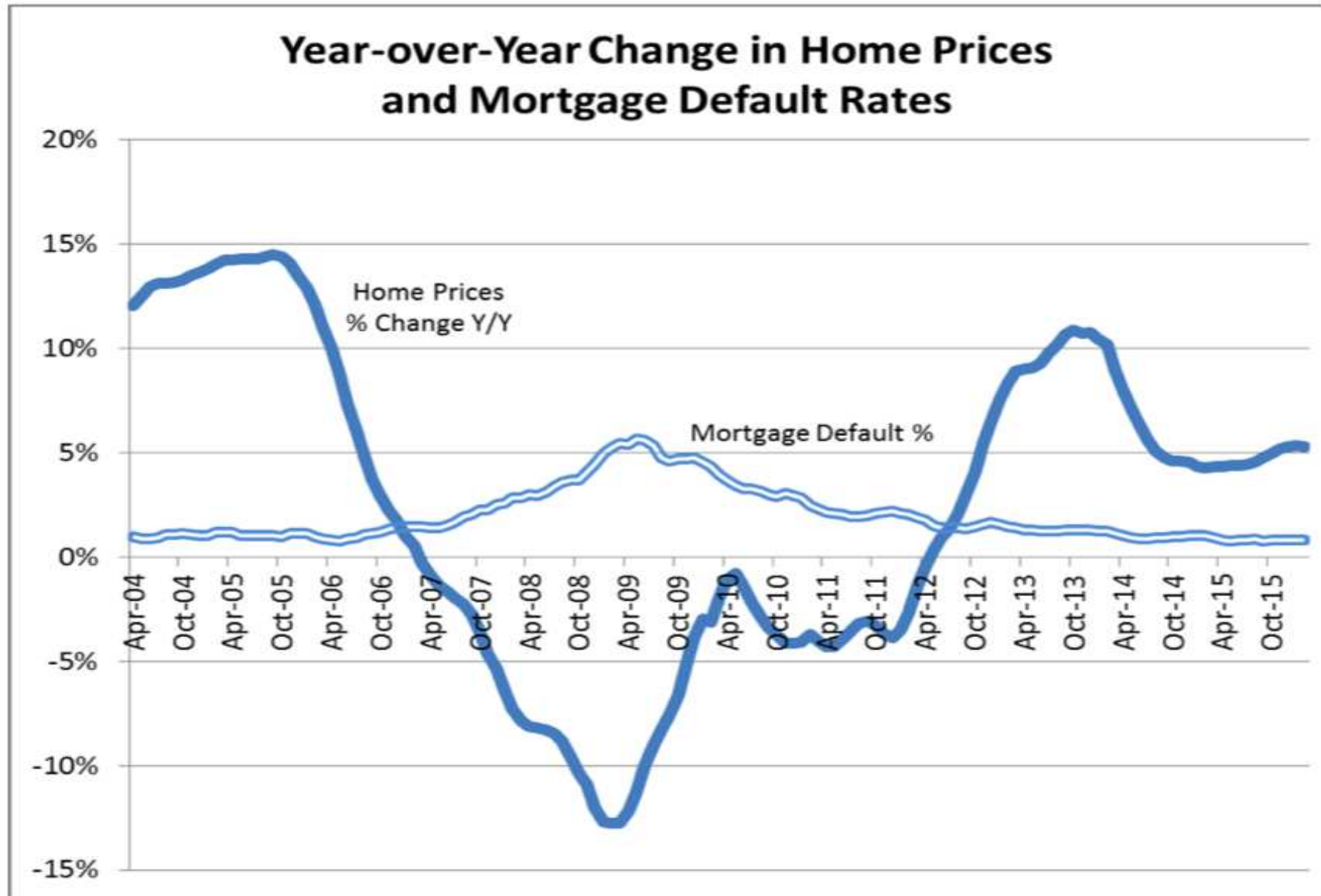


Understanding Mortgage Default

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The graph we'd like to understand



Source: S&P/Case-Shiller National Home Price Index; S&P/Experian Consumer Credit First Mortgage Default Index

Net worth and home equity

To understand the connection between **default and house prices**, start with the **concept of net worth**:

$$NET\ WORTH = ASSETS - LIABILITIES$$

For a household whose **only asset is a house** and **only liability is a mortgage**,

$$NET\ WORTH = House\ value - Mortgage\ balance = V - M.$$

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$V - M$ is commonly known as **“home equity.”**

Home equity and default

In most situations, **home equity is positive**, with house value V exceeding the mortgage balance M .

But suppose the **house value falls** for some reason (e.g., bursting of a housing bubble).

If V becomes less than M , **home equity is negative** and mortgage is said to be “**under water.**”

The household's **NET WORTH** is then negative.

Default raises net worth

But if the household **defaults on the mortgage**, then the debt **disappears**, reducing liabilities to zero.

The house is also seized by the bank (**foreclosure**), so that **assets are reduced to zero**.

NET WORTH is then zero instead of negative, so that **default increases NET WORTH**.

Ruthless default?

So a household **seeking to maximize net worth** should default when home equity is negative.

This behavior is called **“ruthless default.”**

But while **home equity matters** in determining default, empirical studies show that some household characteristics **matter too.**

Are we **missing something?**

Yes, **“default costs”** also matter in the default decision.

Default costs

Default costs, denoted C , include

- Moving costs
- Guilt
- Cost of an impaired credit rating

Incurring default costs reduces *NET WORTH*,

So *NET WORTH* with default is negative, equal to $-C$, not zero.

New default rule

Now default is **desirable when**

$$\begin{aligned} \text{NET WORTH without default} &= V - M \\ &< \text{NET WORTH with default} &= -C \end{aligned}$$

Home equity **must be more negative than $-C$** for default to be desirable.

Implies that lots of **underwater households won't default.**

For example, households with **top-notch credit ratings** have a lot to lose, and will resist default.

Trigger events

Trigger events are events such as **loss of a job**, that appear to **trigger default**.

But our theory says that job loss **should just lead to sale of the house** if home equity is positive.

If home equity is **negative**, however, **job loss can tip the scale** in favor of default.

Since the **household has to move anyway**, the moving-cost element of default costs disappears.

Default may then be the **right decision**.

Defaulters as victims?

This picture of default as a net-worth-maximizing strategy **differs from common depictions of defaulters as “victims.”**

Newspaper stories **refer sympathetically** to defaulters as “losing their houses,” when in fact default is **entirely voluntary**.

Mistaken view

Some **unsophisticated households** did take mortgages whose **payments spiked** after a few years, apparently precipitating default.

But if home equity had been positive, payment **unaffordability** **would simply lead the household to sell the house**, not to default on the mortgage.

Negative home equity is an **essential ingredient of default**.

Understanding defaults during the financial crisis

The sharp decline in house prices during the financial crisis **was the main driver of defaults.**

But **manipulation of our default rule** $V - M < -C$ gives further insight.

Makes use of the fact that the **mortgage balance** M equals the original house price V_0 minus the downpayment D .

So the **default rule becomes** $V - V_0 + D < -C$.

Understanding defaults during the financial crisis

Default rule can be **further rewritten** as

$$V - V_0 + D + C < 0$$

Three factors during financial crisis **helped to satisfy this condition**:

- **Big drop in V** (making $V - V_0$ strongly negative)

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- **Lots of subprime lending** (low C for many borrowers)
- **Easy mortgage terms**, with low downpayments (low D)

Created a **“perfect storm”** for mortgage default.

Conclusion

Presentation has argued that mortgage default is an optimizing choice.

Defaulters are not victims.

Framework helps us better understand the surge in defaults during the financial crisis.