From Renting to Owning: Anticipatory Behavior of First-Time Homebuyers

Resarch Proposal

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Introduction

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- How do **mortgage requirements** shape the consumption-saving behavior of prospective first-time homebuyers and the time it takes to achieve **homeownership**?
- How do stricter **mortgage conditions** affect rental housing demand through delayed transitions to homeownership?

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- Household's Problem Solution show that the initial wealth gap mainly affects saving duration, not consumption levels. consistent with my empirics and the low elasticity found in the literature.
- Tighter credit constraints or higher house prices may extend time as renters, raise rental demand.

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- Empirics
  - Data
  - Econometric Framework
  - Event Study Regression
  - Heterogeneity Analysis

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- **Consumption Dynamics Around Home Purchase Events**
  - Event study by Benmelech et al. (2023) shows a sharp rise in spending **post-purchase**, especially on home durables.
  - This work, in contrast, emphasizes the **pre-purchase** period and the long-term reduction in consumption due to down-payment saving.

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  - This research complements those by focusing on households' **anticipatory behavior** and how they plan to meet **future mortgage requirements** (e.g., down payment, LTV limits) — see also Balke et al. (2024).

Empirics

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- Other methods (Baker (2018), Ganong and Noel (2020))
- Rent payments are rarely made via credit card and will be analyzed separately

Average Consumption Relative to Time of Purchase

	Mean (thousands NIS)	SD (thousands NIS)	N of observations (millions)
Total	13.8	15.1	83
Before	8.8	10.5	12.8
After	14.7	15.6	70.2
Monthe relative to home purchase			
-12	9.4	10.9	0.3
-6	9.7	10.5	0.3
0	11.0	12.8	0.3
6	12.5	14.1	0.3
12	12.5	14.0	0.3

Figure 1: HH Spending around first home purchase (Average monthly spending NIS)

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- May include controls for age and life-cycle effects
- This approach has limitations, which will be addressed later. It also allows for analyzing how different types of households respond to the event.

Event Study Regression

$$S_{it} = \theta_i + \delta_t + \sum_{m'=a}^{b} \beta_{m'} \, \mathbf{1}_{m',t-\tau_i} + \gamma' X_{it} + \varepsilon_{it}$$

S_{it}: Spending of household i at time t.
β_m : Incremental spending, m, month relative to the purchase month, τ_i, so $m = t - \tau_i$. **Reference level is 2 or more years after purchase** (will be change).
δ_t: Time fixed effects. To adjust for cohorts slops diffrences, I interact with mortgage cohort, $\varphi_\tau \bar{S}_t$.
θ_i: Household fixed effects (time-invariant unobserved heterogeneity, e.g., preferences, income, baseline consumption levels).
X_{it}: Controls. unused since have only time invariant varibels (e.g., income, LTV, etc.).

Baseline estimation - Spending Level

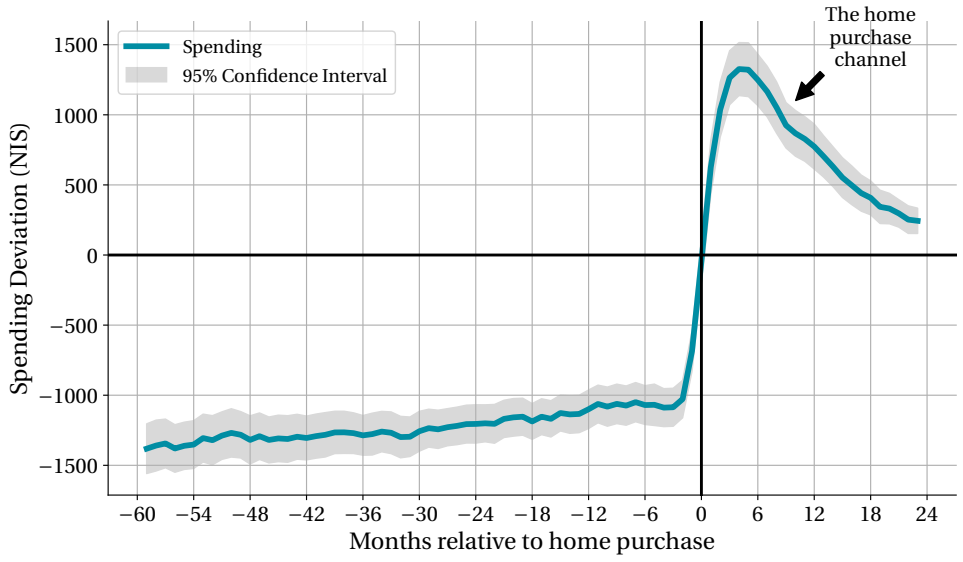

Figure 2: Event Study Regression. Outcome: Spending (NIS)

- What causes the low level of consumption prior to purchase?

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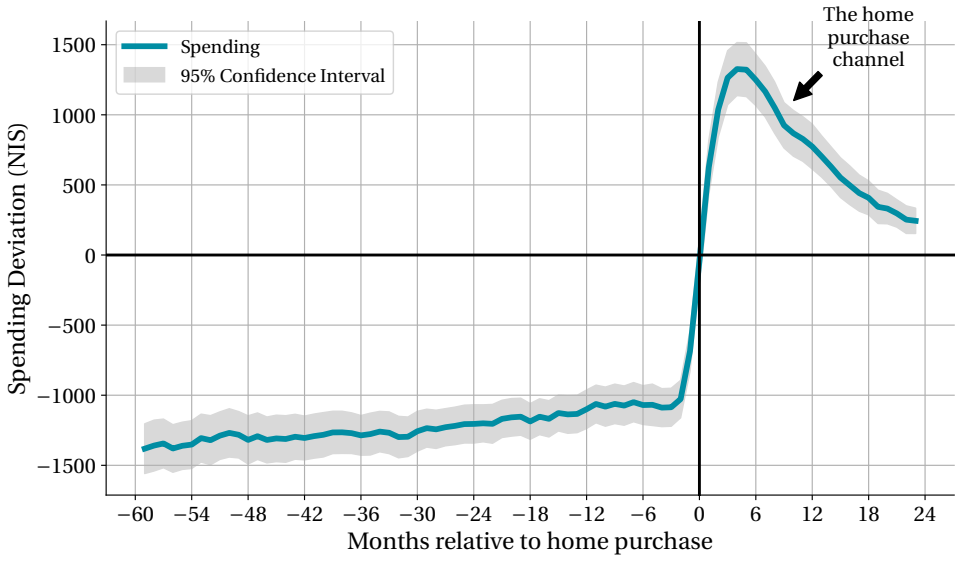

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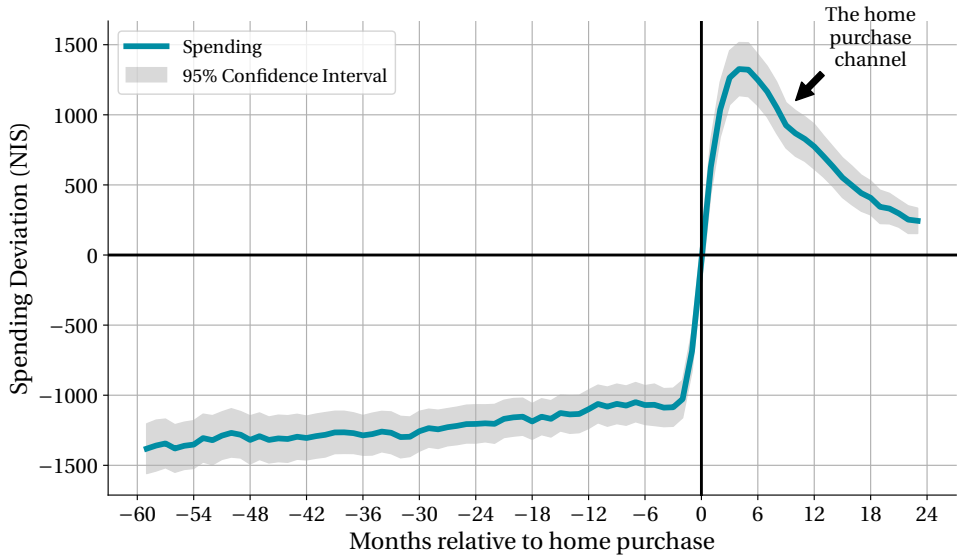

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- What causes the low level of consumption prior to purchase?
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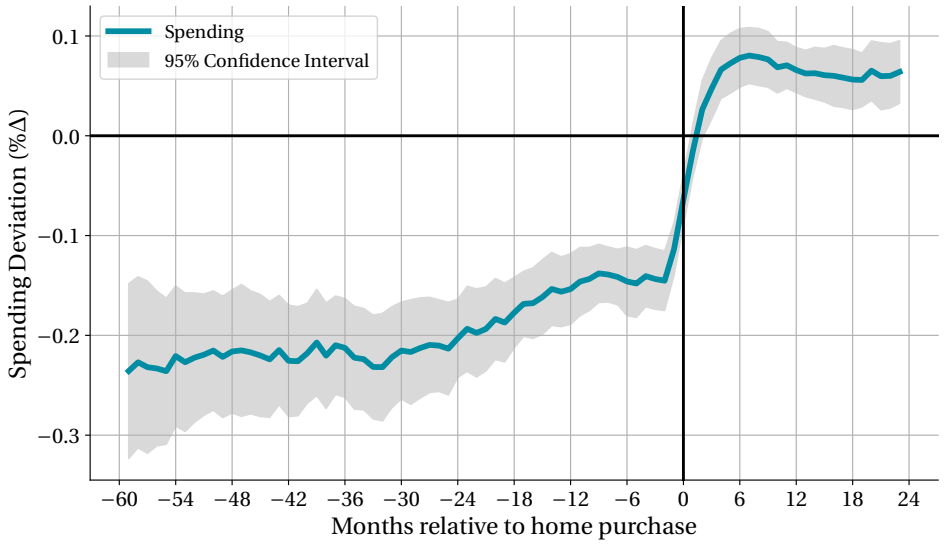
- Before the purchase, cumulative spending was -72 tNIS; after the purchase, it dropped to just 17 tNIS.

Baseline Estimation – Log Specification



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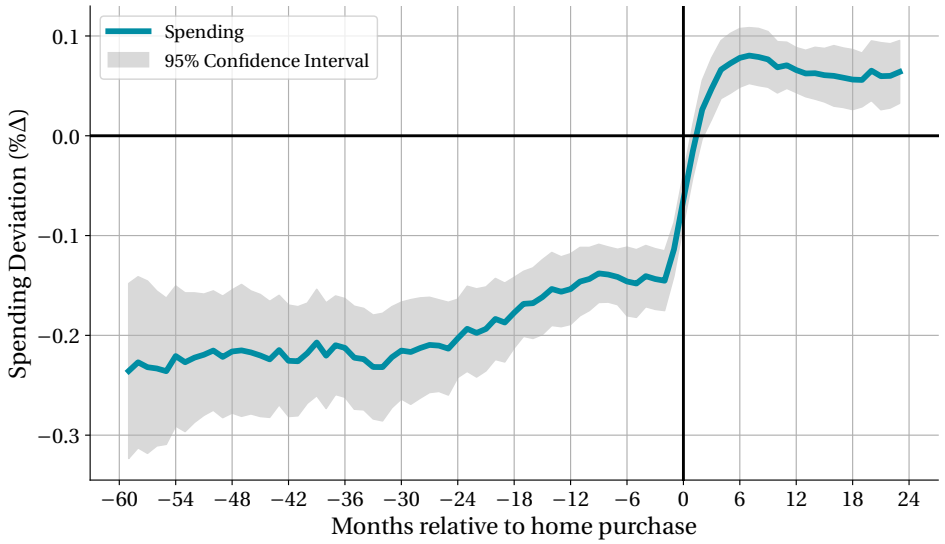

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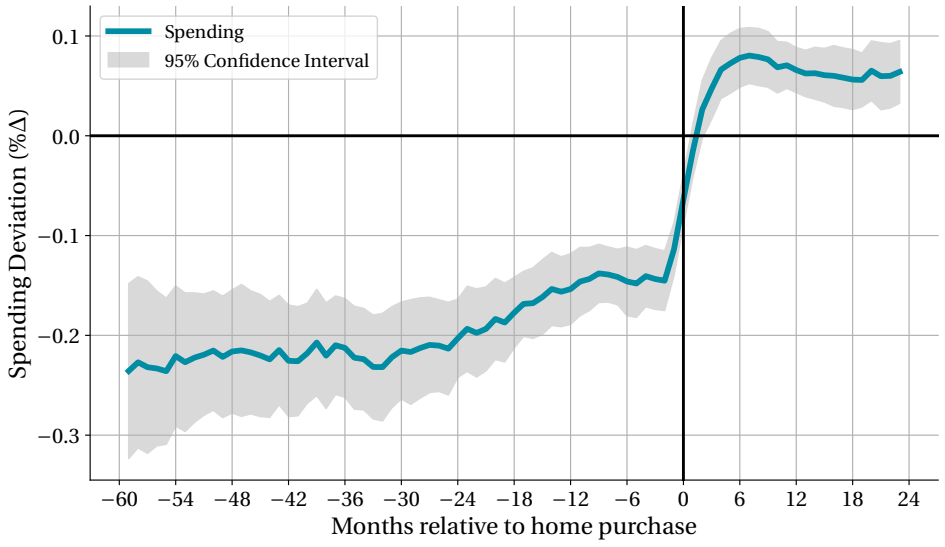

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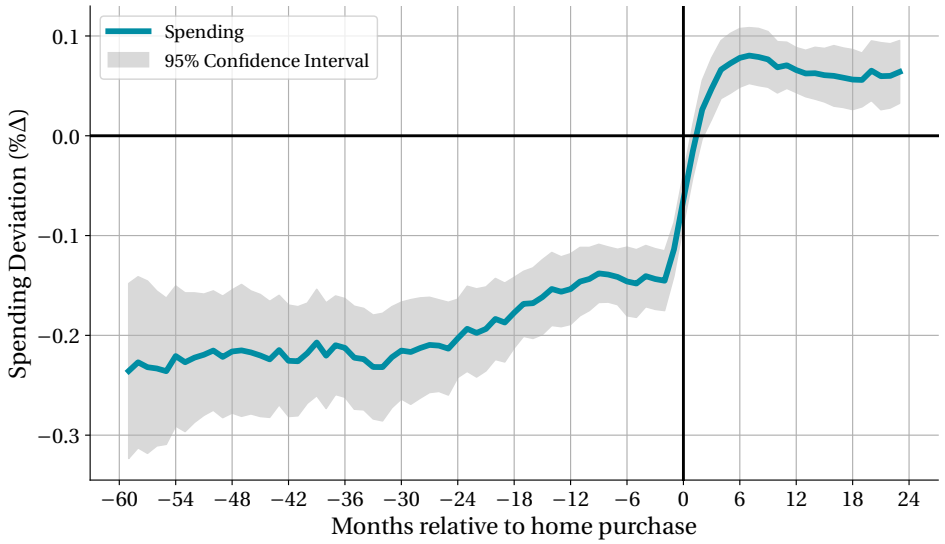

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- Offer a more consistent scale across households.
- The **levels spec.** tends to focus on fitting large expenditures, while logs place more weight on small purchases.

Heterogeneity: Partition by LTV

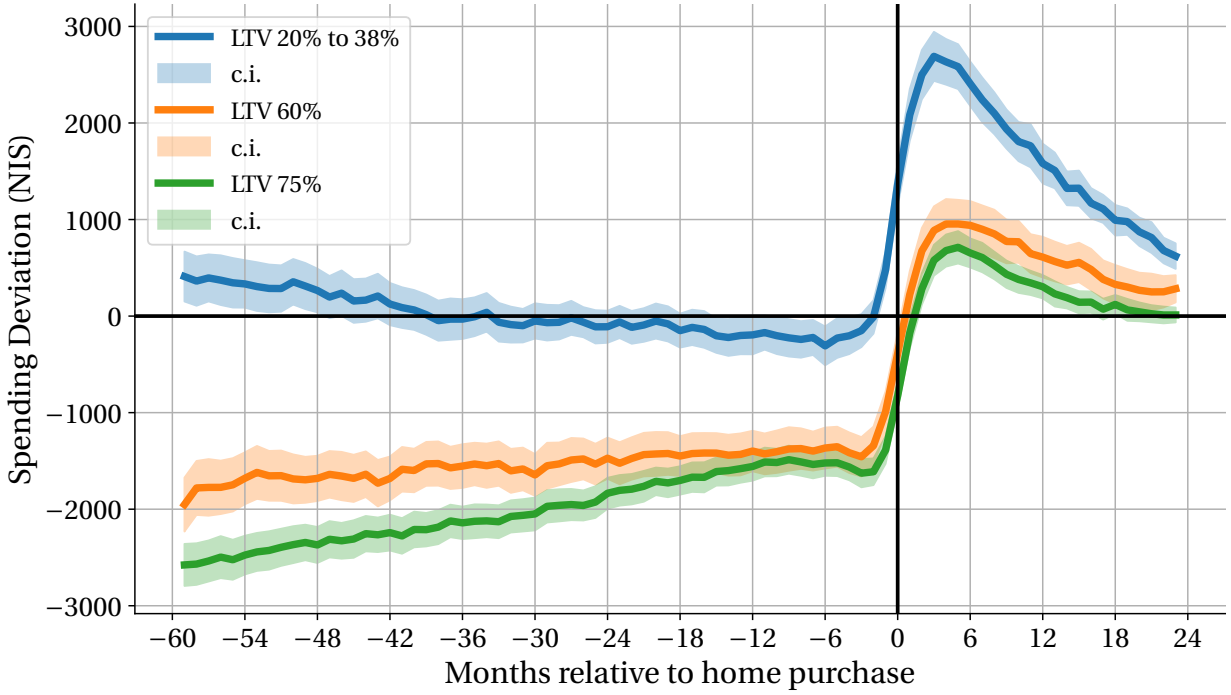

Figure 4: Sample Partition by LTV

Comparable to the interaction of β_m with LTV groups (planned work)

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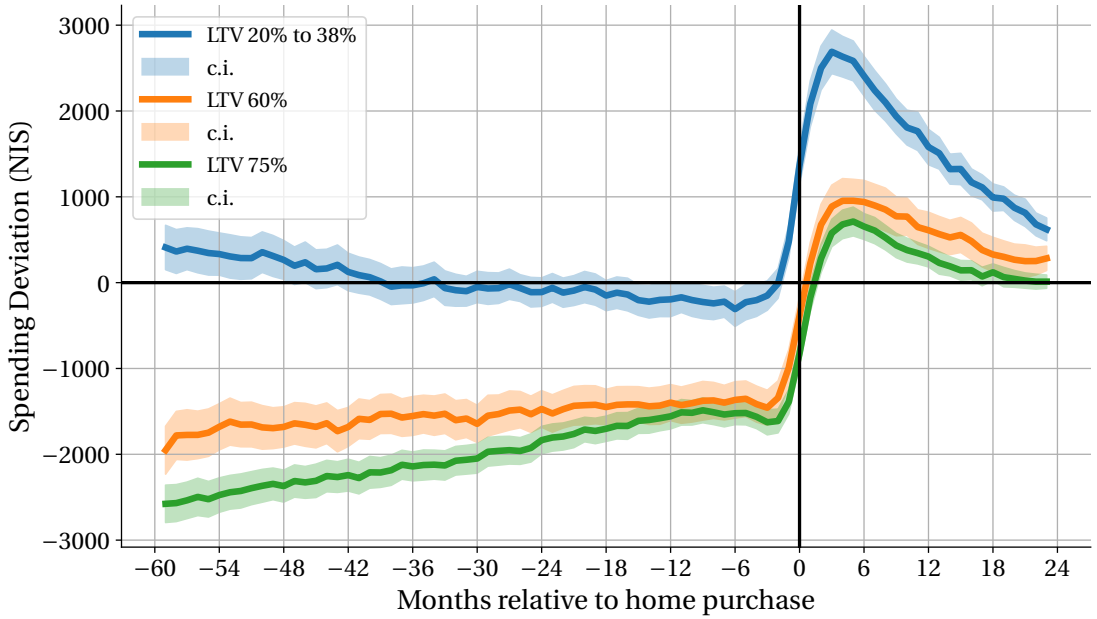

Figure 5: Sample Partition by LTV

LTV Group	Cumu.Spending Before	After
75%	-118	6
65%	-91	13
20%–38%	1	38

Heterogeneity: Partition by income

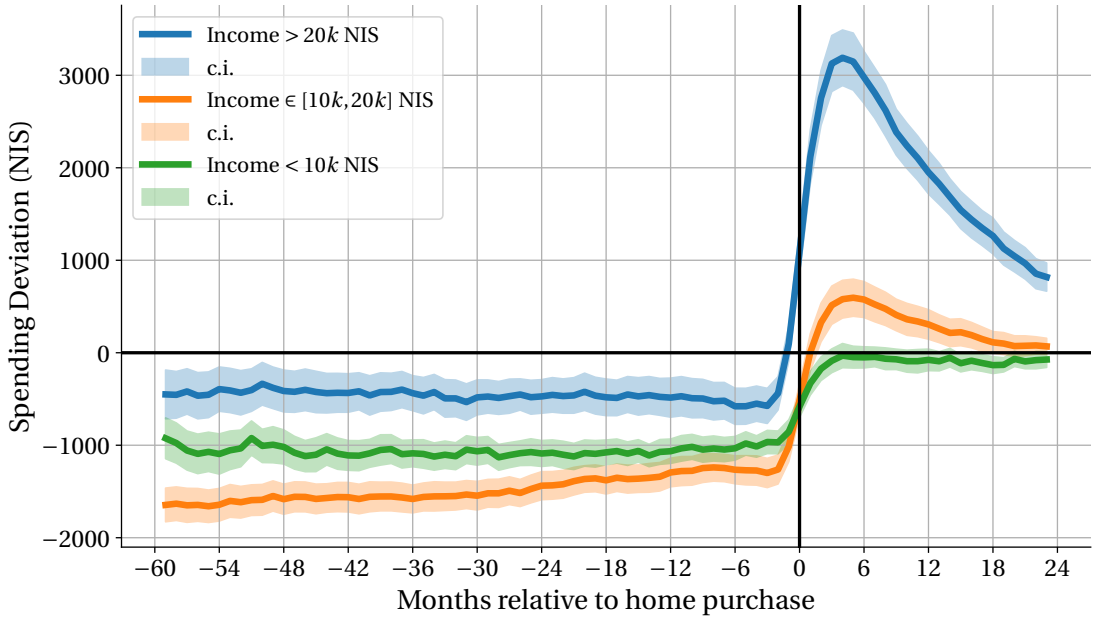

Figure 6: Sample Partition by Income

Income	Cum.Spending Before	After
$<$ 10k	-62	-2
between	-87	7
$>$ 20 k	-23	45

Household's Problem

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- Assumes households prefer owning over renting. The realization of this preference (shock) may be triggered by life-stage events (e.g., marriage, childbirth). Kaplan et al. (2020) identify preference shocks as a key driver in housing market behavior.

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    - Households that have given up on the "homeownership dream" are not represented in the model and are not captured in the data.

Homeownership provides utility but requires wealth

Bellman eq.

$$V(w_t) = \max_{c_t,\ w_{t+1}} \{u(c_t) + \mathbf{o_t(w_t)} + \beta V(w_{t+1})\}$$

Where, utility from ownership *per se*,

$$o_t = \begin{cases} 0 & , w_t < \overline{w} \\ u^o & , w_t \geq \overline{w} \end{cases}$$

Threshold, $\overline{w}$, represent mortgage requirements. **LTV**: $\overline{w} \geq qH \cdot (1 - \theta_{ltv})$. **PTI**: ...

The budget constraint, $w_{t+1} = R(w_t + y - c_t)$

Household's Problem – Solution Simulation

Consumption path response to permanent preference shock: $0 \mapsto u^o$ $(\beta R = 1)$, until home purchases.

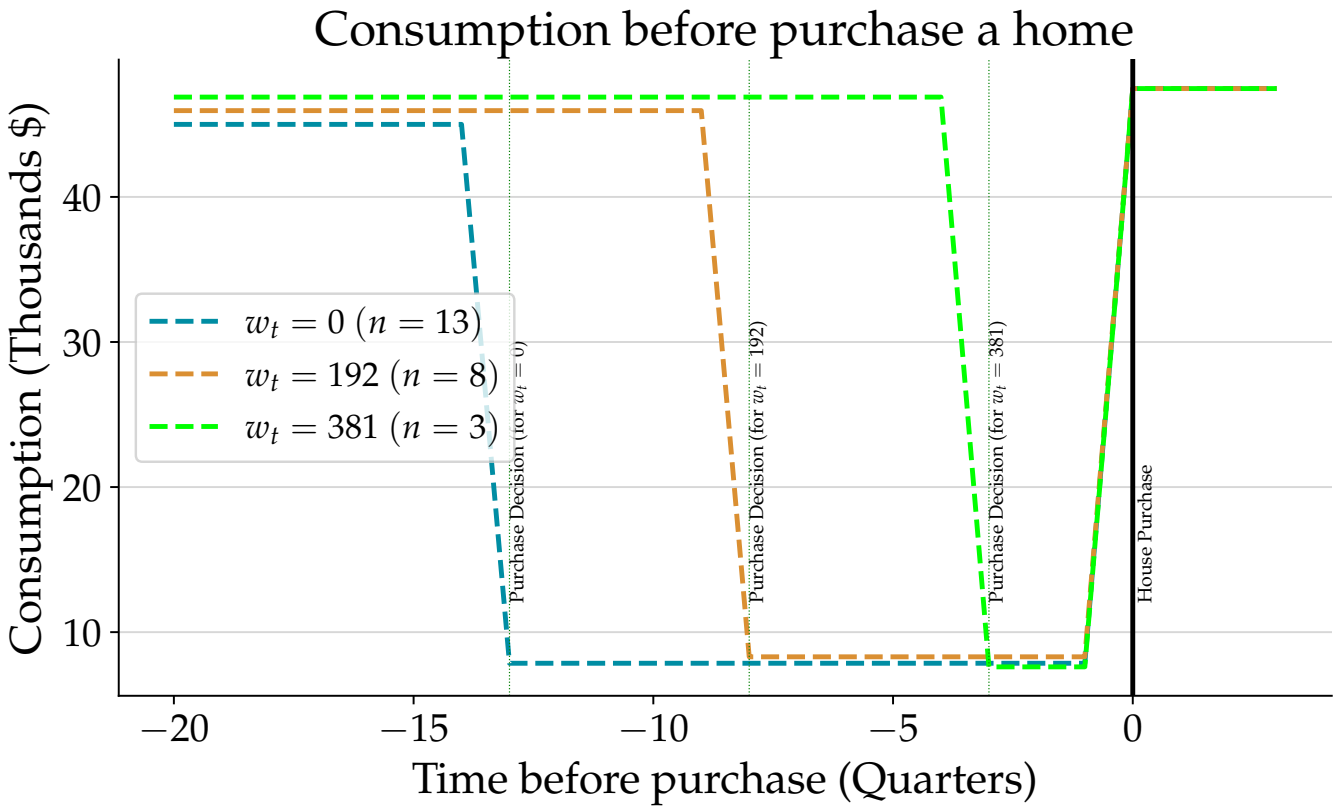

Figure 7: Consumption before home purchase

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- **Tighter credit conditions** or **rising home prices** extend the period households save for down paymentm and remain renters, potentially **increasing rental demand**, while *consumption stays flat*.
- Can explanate the low elasticity of renters' consumption to house prices found in the literature (e.g., Berger et al., 2018).

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- Household's problem solution suggests that the initial wealth "gap" primarily affects **the duration of saving**, not consumption levels.
- Findings suggest potential macro-level implications, especially for rental market dynamics.

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  - Add controls and **interaction** terms (e.g., with LTV, income, **age**).

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- Refine Event Study Regression
  - Data validation
  - Mitigation of estimation challenges
  - Extend time window: up to 48 months post-purchase, and 84 months pre-purchase.
  - Vary reference period: test 0, 36, and 48-month baselines.
  - Incorporate additional financial indicators (e.g., other credit lines, car loans).
  - Add controls and **interaction** terms (e.g., with LTV, income, **age**).
- Descriptive Statistics, based on **Bank of Israel** and **CBS** data to provide macro-level context.

Future Work (cont.)

- Estimate Elasticities (consumption response to **house prices**)

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  - Mortgage policy
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- **Thank you!**

Appendix

Price-to-Income ratio

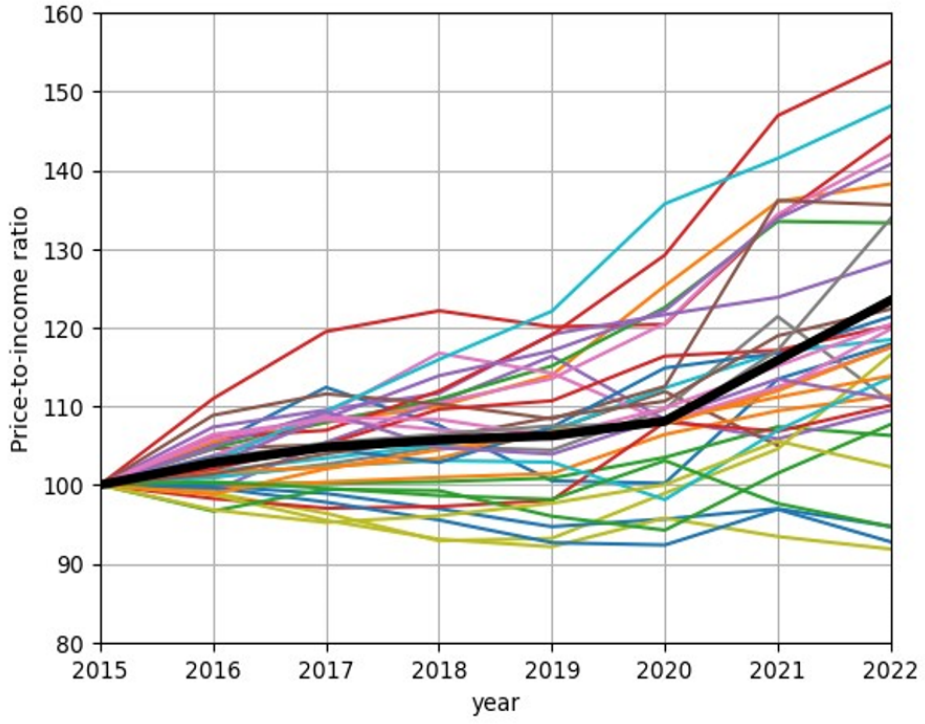


Figure 8: Price-to-Income ratio, OECD, 1996-2022 (Nominal house price divided by nominal disposable income per head, 2015 = base year)

OECD (2024), OECD Affordable Housing Database - indicator HM1.2 House Prices.

Literature: Consumption Elasticity to House Prices

Study	Homeowners	Renters	Main Data Source
Aladangady (2017)	0.051 (0.026)	-0.017 (0.020)	Consumer Expenditure Survey
Stroebel and Vavra (2019)	0.024***	-0.024 to -0.012 (0.016)	7,200 grocery stores in over 2,400 zip codes + Nielsen Consumer Survey. Renters identified by condo residence

Literature: Consumption Elasticity to House Prices (cont.)

Study	Homeowners	Renters	Main Data Source
Berger et. al. (2018)	—	No consumption response, just renting smaller houses	—
Graham and Makridis (2023)	0.100 (0.031)	0.034 (0.059)	Nielsen Consumer Survey (~50K HH per year)

Literature: Consumption Elasticity to House Prices (cont.)

Study	Homeowners	Renters	Main Data Source
Attanasio et al. (2009)	—	(+) significant	Microdata from the UK
Campbell and Cocco (2007)	—	Old: (+) significant. Young: insignificant	—

Spending Trend Hetrogenity (by Cohort)

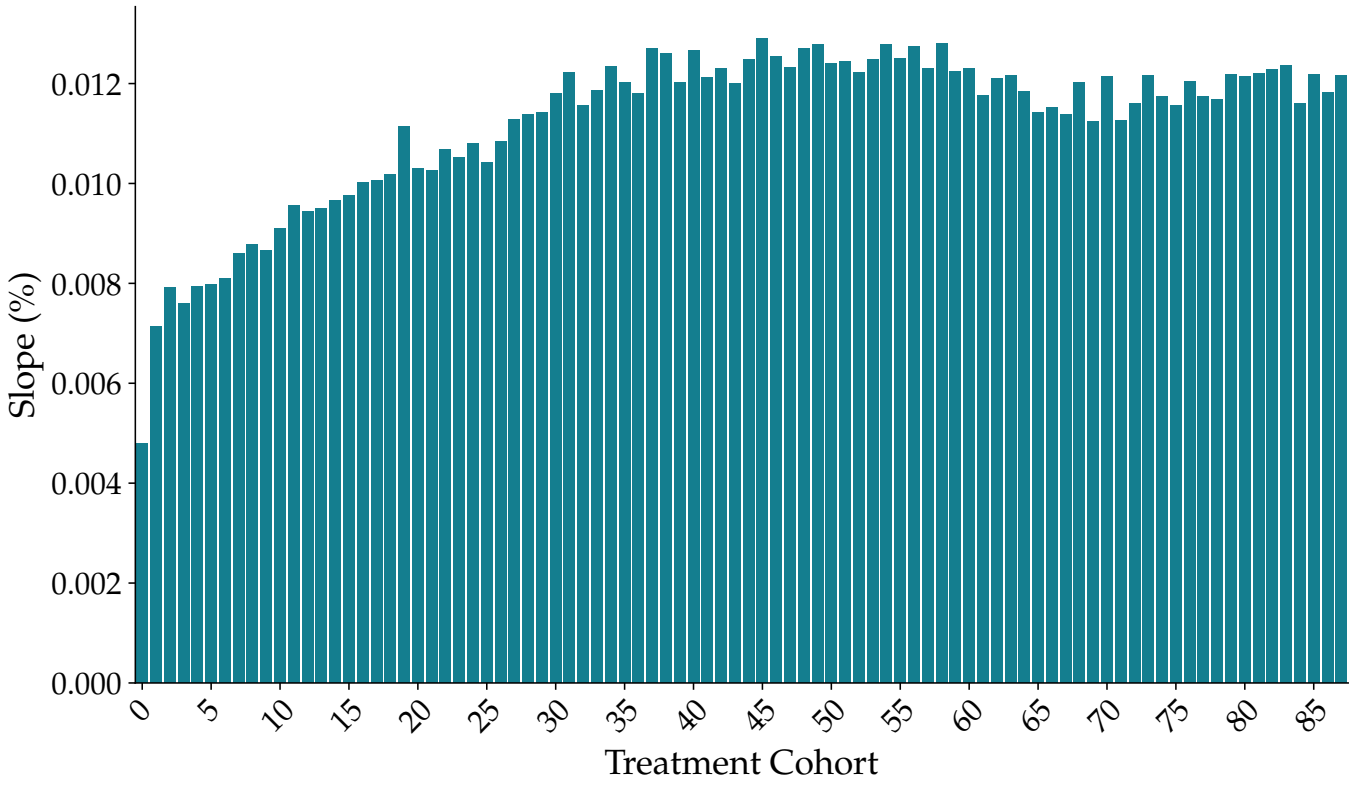


Figure 9: Slope of Spending Linear Trend (by Cohort), monthly frequency

Statistical View

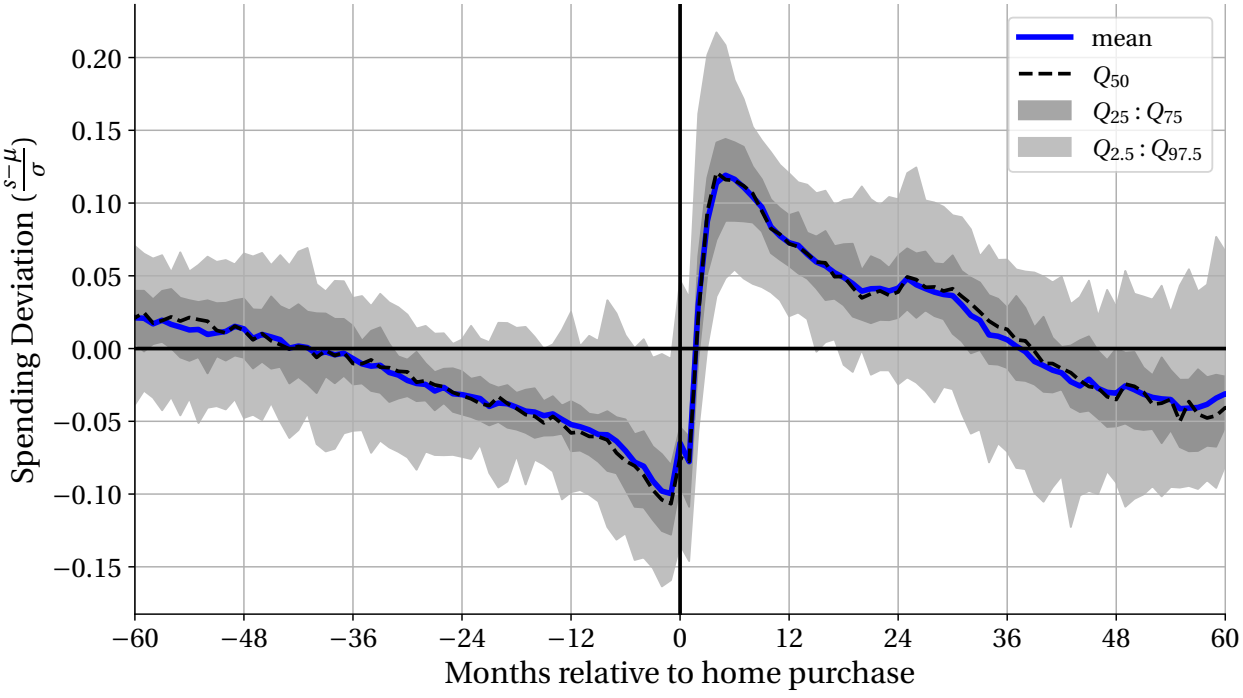
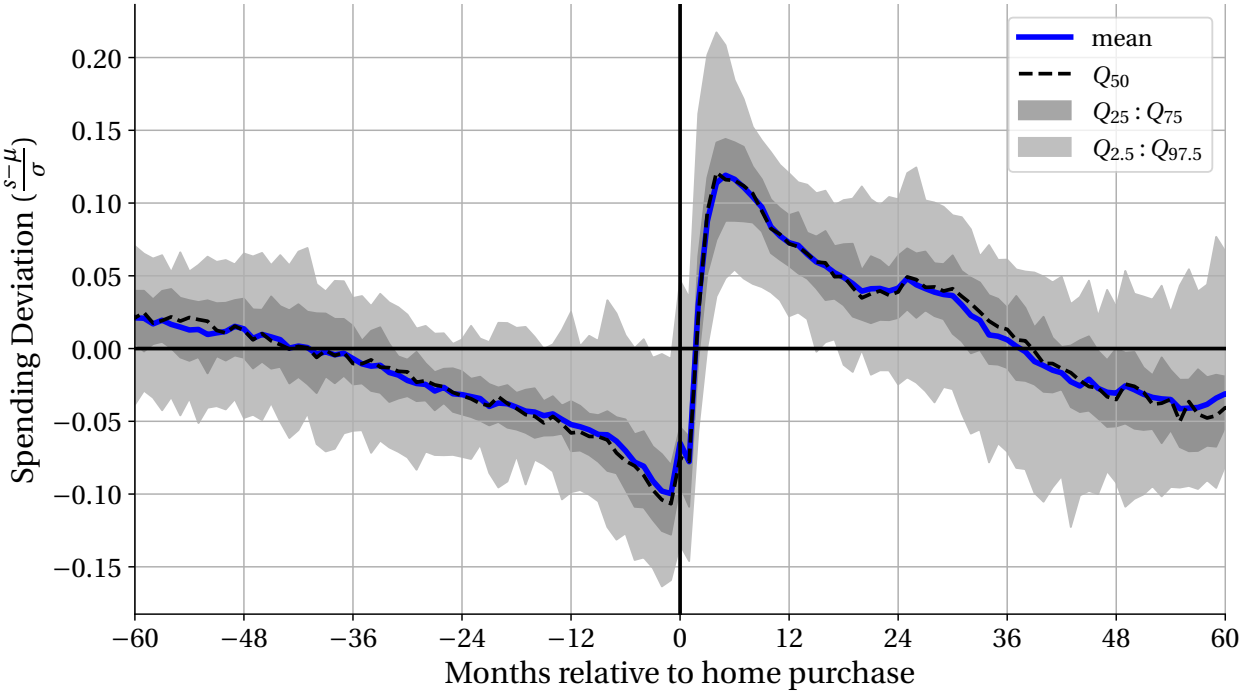


Figure 10: Spending Deviation (in S.D. terms) Around Home Purchases

- Steps:

Statistical View



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- Steps:
  - Standardize

Statistical View

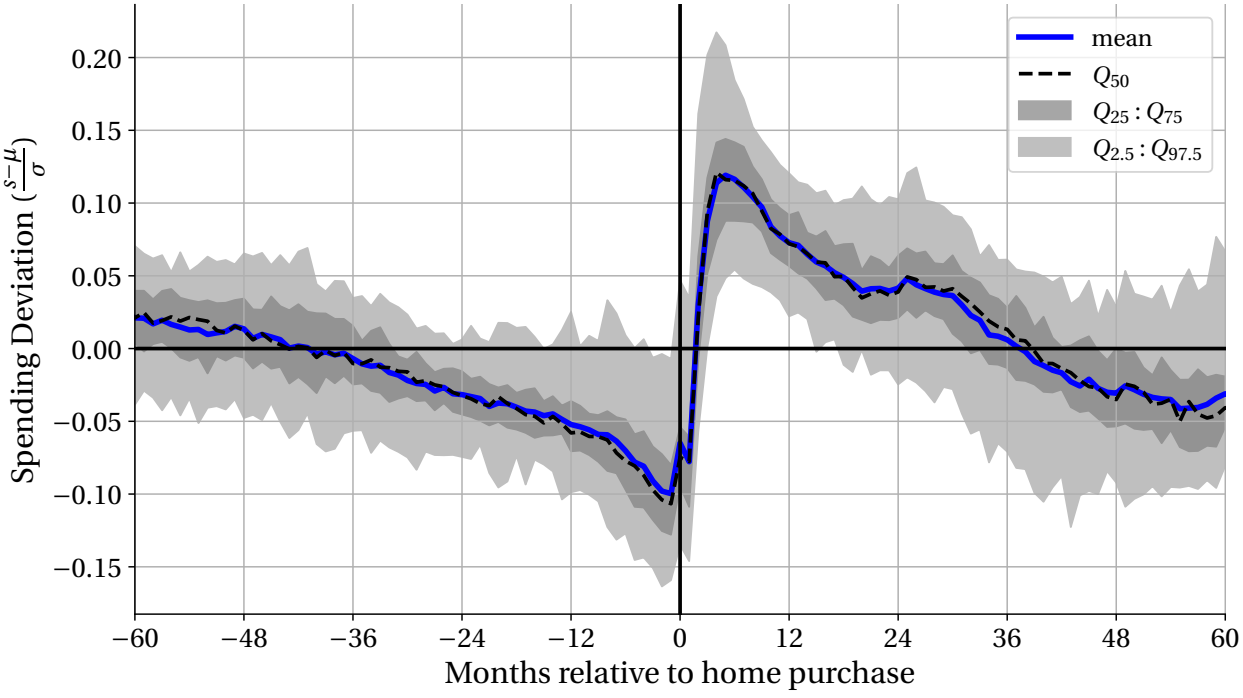

Figure 10: Spending Deviation (in S.D. terms) Around Home Purchases

- Steps:
  - Standardize
  - Removing common trend (mean)

Statistical View

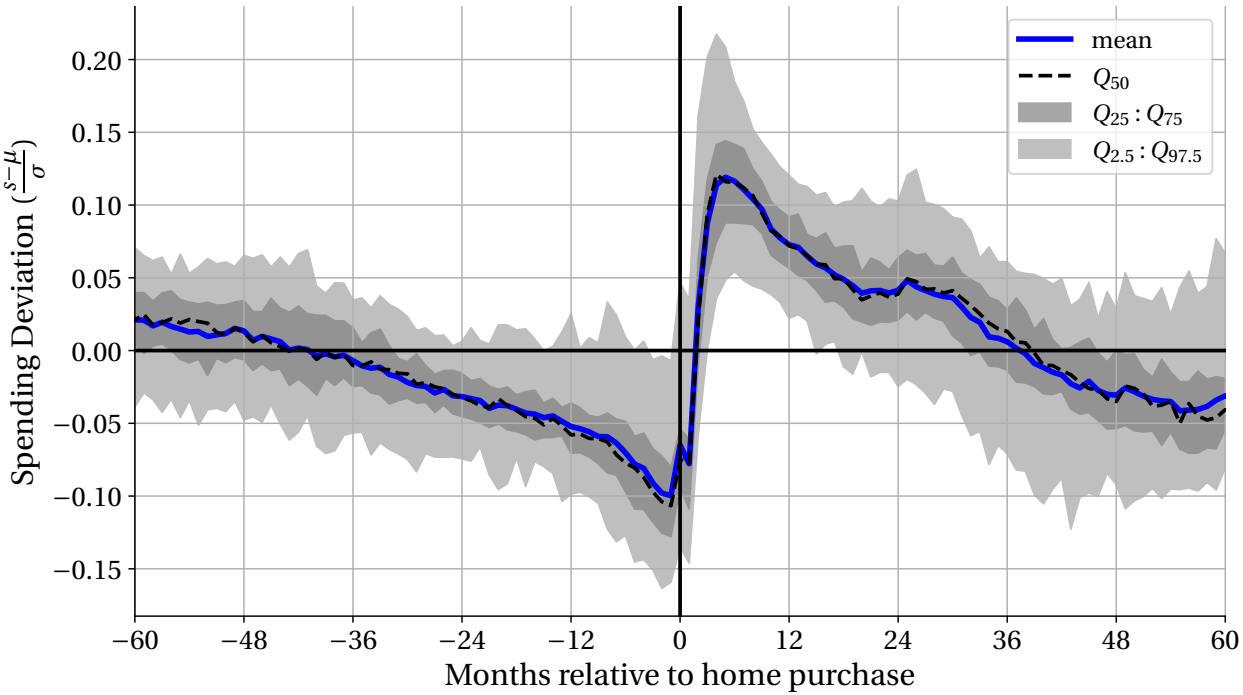

Figure 10: Spending Deviation (in S.D. terms) Around Home Purchases

- Steps:
  - Standardize
  - Removing common trend (mean)
  - Time shift to mortgage taken

Credit and Debt: Purpose & Goal Categories

שם השדה במאגר המותמם - עברית	רשימת ערכים
מטרת האשראי	עסק
מטרת האשראי	רכב
מטרת האשראי	לימודים
מטרת האשראי	נדל"ן ושיפוצים
מטרת האשראי	צריכה פרטית
מטרת האשראי	השקעה בשוק ההון
מטרת האשראי	כרטיס אשראי
מטרת האשראי	**ארגון חוב מחדש**
מטרת האשראי	אחר
מטרת האשראי	לא ידוע
מטרת האשראי	הלוואה לתאגיד או בשיתוף עם תאגיד
מטרת האשראי	חסר
מטרת ההלוואה	**מגורים: דירה ראשונה**
מטרת ההלוואה	**מגורים: דירה חלופית**
מטרת ההלוואה	**מטרת מגורים – אחר**
מטרת ההלוואה	**השקעה**
מטרת ההלוואה	**הלוואה לכל מטרה בשעבוד דירת מגורים**
מטרת ההלוואה	מיחזור כספי בנק אחר למטרת מגורים
מטרת ההלוואה	מיחזור כספי בנק אחר שניתן שלא למטרת מגורים
מטרת ההלוואה	מיחזור הלוואות מוכוונות
האם הנכס המשועבד בהלוואה נרכש במסגרת "דירה במחיר מופחת"	לא
האם הנכס המשועבד בהלוואה נרכש במסגרת "דירה במחיר מופחת"	כן

Home Purchase Channel (Benmelech et al. (2023))

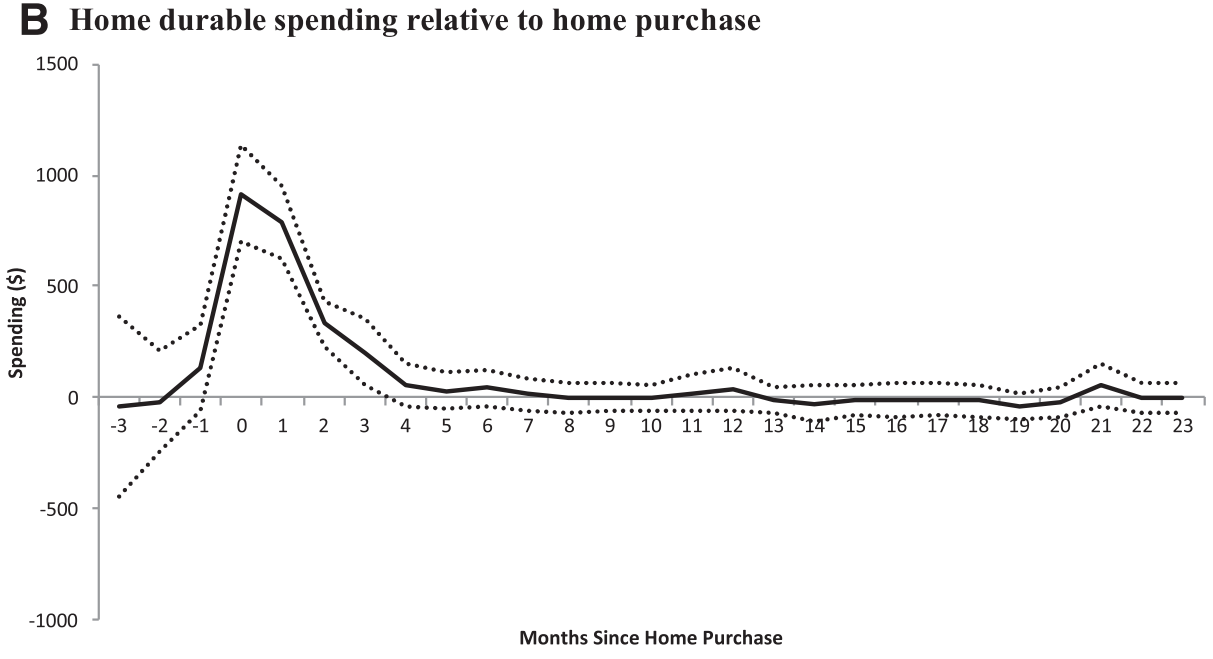

Figure 11: Minimal, if any, intertemporal substitution from the delay of prepurchase spending.

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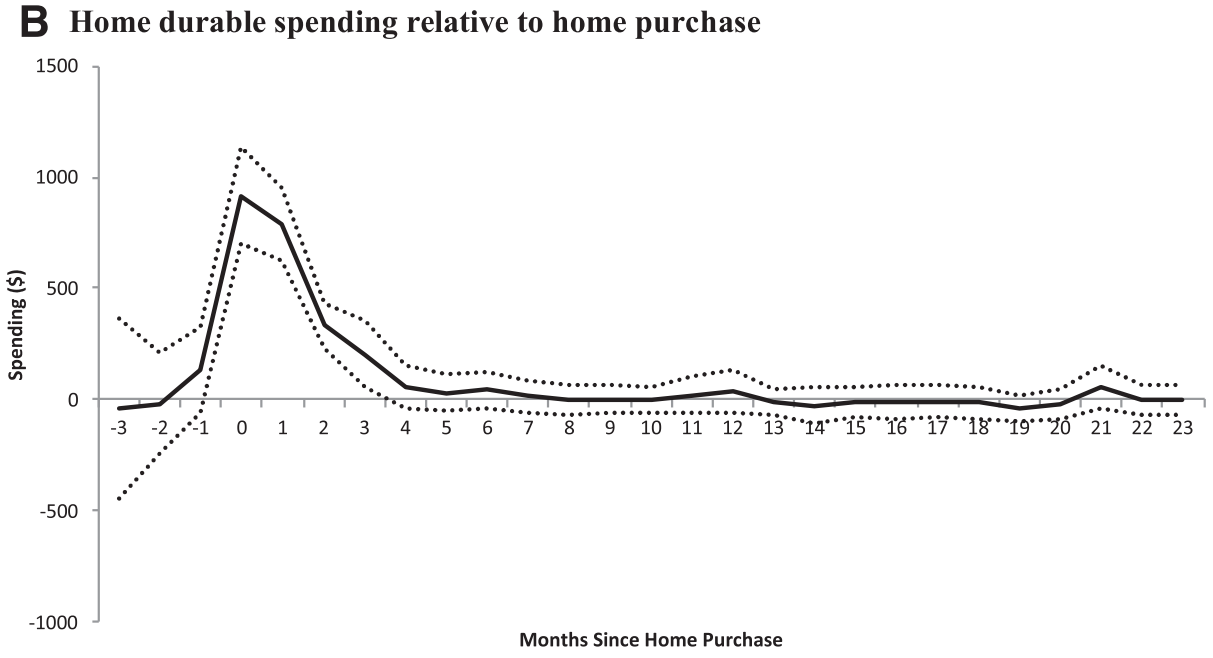

Figure 11: Minimal, if any, intertemporal substitution from the delay of prepurchase spending.

- After purchase, other spending remain unchanged or decrease modestly (reject unobserved shocks: wealth / income / credit / family)

Additional Estimation Challenges

- Rental payments are almost never made via credit card, raising the question of how to account for rental expenses after the transition to homeownership (If the transition does not involve a change in household size and if the transition does involve a change in household size)

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  - The basic assumption is that most of the rental expense is redirected toward mortgage payments. While not a one-to-one substitution, the majority of the expenditure is allocated to the mortgage—especially in the early stages of the loan, when the household transitions into ownership.
- Is the panel balanced? If not, this may introduce bias, particularly at the edges of the sample due to differences in composition.

Additional Estimation Challenges (cont.)

- Are there differences between high-LTV and low-LTV populations? What are the differences in terms of asset value (V)? Do highly leveraged households purchase larger or more expensive homes? Or conversely, do less leveraged households tend to buy more expensive properties?

Additional Estimation Challenges (cont.)

- Are there differences between high-LTV and low-LTV populations? What are the differences in terms of asset value (V)? Do highly leveraged households purchase larger or more expensive homes? Or conversely, do less leveraged households tend to buy more expensive properties?
  - Variance across LTV groups should be examined: test whether there are significant differences in the type and size of homes purchased across LTV categories to ensure valid comparisons.

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  - There appear to be persistent differences between these populations, including long-term differences in consumption levels.
  - It is important to verify that these are not mechanical artifacts and that the samples are representative.
- It is possible that living standards increase following home purchase.

Timing decision (and dynamic)

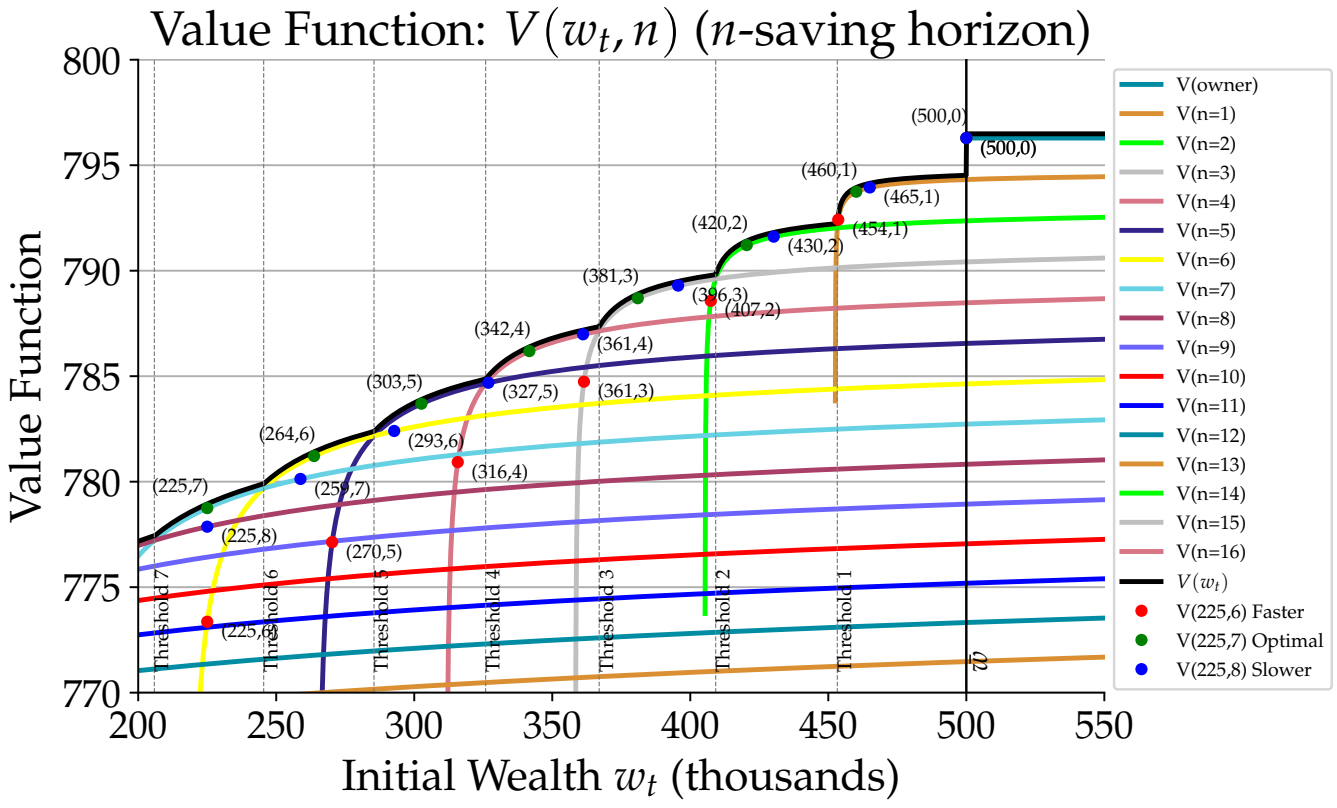

Figure 12: Value function and consumption decision

Consumption Decision

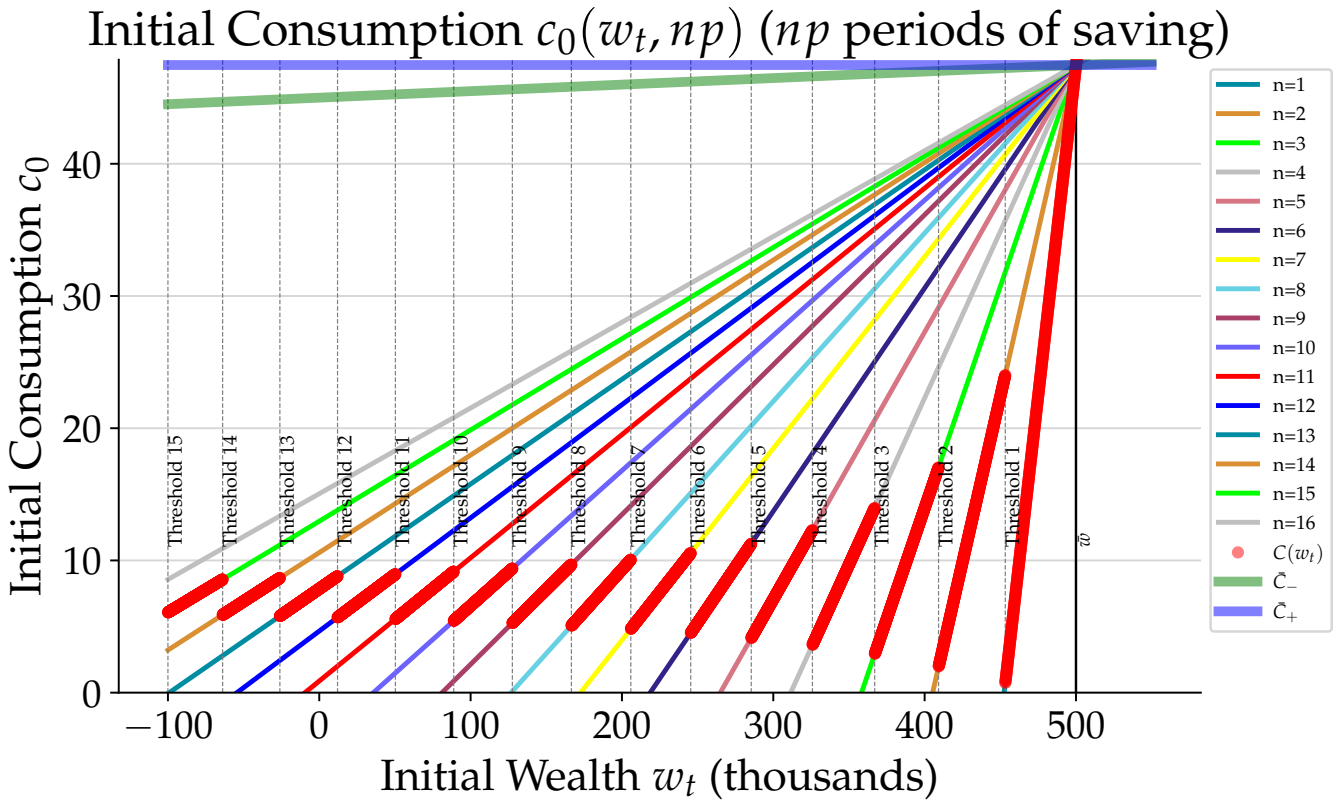

Figure 13: Consumption Decision

Household's Problem – Solution Simulation with Wealth Accumulation

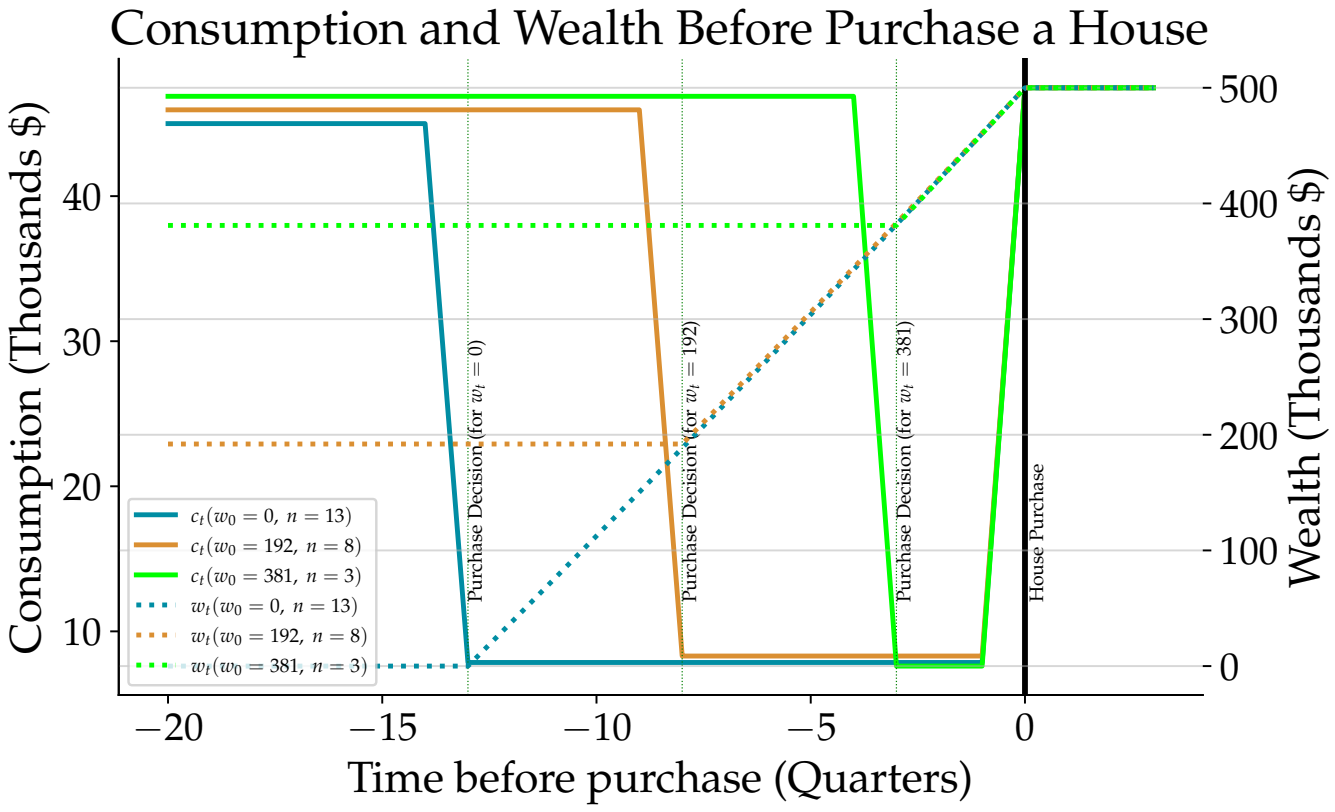

Figure 14: Consumption and Wealth before home purchase

Household's Problem – Daviation from the Optimal Consumption Path

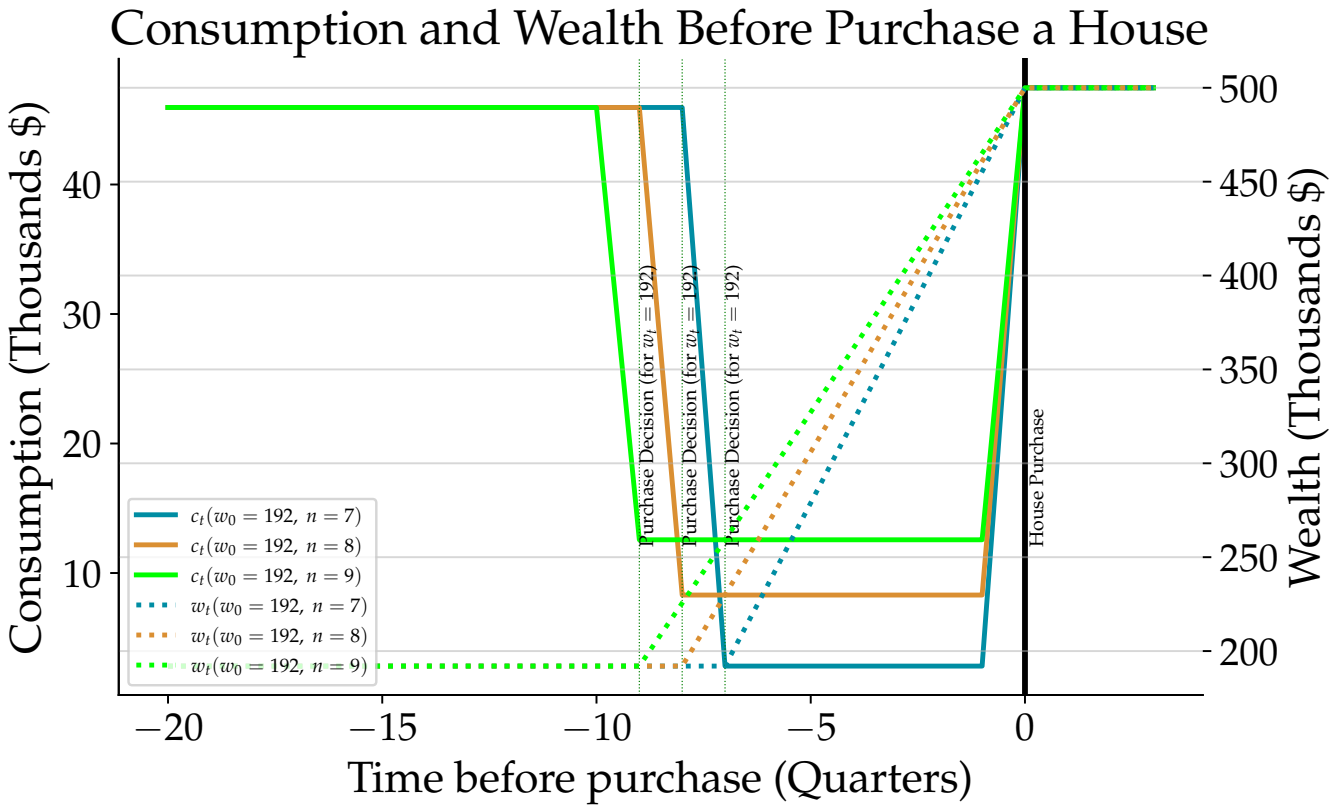

Figure 15: Consumption deviation from the optimal path

Costs of Owned Housing – in the CPI (BLS)

Expenditures related to home purchases and improvements – including mortgage interest, property taxes, real estate fees, most maintenance costs, and all improvement costs — are classified as investments or part of the cost of the capital good. Consequently, they are excluded from consumption measures such as the Consumer Price Index (CPI).

U.S. Bureau of Labor Statistics (LINK)

References

References

- Balke, Karlman and Kinnerud, "Down-payment requirements: Implications for portfolio choice and consumption", WP 2024

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