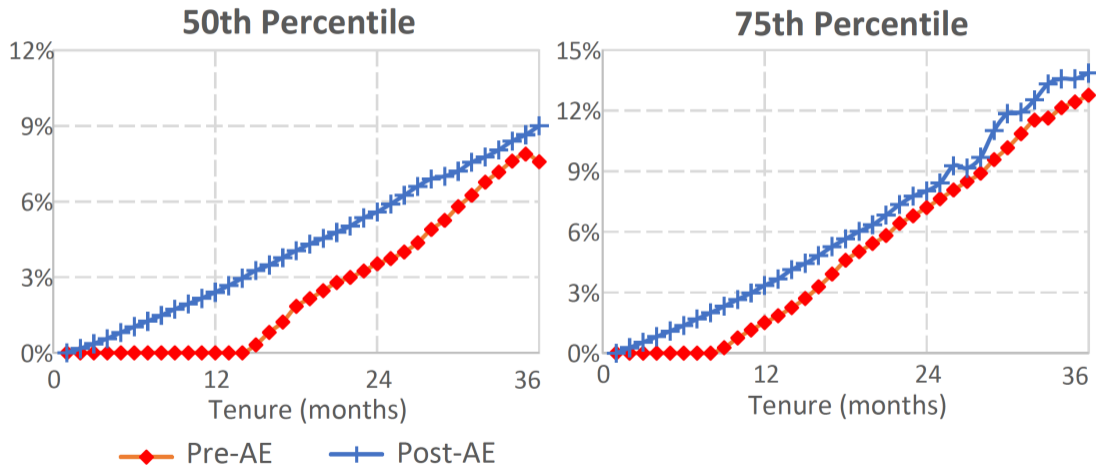
and many, many more...

- **Mortgage contract design and wealth accumulation**

Bernstein and Koudijs (2020)

and hopefully more to come...

Median Non-Auto Enrolled Worker Fully Catches up by Year Three



Source: Choukhmane (2019), Figure 1

Potential Sources of Long-Run Convergence

Partially amortizing borrower catches up

- Increasing future non-housing savings
 - Monthly payment \approx \$130 less under partial amortization
 - Saving this amount starting in year 4 at 5.5% \rightarrow full catch-up by year 30
- Prepayment of the partially amortizing loan

Fully amortizing borrower falls behind

- Re-levering on the next purchase \rightarrow average LTV in the Netherlands = 100%!
- Cash-out refinances/home equity loans
- Decreasing future non-housing savings

The jury is out on how important these things might end up being...

Potential Sources of Long-Run Convergence

Partially amortizing borrower catches up

- Increasing future non-housing savings
 - Monthly payment \approx \$130 less under partial amortization
 - Saving this amount starting in year 4 at 5.5% \rightarrow full catch-up by year 30
- Prepayment of the partially amortizing loan

Fully amortizing borrower falls behind

- Re-levering on the next purchase \rightarrow average LTV in the Netherlands = 100%
- Cash-out refinances/home equity loans
- Decreasing future non-housing savings

The jury is out on how important these things might end up being...

Auto-Enrollment at One Employer → Non-Enrollment at the Next

Table 1: Auto-enrollment effect after a job transition to a non-autoenrollment employer

	Actual policy			Placebo tests				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Beginning of policy rollout	2012	2005	2006	2007	2008	2009	2010	2011
	Panel A - Participation rate							
AE to non-AE employer	-0.126** (0.061)	0.064 (0.052)	0.002 (0.053)	-0.011 (0.046)	-0.000 (0.045)	0.026 (0.044)	-0.023 (0.040)	0.028 (0.051)
	Panel B - Contribution rate (in percentage of pay)							
AE to non-AE employer	-0.348** (0.149)	0.301 (0.266)	-0.081 (0.251)	-0.162 (0.258)	-0.071 (0.244)	0.042 (0.245)	-0.390* (0.206)	-0.183 (0.173)
Employee characteristics	✓	✓	✓	✓	✓	✓	✓	✓
Size _{e_t} × Size _e	✓	✓	✓	✓	✓	✓	✓	✓
Employer × Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Observations	107,795	107,795	107,795	107,795	107,795	107,795	107,795	107,795

* p < 0.10, ** p < 0.05, *** p < 0.01

Source: Choukhmane (2019)

Potential Sources of Long-Run Convergence

Partially amortizing borrower catches up

- Increasing future non-housing savings
 - Monthly payment \approx \$130 less under partial amortization
 - Saving this amount starting in year 4 at 5.5% \rightarrow full catch-up by year 30
- Prepayment of the partially amortizing loan

Fully amortizing borrower falls behind

- Re-levering on the next purchase \rightarrow average LTV in the Netherlands = 100%
- Cash-out refinances/home equity loans
- Decreasing future non-housing savings

The jury is out on how important these things might end up being...

Potential Sources of Long-Run Convergence

Partially amortizing borrower catches up

- Increasing future non-housing savings
 - Monthly payment \approx \$130 less under partial amortization
 - Saving this amount starting in year 4 at 5.5% \rightarrow full catch-up by year 30
- Prepayment of the partially amortizing loan

Fully amortizing borrower falls behind

- Re-levering on the next purchase \rightarrow average LTV in the Netherlands = 100%!
- Cash-out refinances/home equity loans
- Decreasing future non-housing savings

The jury is out on how important these things might end up being...

Conclusion

This is a great paper!

- Important paper with interesting new findings
- Very little to quibble with on execution → I “believe” the main results
 - Forced amortization ↑ total wealth \$1-for-\$1 in first 3-5 years
 - Net ↑ savings financed by both ↓ expenditures and ↑ labor supply
 - Effect is broad-based and homogeneous

My take

- The results are **necessary but not sufficient for the broader conclusion** that mortgage amortization is a key determinant of lifetime wealth accumulation

Looking Forward to Learning More!

- **Retirement account design and wealth accumulation**

Engen, Gale, and Scholz (1996)

Poterba, Venti, and Wise (1995, 1996)

Madrian and Shea (2001)

Choi, Laibson, Madrian, and Metrick (2004, 2006)

Thaler and Benartzi (2004)

Engelhardt and Kumar (2007)

Beshears, Choi, Laibson, and Madrian (2009)

Choi, Laibson, and Madrian (2009)

Gelber (2011)

Chetty, Friedman, Leth-Petersen, Nielsen, and Olsen (2014)

Beshears, Choi, Laibson, Madrian, Skimmyhorn (2018)

Choukhmane (2019)

and many, many more...

- **Mortgage contract design and wealth accumulation**

Bernstein and Koudijs (2020)

Bernstein and Koudijs (2050)?