



# **A systemic approach to home loans: Continuous workouts vs. fixed rate contracts** (Shiller et al., 2014)

Discussion

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1. Unexpected house price declines can lead to negative equity at household level.
2. Continuous Workout Mortgages (CWMs) are proposed as an alternative to more costly re-negotiations:
  - ▶ Fixed-rate home loans (FRMs) coupled with negative equity insurance.
  - ▶ Monthly payments  $R$  are linked to (local) house price index  $\xi_t$  and adjusted downward when  $\xi_t < \xi_0$ :

$$R(\xi_t) = \rho \min\{\xi_0, \xi_t\}$$

3. Utility-maximizing welfare criterion.
4. Calibration and simulation based on post-war data for the US.
5. For reasonable house price volatility levels and typical risk aversion, CWMs improve household welfare over the life of the mortgage contract.

# Comments and suggestions



1. Equilibrium allocation of risk
2. Welfare criterion
3. Continuous workout: details and alternative triggers
4. Systemic risk
5. Information costs
6. Empirical validation and relevance
7. Minor comments

# 1. Equilibrium allocation of risk

- ▶ Present-value equivalence between CWMs and FRMs:

$$\underbrace{Q_0^{CWM+}}_{\text{expected payments over the remaining life of the mortgage}} = \underbrace{Q_0}_{\text{initial balance}}$$

- ▶ Key (endogenous) **driving force of the model**: equilibrium payment flow:

$$\rho = f(r, \delta, T, \sigma, \dots)$$

- ▶ CWMs entail a risk transfer from the borrower to the lender.
- ▶ Risk-neutral mortgage originators? (Plausible. Alternatively: cheap hedging alternatives.)
- ▶ Essential modeling choice (see Figures 3 and 15).
- ▶ Suggested **extension**: risk-adjusted equivalent payment flows (generally higher  $\rho$ ).

# Intuition

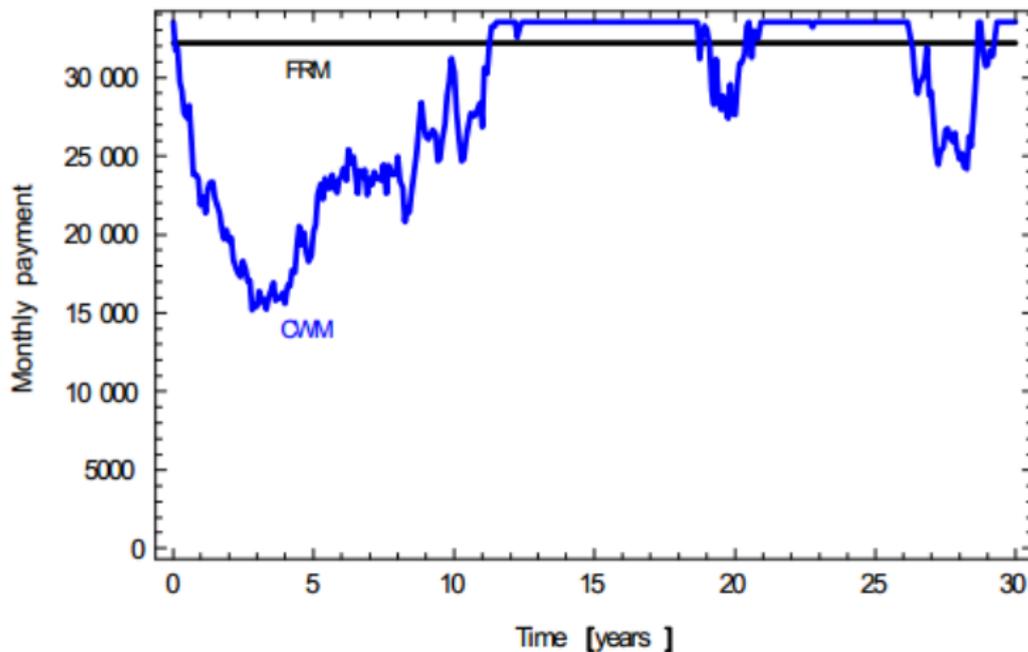


Figure 3: Monthly payments of a CWM are reduced in bad times.

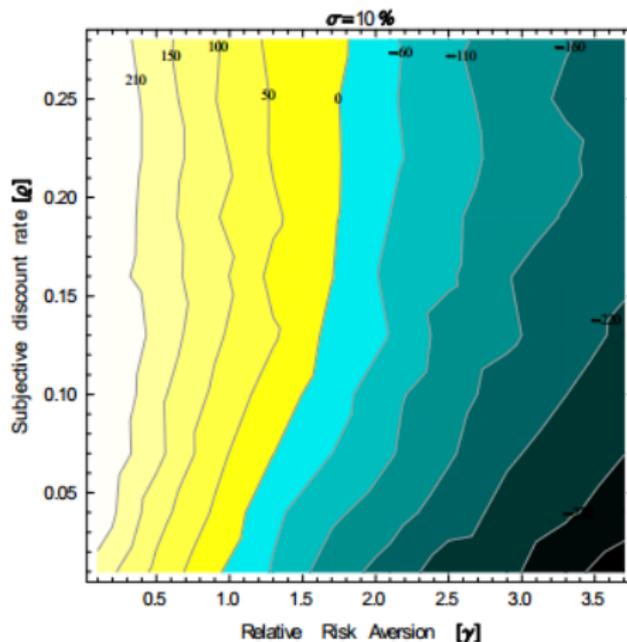


Figure 15: CWM v.s. FRM: The net dollar welfare gain for  $\sigma = 10\%$ . In yellow areas CWM is preferred. In cyan areas FRM is preferred.

## 2. Welfare criterion

### Household-level optimization



$$V_T = \max_m \int_0^T e^{-\delta(t)t} u(x(t) - y_m(t)) dt.$$

#### ▶ **Assumptions:**

- ▶ Constant wage  $x(t) = x$ .
- ▶ No risk of default:  $x > y_m(t), \forall t$ .

#### ▶ **Implications:**

- ▶ *Temporary* shocks to net equity have *no* effects on life-time utility  $V_T$ .
- ▶ In other words: house price changes do *not* affect  $V_T$ .
- ▶ Welfare benefits of CWMs accrue due to lower monthly payments during bad times.

#### ▶ **Suggestions:**

- ▶ Collateral constraints - endogenous de-leveraging during bad times!
- ▶ Income shocks - a true bankruptcy-averting role for CWMs:
  - ▶ Simple calibration: see Cocco, Gomes and Maenhout (2005).

# 3. Continuous workout

## Details of adjustment procedure

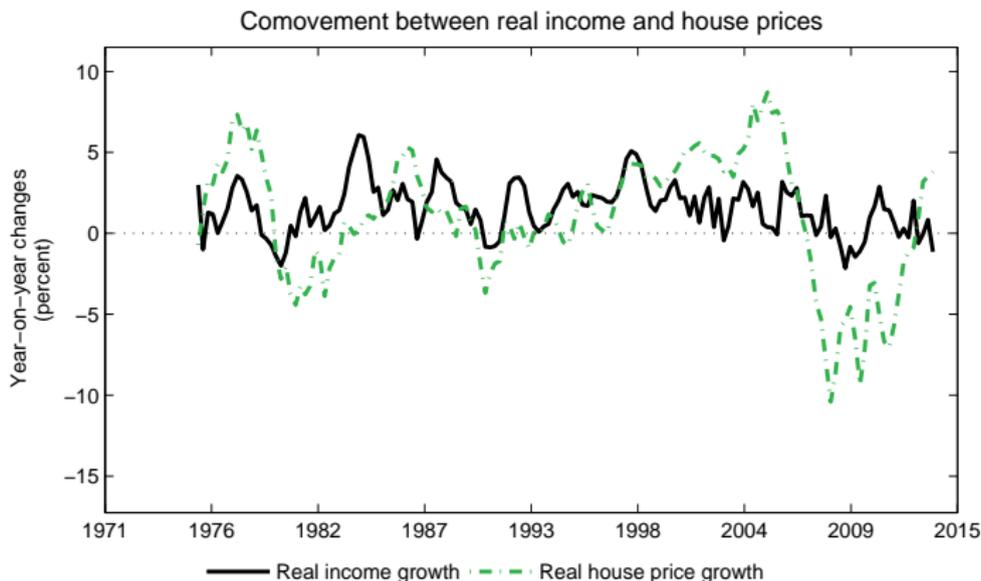


$$R(\xi_t) = \rho \min\{\xi_0, \xi_t\}$$

- ▶ House price index  $\xi_t$  affects net equity, a **stock** quantity.
- ▶  $R(\xi_t)$  is a monthly **flow**.
- ▶ **Suggested** alternative:
  - ▶ Income thresholds.
  - ▶ Individual-specific triggers of *temporarily* lower  $R$ .
- ▶ **Correlation between income and house price shocks**
  - ▶ CWMs are probably even more helpful in this case.

# 3. Continuous workout

## Alternative calibration



**Note:** The data sources are the Federal Housing Finance Agency (real house prices) and the Bureau of Economic Analysis (real private disposable income). The full-sample correlation of the quarterly time series of real year-on-year real growth rates of income and house prices is equal to 0.35.

# 3. Continuous workout

A bird's eye view



**Two related financial difficulties** at household-level:

- ▶ **Negative equity**
  - ▶ Solved by CWMs with house prices as reference variable.
  - ▶ But: does not affect utility in the model.
- ▶ **Short-term illiquidity**
  - ▶ Partially solved by CWMs with house prices as reference variable.
  - ▶ But: individual-specific triggers may improve welfare even more.

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Borrowers vs. lenders



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- ▶ Suggested **related question:** What are the welfare effects of coupling mortgage and insurance contracts?

- ▶ Natural benchmark: different products, sold by different institutions, which are subject to different regulatory requirements.

## 5. Information costs



- ▶ Alternative perspective:
  - ▶ Households face significant information acquisition and processing costs.
  - ▶ Infrequent adjustments of balance sheets.
  
- ▶ Suggested model extensions, based on empirical evidence:
  - ▶ **Default options:**  
Beshears, Choi, Laibson and Madrian (2009).
  - ▶ **Inattention and inertia:**  
Andersen, Campbell, Meisner-Nielsen and Ramadorai (2014).

# 6. Empirical validation and relevance

## Net equity



### ▶ **Survey of Consumer Finances**

- ▶ How would CWMs affect the share of households currently underwater?
- ▶ Difficult to adjust outstanding balances with local house price indexes.
- ▶ Important for any immediate policy implications.

### ▶ **Euro area household finance and consumption survey**

- ▶ Around 5% of households have zero or negative wealth.
- ▶ 50% of mortgages are adjustable-rate.
- ▶ Country-level heterogeneity in mortgage market structures and house price indexes.

### ▶ **Empirical** suggestions:

- ▶ Counter-factual simulations of payments implied by alternative mortgage contracts during the housing crisis.
- ▶ Model delivers testable implications about *insurance* product choice:
  - ▶ time-series: driven by the *perceived* volatility of house prices, and,
  - ▶ cross-section: driven by preference parameters.

- ▶ Paper addresses question of first-order importance in international mortgage markets.
- ▶ Very clear modeling framework and simulation results.
- ▶ Suggestions for possible future extensions:
  - ▶ The systemic effects are likely to materialize fully only in a general equilibrium framework.
  - ▶ Mixed results in terms of welfare likely driven by the combination of:
    - ▶ Life-time utility only affected by flow variables, and,
    - ▶ Continuous workout as a function of a stock quantity.
  - ▶ Collateral constraints, income shocks and default are likely to magnify the welfare-improving role of CWMs.
  - ▶ Empirical validation and relevance of alternative mortgage products.

## 7. Minor comments

For authors' consideration



- ▶ The discount rate is alternatively denoted by  $\delta$  and  $\rho$  (in main text vs. Figures 10 to 15)
- ▶ The discount rate does not seem to have a significant impact on welfare gains:
  - ▶ Interesting result in itself.
  - ▶ At the same time, varying  $\sigma$  instead of  $\rho$  in Figures 10 to 15 would clearly illustrate the significant non-linearities embedded in the model.
- ▶ The time variation of  $\sigma$  (illustrated in Figure 1) could be a useful input in order to assess the welfare benefits of alternative products at different stages of the housing market and business cycles.
- ▶ Empirical perspective on systemic effects: Likely aggregate trade-off between the need to avoid negative equity and the volatility of bank cash-flows.