

# House Prices, Mortgage Debt and Labor Mobility

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# Negative Equity and Labor Outcomes

## Main Result:

1. Individuals with negative equity less likely to move in a year (geo)

**Heterogeneity:** the effect is stronger in liquidity-constrained borrowers and subprime individuals

2. Individuals with negative equity experience lower labor income growth and less likely to change jobs (labor-income)

## Heterogeneity:

- Liquidity-Constrained borrowers and longer tenure experience smaller income growth.
- Conditional on not moving (geo) individuals are more likely to change jobs

# Main Comments

1. Interpretation of the result and contribution
2. Validation of income and employment measure
3. Empirical strategy and identifying assumptions

# Comment 1: Interpretation of the Results and Contribution

## 1. **Housing Lock** (Financial constrains or expectations)

Inability to move constrains geographic distance of job search (Bernstein and Struyven 2016)

## 2. **Household Debt Overhang**

Negative equity reduces incentives of individuals to incurred effort (Bernstein 2016)

## 3. **Wage Bargaining**

Negative equity means companies have local monopsony power so wages fall (Cunningham and Reed 2013)

## Comment 1: Interpretation of the results

		Labor-Income	
		Yes	No
Geographical	Yes		
	No		

Negative equity → Less geo-mobility (housing lock, debt overhang)

Negative equity → Less wage growth / job change (housing lock, debt overhang, wage bargaining)

## Suggestions: Step 1, Average treatment effects

Negative equity → Less geo-mobility (housing lock, debt overhang)

Negative equity → Less wage growth (housing lock, debt overhang, wage bargaining)

### **Conditional on NO geographical mobility:**

→ less wage growth, consistent with debt overhang and wage bargaining

→ more job change (Brown and Matsa 2017 job search), inconsistent with debt overhang

### **Conditional on geographical mobility?**

**Contribution:** quantify how much of the total effect of negative equity on mobility is accounted for each channel

## Suggestions: Step 2, Refining Mechanisms

Then look at heterogeneity to disentangle mechanism:

- **Financial constrains:** stronger results for all of them (monotonicity of the effect)
- **Recourse status:** differential results for geo mobility
- **Delinquency:** stronger results (financial constrains) weaker results (strategic behavior)
- **Loan Modification Program:** no differential effect on wages (no debt overhang)

## Comment 2: Validation of Income and Employment Measure

Income and employment data represent a great opportunity, but it needs more description

### **If using “The Work Number” \***

- Employment records from over 75% of Fortune 500 and federal government.
- Basic employment information and detailed employer compensation data
- Payroll data directly from employers and is updated every payroll cycle

### **If using Equifax IXI Services "Income360"**

- More problematic because uses neighborhood imputed income

\* Source, equifax website



## Comment 2: Validation of Income and Employment Measure

Importance of how changes are coded. Potential measurement error on employment changes

### Addresses Reported

- 1 BARRETT RD  
HANOVER, NH  
03755
- 60 WADSWORTH ST  
APT 23C  
CAMBRIDGE, MA  
02142
- 0 MIT FCU  
CAMBRIDGE, MA  
02142

### Employer Reported

TUCK SCHOOL OF BUSINESS

DARTMOUTH COLLEGE

### Date Reported

Jan 6, 2016

Sep 8, 2014

## Suggestion: Income and Employment Measure

Make a bigger effort to show the representativeness of the sample.

### **1. Summary Statistics, for example:**

- Compare total wages with IRS income at the zipcode level
- BLS data on employment
- Compare random sample to whole sample

### **2. Describe number of employment changes and time between changes**

- Are changes coded properly in the data

### **3. Income changes and new credit lines**

- Are big income changes uncorrelated with new credit line ( rule out “promotion” correlated with new credit applications)

## Comments 3: Empirical Strategy and Identifying Assumption

### Regression

$$y_{izt} = \delta_i + \delta_{zt} + \delta_{ct} + \sum_k \beta_k \times 1_{\{LTV_k\}} + \Gamma X_{it} + \varepsilon_{izt}$$

Where  $LTV_{it} = LTV_0 \times \frac{(1 + \% \Delta Loan_{it})}{(1 + \% \Delta HP_{zt})}$

Identify Negative Equity based on the “predicted” LTV

- Assumes LTV at origination, LTV not CLTV, same mortgage type and maturity

## Comments 3: Identifying Assumption

$$LTV_{it} = LTV_0 \times \frac{(1 + \% \Delta Loan_{it})}{(1 + \% \Delta HP_{zt})}$$

Instrument by SLTV which takes the “expect” amortization of a loan

$$SLTV_{it} = LTV_0 \times \frac{(1 + \% \Delta SynthLoan_{it})}{(1 + \% \Delta HP_{zt})} \quad \% \Delta SynthLoan_{it} \frac{(1+r)^{t-c} - 1}{(1+r)^{360} - 1}$$

Identifying Assumption: Changes in “expect LTV” only affect mobility through realize LTV

## Suggestion: Identifying Assumption and Measurement Error

**A1: SLTV varies across the age of the loan, but does not depend in individual household characteristics.**

- Not true if measurement error (LTV, mortgage type, interest rates) correlated with time-varying household characteristics

*Use geographical variation at finer level to define LTV and SLTV.*

*Potentially simulated to understand potential biases*

*Explain the magnitude of the coefficients*

## Suggestion: Evidence of Geographical Variation

RateWatch Interest Rates at county level

30yr fixed rate mortgage (175k)

	n	mean	sd	min	median	max
2006	1,502	6.4	0.3	5.9	6.4	8.4
2007	1,444	6.4	0.2	5.8	6.3	8.1
2008	1,466	6.3	0.3	5.3	6.3	7.4
2009	1,506	5.1	0.2	4.7	5.1	7.0

## Suggestion: Identifying Assumption

**A1: SLTV varies across the age of the loan, but does not depend on individual household characteristics.**

- If no measurement error individual fixed effect helps

However, if individual invariant characteristics (LTV<sub>0</sub>, mortgage type) interacted with time-varying factor (house prices) this violates the exclusion restriction

→ High LTV individual are more sensitivity to local demand shocks

*Look at heterogeneity of the effect for sub-sample with real LTV<sub>0</sub> to assess bias*

## Suggestion: Identifying Assumption

**A2: After controlling for all high dimensional fixed effect SLTV only affect mobility through negative equity.**

All variation is driving by the timing of home purchases; however, decision to buy depends on expectations about future economics conditions

*Look at exogenous life-event driven moves.*

*Household composition (if household id), College (using student debt)*



### 1. Standard Errors

Variation is at the zipcode (house prices) or CZ level, currently at individual and monthly level

### 2. Geographical Level

CZ natural level of geo aggregation for the question (Autor et al. 2016)

# Other comments

## 3. Switchers

Changes in zipcodes. Example from CCP of a “switcher”, how is this account for in the data?

quarter	state	zipcode	census_block	census_tract
2001q1	MD	20716	1009	800511
2001q4	MD	20716	1009	800511
2002q1	MD	20716	1009	800511
2002q2	MD	20716	1009	800511
2002q3	MD	20716	1009	800511
2002q4	MD	20716	1009	800511
2003q1	MD	20716	1009	800511
2003q2	MD	20716	1009	800511
2003q3	MD	20716	1009	800511
2003q4	MD	20716	1009	800511
2004q1	MD	20716	1009	800511
2004q2	MD	20716	1009	800511
2004q3	MD	20716	1009	800511
2004q4	MD	20716	1009	800511
2005q1	MD	20716	1009	800511
2005q2	MD	20716	1009	800511
2005q3	MD	20716	1009	800511
2005q4	MD	21221	1004	451100
2006q1	MD	21221	1004	451100
2006q2	MD	21221	1004	451100
2006q3	MD	20716	1009	800511
2006q4	VA	23832	2000	101005
2007q1	VA	23832	2000	101005
2007q2	MD	20716	1009	800511
2007q3	NC	28227	1005	1907
2007q4	VA	23225	3003	71100
2008q1	VA	23225	3003	71100
2008q2	VA	23225	3003	71100
2008q3	VA	23113	2004	100915
2008q4	VA	23113	2004	100915
2009q1	VA	23113	2004	100915
2009q2	VA	23225	3003	71100
2009q3	VA	23294	1016	200305
2009q4	VA	23113	2004	100915
2010q1	MD	20716	1009	800511
2010q2	MD	20716	1009	800511
2010q3	MD	20716	1009	800511
2010q4	MD	20716	1009	800511
2011q1	MD	20716	1009	800511

Also not trivial amount of changes within a zipcode, *use census blocks*

## Conclusion

Very interesting paper that documents a key relationship between negative equity and labor outcomes

Need to do more to sharpen the contribution

- Clear exposition and direct evidence of different channels
- Describe and validate income data
- Refine empirical strategy

Looking forward to read the new version

Thank you!