Mortgage Composition and Risk Evaluation

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George Mason University Seminar
21 February 2017

Introduction

1. Mortgages in the CE Survey.
2. A conceptual analysis of risk.
3. Connecting mortgages to risk.
4. Risk abatement strategies.
5. Modeling risk with insurance proxies.

Terms and Definitions

- **Mortgage Composition:** The number of various mortgage instruments reported in the sample as a proportion of the total number of reported mortgages.
- **Mortgage Choice:** The decision to select one type of mortgage over another.
- **Risk Preference:** The type of behavior a consumer unit exhibits.
- **Risk Evaluation:** Understanding the sources of risk and how they apply to the various instruments.
- **FRM:** Fixed Rate Mortgage
- **ARM:** Adjustable Rate Mortgage

Mortgage Composition in CE

CE Variables

- Term
- Interest rate type (i.e. Fixed Rate or Non-Fixed Rate)

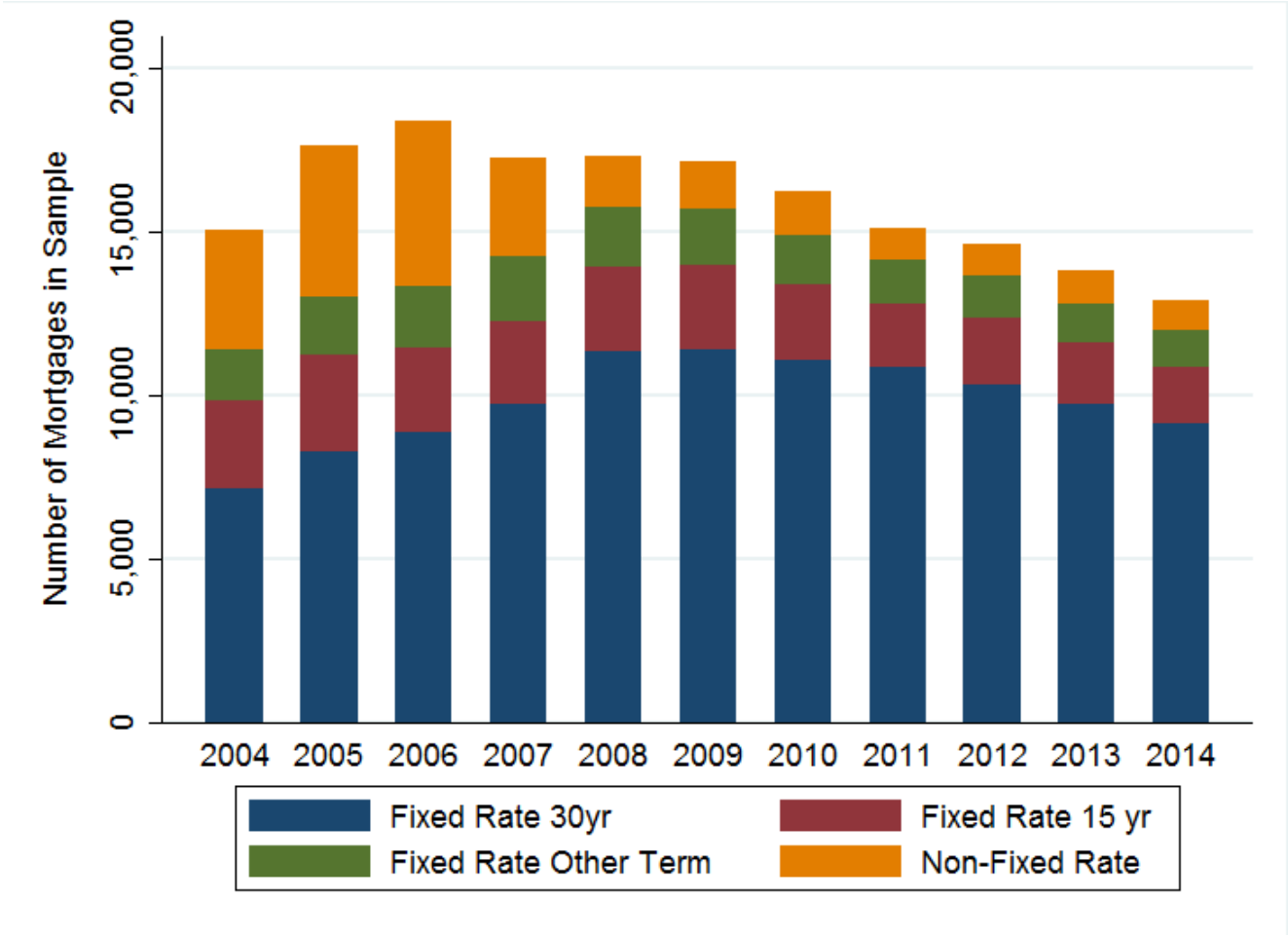
Mortgage Instruments

- 30yr FRM
- 15yr FRM
- Other term FRM
- Non-FRM

	30yr FRM	15yr FRM	Other Term FRM	Non-FRM
Number of Mortgages	107,991 (61.49)	25,717 (14.64)	17,221 (9.81)	24,685 (14.06)

Source: 2004-2014 CE Pooled Sample - Percentage of Sample in Parentheses

Mortgage Choice



Risk Preferences

- Risk Averse
  - Concave utility of wealth function
- Risk Neutral
  - Linear utility of wealth function
- Risk Loving
  - Convex utility of wealth function

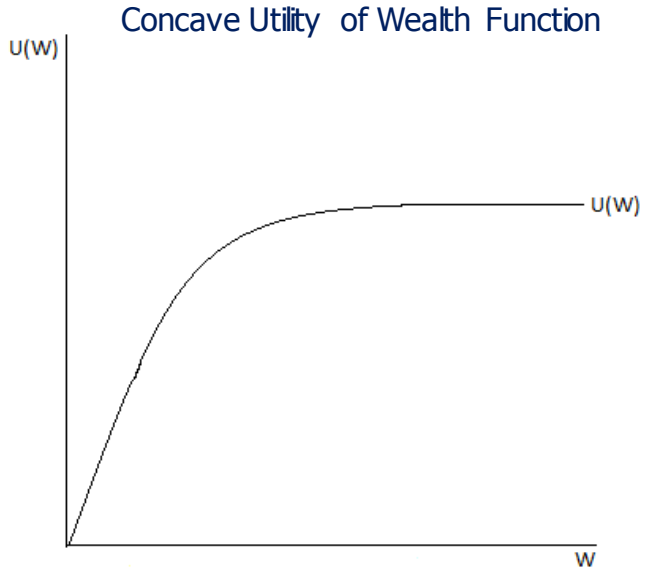
Risk Preferences

- There is good reason to believe that most consumer units will be risk averse. Friend and Blume (1957) and Latane (1959)
- Concavity, negative second derivative, along all values of w assumes absolute risk aversion (i.e. Well behaved utility functions).

$$\frac{\partial U^2}{\partial w^2} < 0$$

Risk Preferences

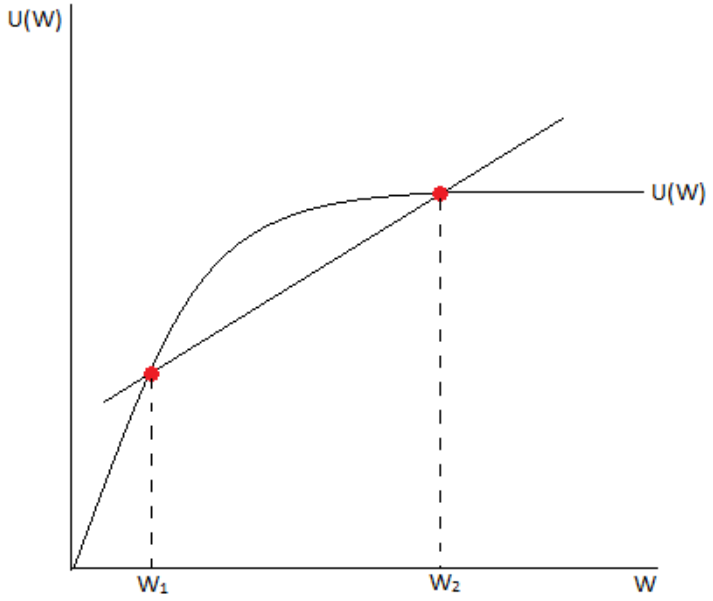
- Utility functions are not estimable.
- General shape inferred based on behavior of the consumer units.



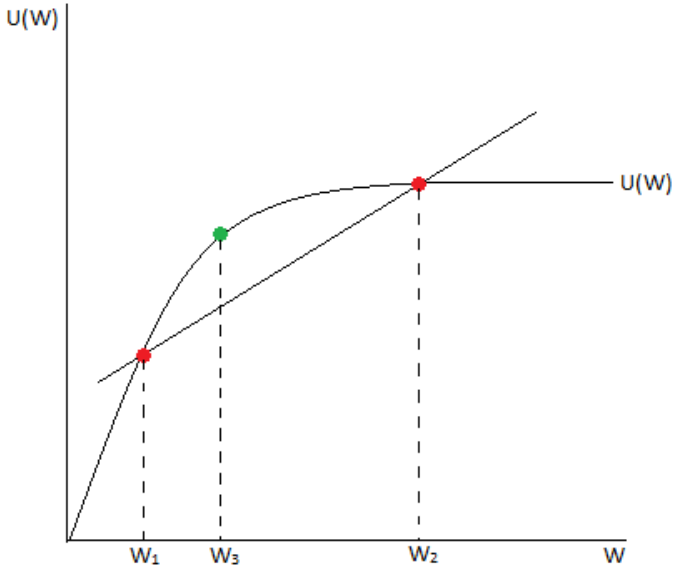
Risk Evaluation

- How do the mortgage instruments fit onto a utility of wealth function?
- Why would risk averse individuals ever select an ARM?

ARM



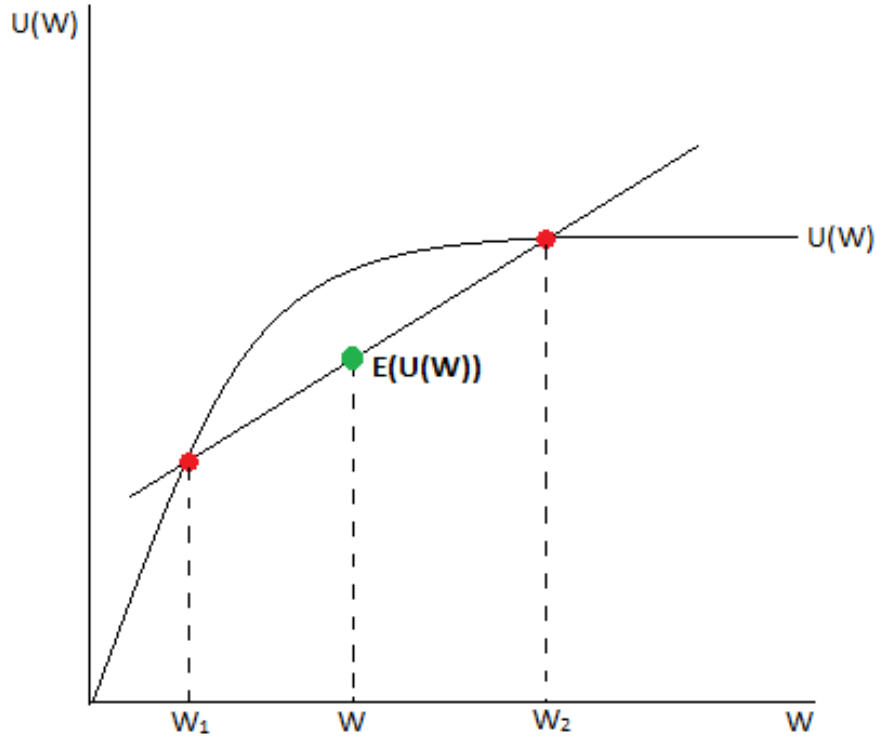
FRM vs. ARM



Risk Evaluation

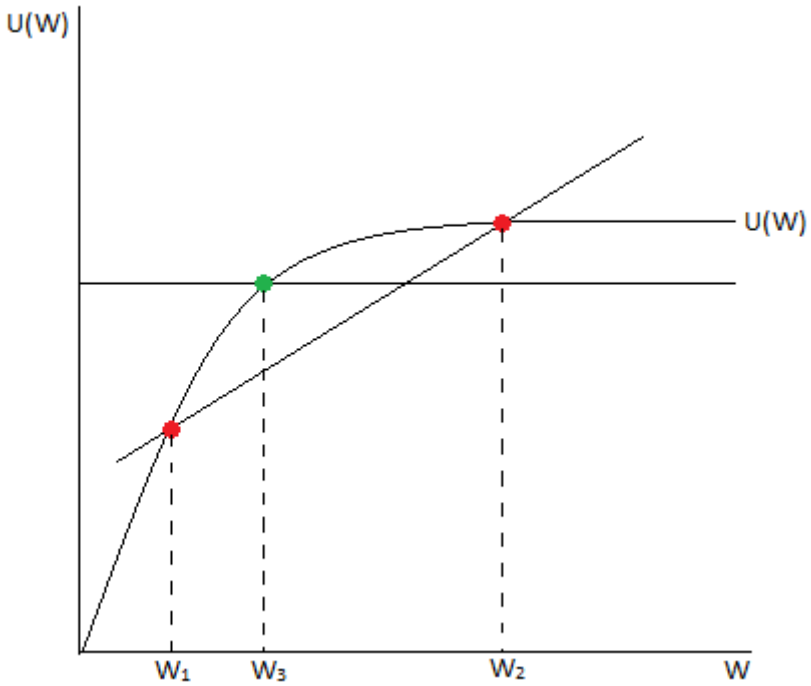
$$E\big(U(w)\big) = \alpha_1 U(w_1) + \alpha_2 U(w_2)$$

If $\alpha_1 = \alpha_2$



Risk Evaluation

- w_3 represents the guaranteed wealth from an FRM in this forward looking period.
- Utility Floor at U(w_3)

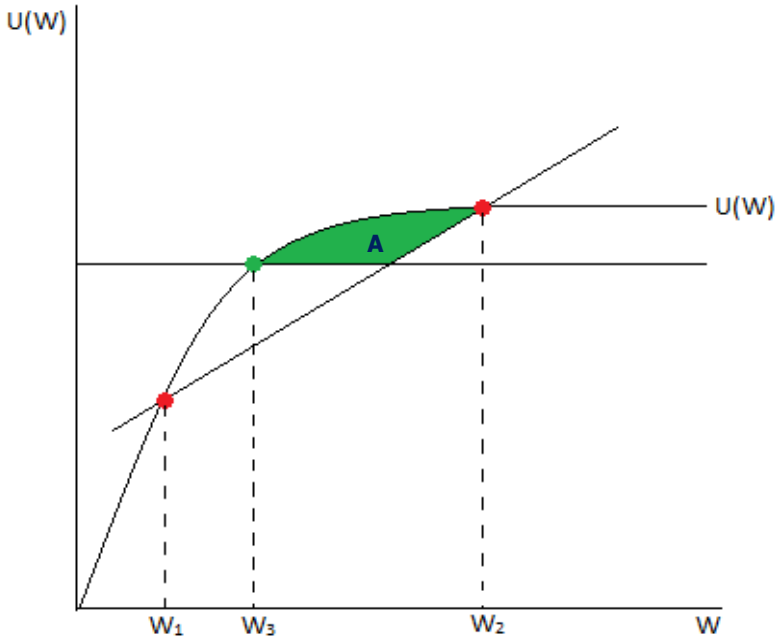


Risk Evaluation

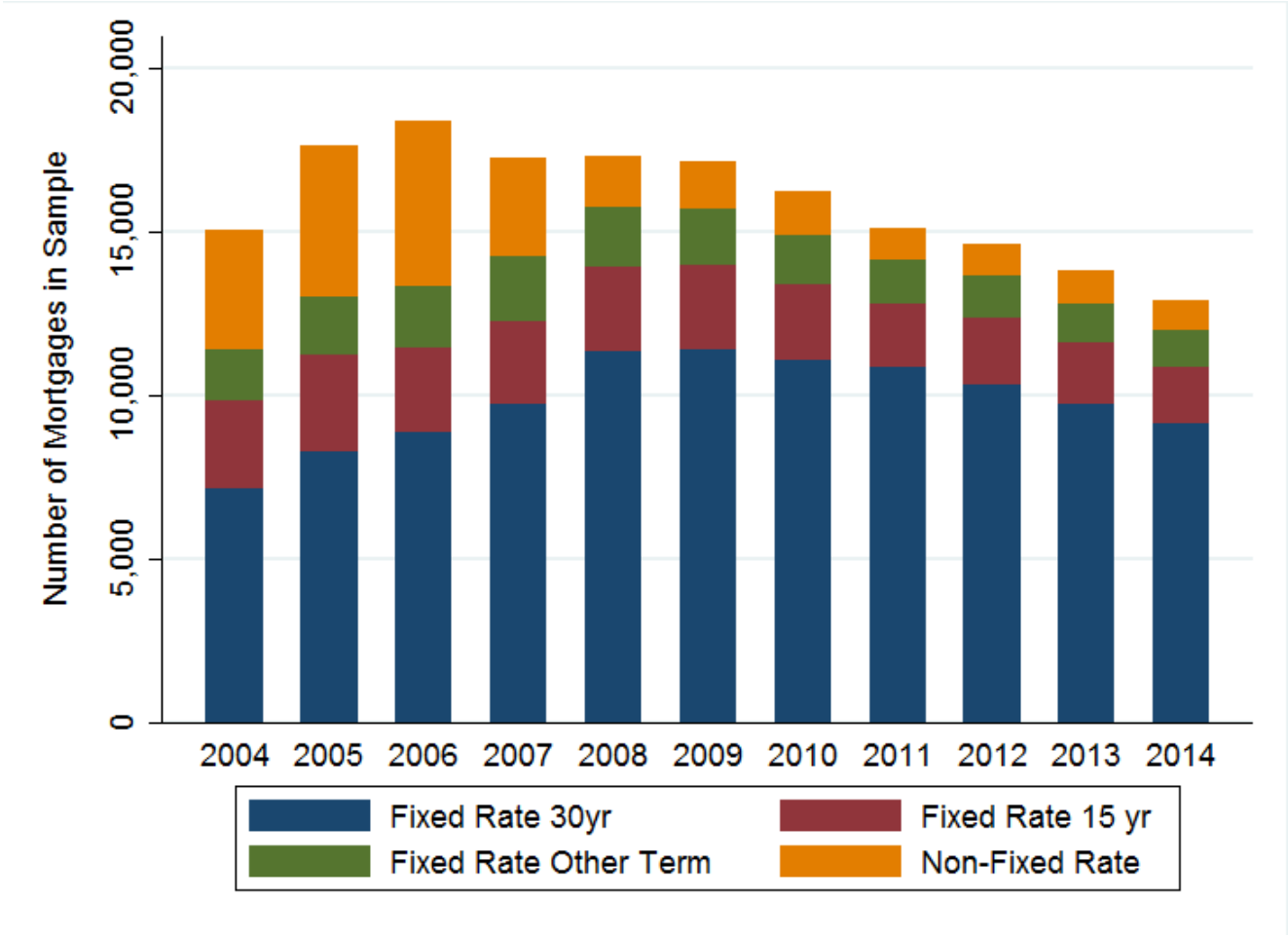
$$E\big(U(w)\big) = \alpha_1 U(w_1) + \alpha_2 U(w_2)$$

If $\alpha_1 << \alpha_2$ such that $E\big(U(w)\big) \epsilon$ **A** then

$$E\big(U(w)\big) > U\big(E(w)\big)$$

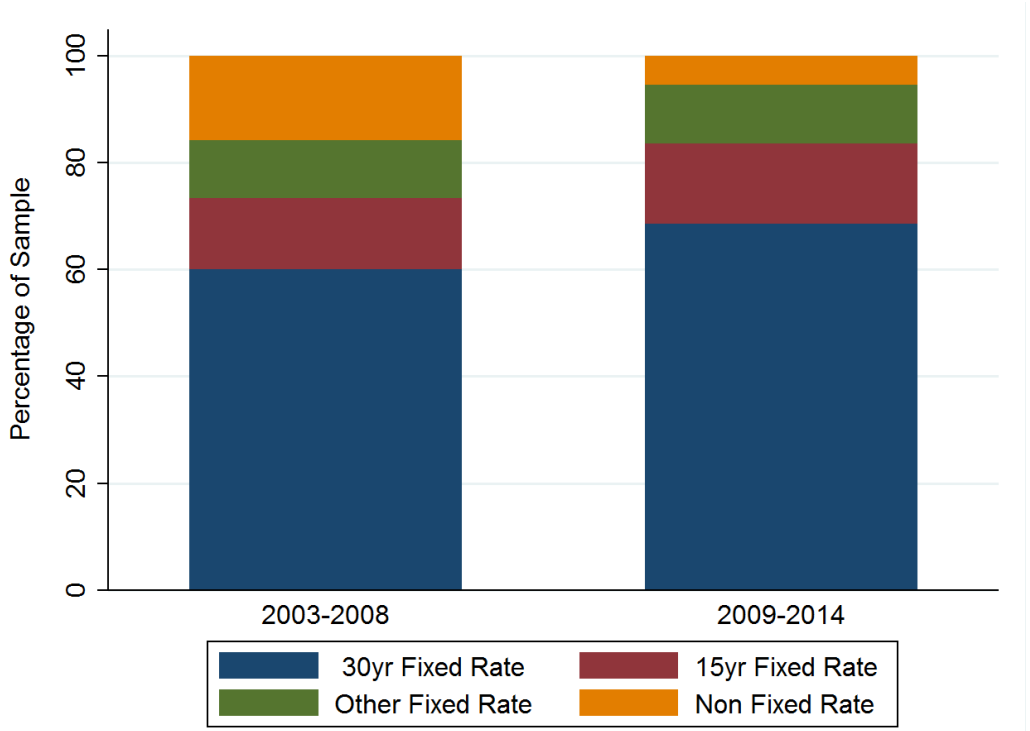


Mortgage Choice



Mortgage Choice

- 2008 is a large shock to the mortgage market.
  - Size of the market shrunk.
  - Non-Fixed Rate Mortgages diminished as a share of the market.
- How did consumer choice change before and after the shock?



Mortgage Choice

- Risk preferences changed in the sample.
  - Perhaps risk loving people became more risk averse.
  - Risk loving people chose not to buy houses anymore.
- $E\big(U(w)\big) = \alpha_1 U(w_1) + \alpha_2 U(w_2)$
  - $\alpha_1 << \alpha_2$ turned into $\alpha_1 >> \alpha_2$
  - Individuals moved from ARMs into FRMs.

Contact Information

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