Real Estate Investing ...

... making use of some of the data

Summary of data that are revealing ...

1. Median prices
2. Days inventory
3. Housing starts
4. Owner-equivalent rent
5. Affordability indexes (regional)
The Median and Average Prices for New Homes, U.S. all regions, 1963-2012

Even if not leveraged, this is a strong investment return, except for the tail end. If leveraged ...

5.22% compounded annual percentage growth rate (ln) (median) unleveraged!


... but city data matters more

http://www.jparsons.net/housingbubble/miami.html
National Days Inventory – 11/85 to 10/13
A condition that must return to normal before a recovery

Trend line is 12-month moving average
Average: 6.2%
Looking much better now!
I identified this as evidence of “bottom” in 2010 – half right.

Source: U.S. Census Bureau, Houses for Sale by Region and Month’s Supply at Current Sales Rate

Housing Starts – Western Region
Monthly SA Nov 85 – Aug 13
... and this is now improving with price stability, days inventory lower, and low mortgage rates, but still way below historical average (341).

... with 6-mo moving average.

Source: Department of Commerce, seasonally adjusted
Another Key Statistic to monitor: Owner-Equivalent Rent

This matters a great deal regionally and was brought to my attention by a Mudd alumnus, Singer Ma ‘11 seeking to buy a home in the Santa Cruz after graduation. He cited this statistic as high for his area and also made an estimate of his Price-to-Rent ratio of 35, which he felt was very high. He also gave me a link the a Kiplinger article that included the slide on the next page. How is the OER calculated?: See http://www.bls.gov/cpi/cpifacnewrent.pdf

More relevant at the local level, as Ma understood.


Important stat: The price-rent ratio

**Mudd Finance**

**Bubble Zone**

MARKETS AT A BOTTOM, AND THOSE THAT MAY FALL MORE

The price-rent ratio—a city’s median home price divided by median annual rent—is one sign of how stable home prices are likely to be. We have also included the average monthly mortgage payment (based on a 10% down payment and 5.3% interest rate for a 30-year, fixed-rate mortgage) and median apartment rent.

Thanks to Singer Ma, 2011

From Kiplinger Personal Finance, “Should you buy or rent?” by Pat Mertz Esswein, April 2010.

This is not normally published and must be calculated like Singer did it, taking median home price divided by median annual rent. Anything above 25 is stretching it, but seagull country is going to be high!!
The California Housing Affordability Index: First-Time Buyer

C.A.R.’s First-time Buyer Housing Affordability Index (FTB-HAI) measures the percentage of households that can afford to purchase an entry-level home in California. C.A.R. also reports first-time buyer indexes for regions and select counties within the state. The Index is the most fundamental measure of housing well-being for first-time buyers in the state. See California Association of Realtors, http://www.car.org/marketdata/data/ftbhai/

This calculation depends upon entry level price, 1-year ARM mortgage rates, and assumes a 40% income qualifying ratio.

You can’t have floating pyramids in real estate!!

Much of the up-scale $500K+ market is bought by people who use equity from their older $250K home to move up, and they in turn bought that home with equity from their starter home.

The US warning in 2005, the China warning in 2012.

Therefore, if this entry level becomes unaffordable for 80% of first-time home buyers, the entire structure is threatened!!
Memo slides about real estate finance: you are not held responsible for these!

**DWBH:** the *slides that remain* may help you understand more about the financing of real estate that led to the 2007 collapse. You are **not** responsible for knowing any of this and you will be asked nothing about this on the final exam.

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**Collateralized Debt Securities (CDSs)**

*pass-thru assets where the buyers get the cashflow*

- **Your $8K credit card balance**
- **Your $30K student loan**
- **Your $35K auto loan**

Private lender lends $100M in consumer loans*, but typically of same class, rather than mixed as shown here.

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**The CDS**

... and sells the pool to a bank or other large lender who may aggregate these into even larger pools (say $1B)

- **Investors**

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*in many cases these large lenders do not resell the loans so the second step is skipped.

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Unlike the CDO, the institutional investors invest **directly** in the CDS and are (sometimes) given the direct cashflow, which is variable.
Collateralized Mortgage Obligations

- Many (most?) private lenders market a mix of loans, sometimes initially funding them with ABCP and similar short-term debt instruments, often secured with syndicated bank lines of credit.
- The loans are eventually (in a few months) packaged into CMOs with the intention of reselling them to longer term investors.
- "Conforming" loans (with balances below $417,000, raised to $729,500 in 2008, and of high quality) can be sold to government-sponsored mortgage pools Fannie Mae and Freddie Mac.
- Non-conforming loans must be sold to large-scale private investors.
- Most of the non-conforming CMOs are split into "tranches" and sold as pieces (see later slide for explanation)
- Credit derivatives exist that allow holders of the non-conforming CMOs to insure against default risk (see later slide for explanation).
- Non-conforming CMO packages, especially for Subprime loans, became the problem in 2007. ABCP dried up for them and they couldn't be sold.

Case 1: An actual CMO with sub-prime exposure

Go to http://www.secinfo.com/dqTm6.uT3.htm and peruse the individual mortgages in this portfolio.

Sources: This loan is one of the constituents of ABX Index HE-A-07-2 maintained in www.markit.com.
Some information from SEC various filings.

Note: $380M (18%) of these loans were delinquent as of Sep 25, 2007.
About the previous slide

- The 20 Distribution Certificates (Tranches) break down the loan portfolio into ratings (from AAA to BBB-), which in turn depend upon loan characteristics in that tranche, fixed versus variable, 1st vs. 2nd trust deeds, FICO scores (?) and so forth.
- About 20% of these loans were interest-only for 5 or 10 years.
- Average FICO score was 618!!
- Weighted LTV was 87%
- Average loan value was $213,000 (a lot of second trust deeds)
- The loans were originated by Argent Mortgage Company
  - One of the largest sub-prime lenders in the U.S.
  - In July 07, State of Florida charges five Argent lenders with racketeering: see http://www.fdle.state.fl.us/Press_Releases/20070719_Racketeering_Gage.html
- If curious about more detail, see the (huge) prospectus at http://www.secinfo.com/dqTm6.urj.htm

The role of Tranches in CMOs (and CDOs)

CDOs can be divided entirely into segments, called *tranches* in the literature but typically called *pass-through certificates* in the prospectuses that define them. The tranches are conduits for the cashflow generated by the CDO (from the mortgage pool in a CMO or credit card pool in a CDO) and they have rights to that cashflow as defined by the prospectus. Their value, although set by the market, should theoretically approximate the *discounted present value of the estimated cashflow* associated with the tranche.

These pass-through certificates are often classified as super, senior, super senior, and mezzanine certificates, which will be explained in a later slide.

These tranche arrangements are made to segment and allocate risk in the portfolio. They are very complicated derivatives and there is no limit to creative designs for their structure.

They are best learned by example, so let's look at a few.
CMO pass-thru certificate (tranche) structure (simplified)

Senior (or super senior): any additional default loss, rate AAA

Mezzanine 5: 5th 2% default losses, rated AA
Mezzanine 4: 4th 2% default losses, rated A
Mezzanine 3: 3rd 2% default losses, rated BB
Mezzanine 2: 2nd 2% default losses, rated B
Mezzanine 1: 1st 2% default losses, rated CCC

10,000 mortgages, $2 billion notional value.

Default loss is absorbed sequentially by the mezzanine tranches, insulating the larger senior tranche, allowing it to earn an AAA rating, even if a large percentage of the portfolio is subprime.

The intent was to sell off the mezzanines, which seldom happened.

Tranches typically had projected yields based on LIBOR + (see WaMu example).

Default losses on some of these hit 25%+

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An actual WaMu tranche provision doc ... this series failed massively

Modern-day equivalent in China are the shadow-banking Wealth Management Products, see 12/3 twitter post.
CMO tranches and "mark to market"

CMO and CDO tranches can get very complicated. Not only are they typically divided according to risk classification, as shown on the earlier slide labeled Credit Risk Tranches, but also can be divided into "principal only" and "interest only" tranches, and also, effectively, restricted to time periods, as shown on the later slide labeled Duration Tranches.

Although tranche values are determined by the market, they will approximate the present discounted value of the estimated cashflow streams of the tranche. If loan defaults are higher than first estimated for the tranche, their value must decline must the estimated cashflow stream declines.

When the value of the CMO or CMO tranches decline because of rising default rates, publicly traded companies must "mark to market" (revalue) these securities and announce that. That became the economy-killing problem in 2007 and 2008. The disappearance of Countrywide, Bear-Sterns, Lehman Brothers, Washington Mutual, etc. had this as the root cause.