

## Americas: Specialty Finance: Mortgage Finance

### Californian home prices are over-valued by 35-40%

#### House prices are significantly over-valued in California

Our house price model indicates that Californian homes are 35-40% above the price range implied by current and forecast economic conditions (compared to 13-14% over-valuation nationally). As of August the median house price in California was \$589K, but economic conditions support prices between \$350-380K; material price declines are likely, in our view.

From 1985 to 2003, 82% of quarterly variation in the OFHEO index for Californian home prices could be explained by two factors (state-level disposable income and interest rates); but this relationship broke down in 2004. We believe that sales of "affordability products" (e.g., subprime, option ARMs) – which spiked in 2004 – drove Californian home prices above levels supported by economic conditions; now that the secondary market for these products has evaporated, we expect home prices to return to normalized levels (as prices fall and disposable incomes grow).

#### Countrywide and WaMu have high exposure to California

Countrywide and WaMu are disproportionately exposed to Californian housing risk; in contrast, Fannie Mae and Freddie Mac are under-exposed. We estimate that California represents 25% of the U.S. mortgage market. This compares with our estimate of the proportion of mortgage portfolios backed by homes in California held by Countrywide and WaMu (45-50% each) versus Fannie and Freddie (15% each). Limited GSE exposure is due to a conforming loan limit below the median house price in California.

#### Californian home prices on the cusp of an abyss?

House prices in California have proven surprisingly resilient (e.g., up 2% year-on-year last August), given the severe curtailment of credit availability and rising unemployment. However, we believe that a downturn is imminent, with sales volumes down 52% from the peak (in January 2005) and inventory (11.8 months) up 100% since last year.

#### House price depreciation and credit deterioration go hand-in-hand

We anticipate residential mortgage credit deterioration to follow house price declines in California. Presently, credit quality (in absolute terms) is better in California versus the national average, but the rate of deterioration is much worse. For instance, in 2Q07 delinquency rates for prime ARMs and subprime ARMs rose 92% and 73% year-on-year respectively in California, versus 53% and 38% nationally.

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#### OUR CALIFORNIAN HOUSE PRICE MODEL

1. From 1985 to 2003, 82% of quarterly variation in the OFHEO index of Californian home prices could be explained by only two economic factors: state-level disposable income and interest rates.
2. This relationship broke down in 2004; sales of "affordability products" (e.g., subprime, option ARMs, home equity loans), which spiked in 2004, drove Californian home prices well-above levels supported by economic conditions, in our view.
3. Now that the secondary market for these affordability products has all but disappeared, we expect home prices to return to normalized levels (i.e. price levels implied by current and forecast disposable income in California as well as U.S. ten-year treasury yields); this implies a 35-40% fall.

#### RELATED RESEARCH

WM (Neutral): "3Q07: A decidedly pessimistic outlook for mortgage credit trends", published October 18, 2007.

CFC (Sell): "Anticipating significant write-downs in 3Q2007", published October 16, 2007.

"Chaos in context: assessing proportionality and adjusting targets", published August 21, 2007.

CFC (Sell): "Californian mortgage trends present a risk for Countrywide", published April 20, 2007.

CFC (Sell): "Legislative initiatives for the mortgage predicament look inevitable", published March 26, 2007.

"Deteriorating subprime fundamentals as a regulatory catalyst", published February 9, 2007.

CFC (Sell): "Credit deteriorating, non-prime gain on sale margins unsustainable", published January 31, 2007.

"A two-stage hangover for mortgage stocks", published November 16, 2007.

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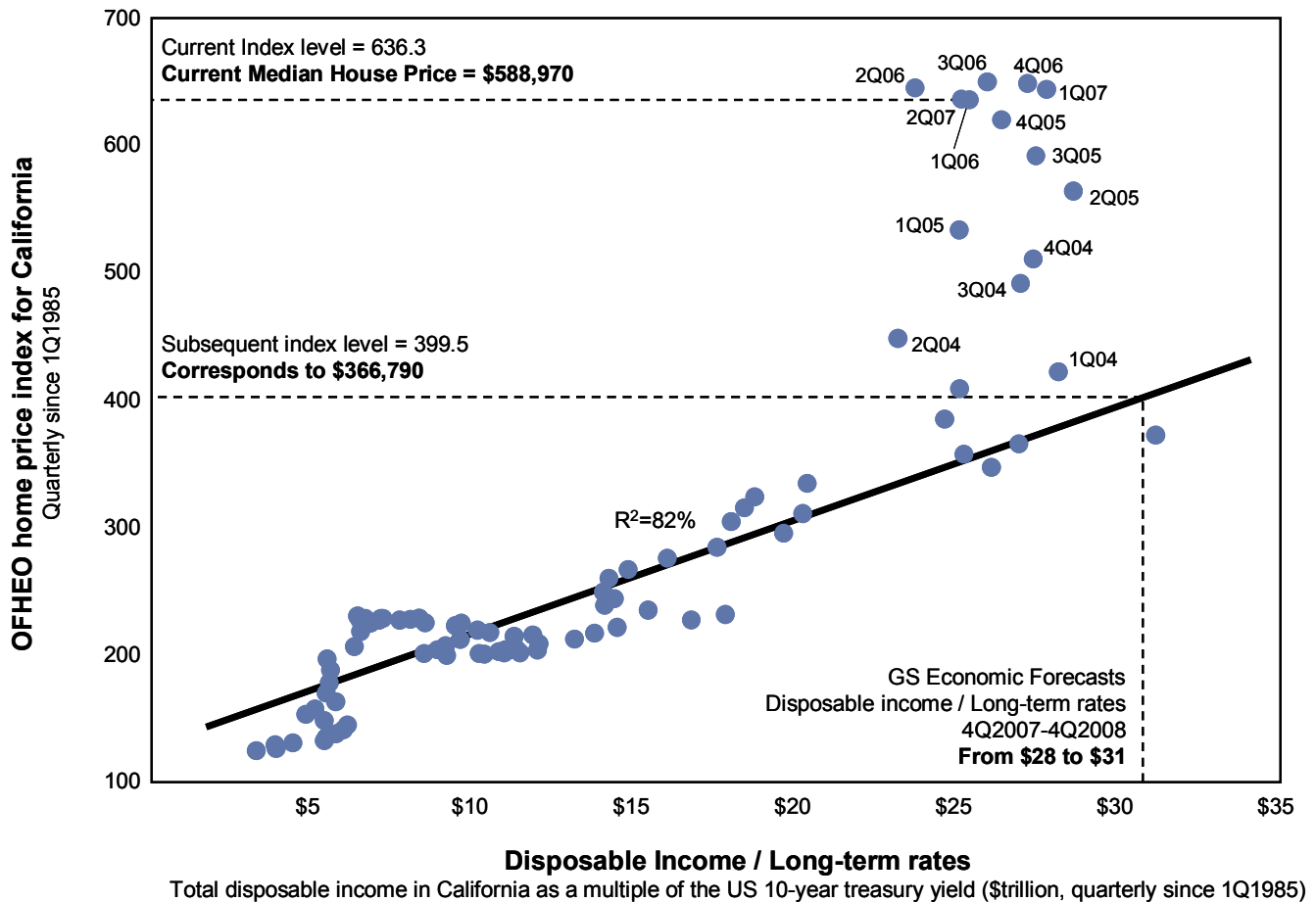
# Californian house prices are not supported by economic conditions

## 1. Our Californian house price model

From 1985 to 2003, 82% of quarterly variation in the OFHEO index of Californian home prices could be explained by only two economic factors: disposable income (for the state of California) and interest rates (U.S. ten-year treasury yield); see Exhibit 1.

### Exhibit 1: House prices in California are 35%-40% over-valued, relative to forecast economic conditions

Our hitherto highly-predictive model broke in 2004, when sales of “affordability products” (e.g., subprime, option ARMs, home equity) spiked as a proportion of total mortgage originations.



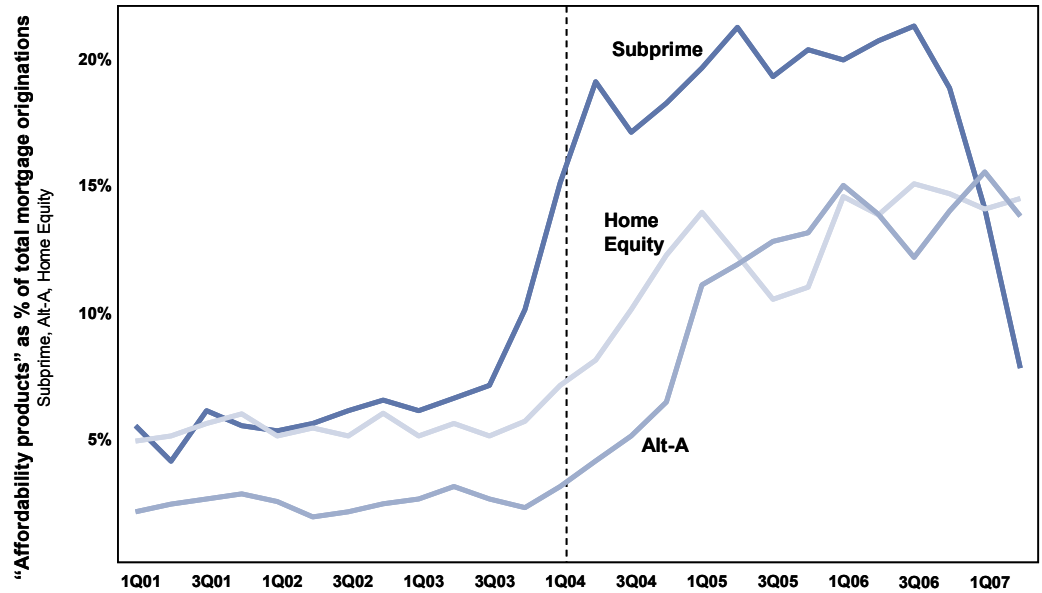
Source: OFHEO, FactSet, Goldman Sachs Economic forecasts, Goldman Sachs Research estimates.

## 2. What happened in 2004?

The relationship between Californian house prices and disposable income as a multiple of long rates broke down in 2004; we believe that aggressive sales of “affordability products” (e.g., subprime, option ARMs, home equity loans), which spiked in 2004 (see Exhibit 2), drove Californian home prices well-above levels supported by economic conditions.

**Exhibit 2: What happened in 2004?**

Sales of “affordability products” – subprime, Alt A, home equity loans – as a proportion of total mortgage originations spiked at the start of 2004.



Source: Inside Mortgage Finance.

**3. Home prices in California are 35-40% over-valued**

Now that the secondary market for these affordability products has all but evaporated, we expect home prices in California to return to normalized levels (i.e. levels implied by current and forecast disposable income in California as well as U.S. ten-year treasury yields); this implies a 35-40% fall.

As of last August the median house price in California was \$589K, but economic conditions support prices between \$350-380K (see Exhibit 1); material price declines are likely, in our view.

While our model is helpful in estimating the magnitude of house price correction due for the state of California, forecasting the timing of such a correction is trickier; the typical response of the average Californian home owner to the prospect of falling house prices is to not sell. Therefore, a correction of 35-40% could take many years to play out.

**Californian mortgage credit quality is deteriorating quickly**

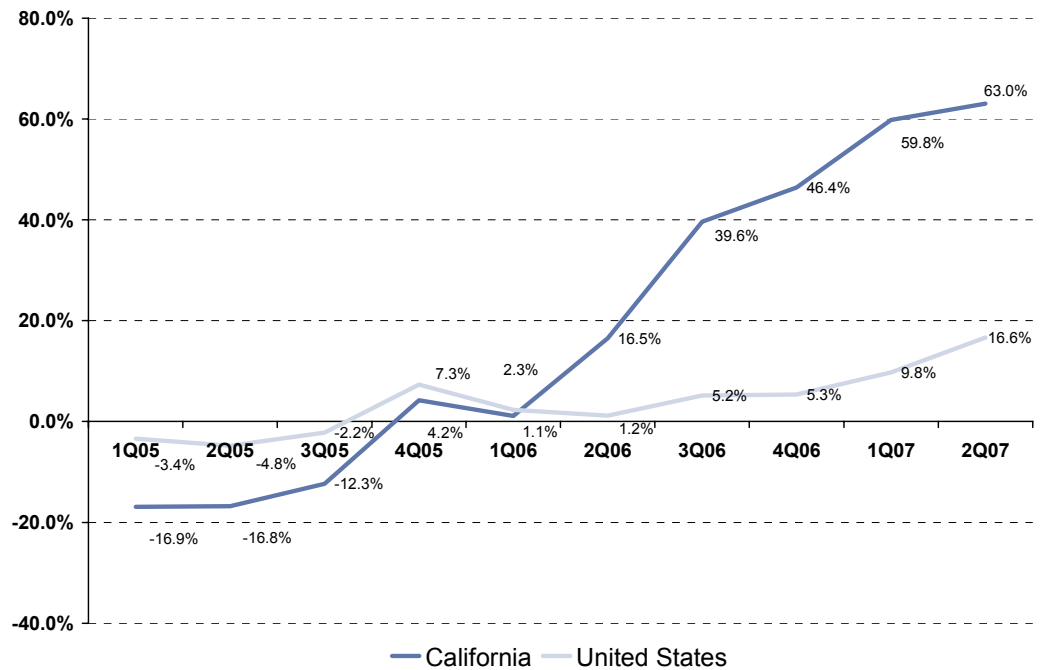
**Mortgage delinquencies in California are catching up to the national average**

From 2000 to early 2006, Californian residential mortgage debt performed much better than both historical and national averages, thanks to double-digit % annual home price appreciation throughout that period.

Recently, however, home price appreciation in California has flattened out (e.g., up only 2% year-on-year in August 2007), although many counties have experienced declines.

Given the recent decline in investor demand for Californian residential mortgage debt (and, subsequently, credit availability for consumers) in tandem with rising state unemployment, we forecast significant house price depreciation leading to credit deterioration in California, which is already accelerating above the national average (see Exhibit 3).

**Exhibit 3: Mortgage delinquencies up 63% in California in 2Q2007, versus 16% nationally**  
 year-over-year change (%) in loans past due, Mortgage Bankers Association Delinquency Survey



Source: Mortgage Bankers Association.

## National housing fundamentals get worse before they get better

We continue to believe that the root cause of current credit fears is related to residential mortgage lending standards which, distinct from that for other asset classes, remain perversely influenced by secondary market demand for affordability product debt.

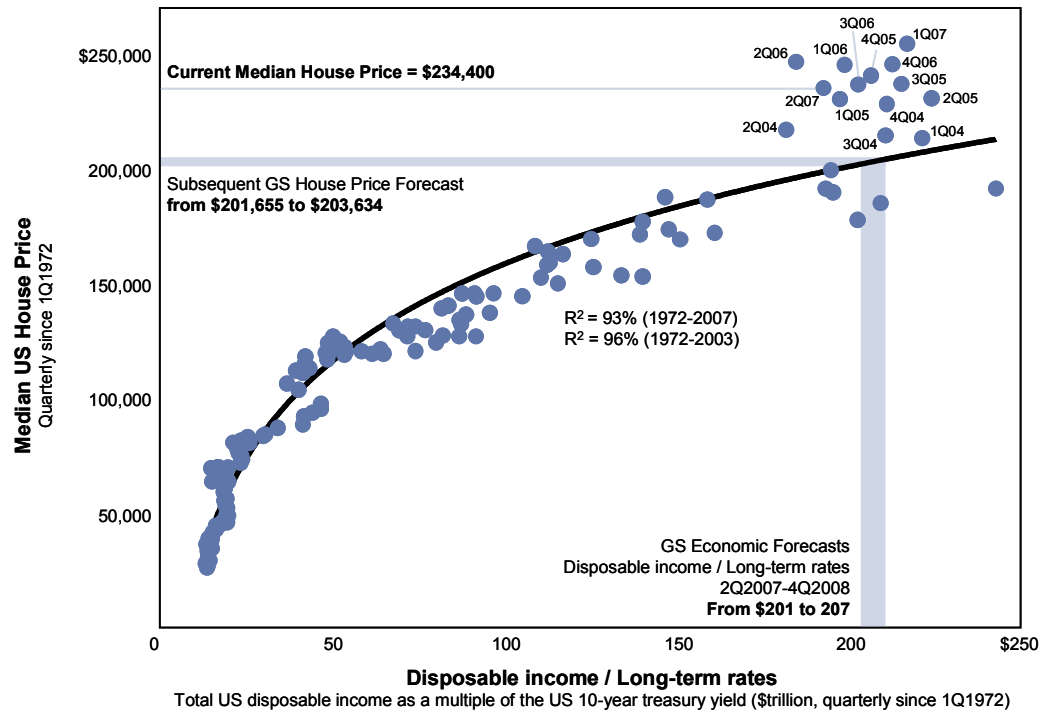
We remain bearish on the U.S. housing market; house prices are 13%-14% over-valued nationally (which, like in California, could take several years to play out), growth in mortgage debt outstanding continues to fall (driven by house price depreciation and declines in the home ownership rate), and we have yet to see the worst of residential mortgage credit deterioration (reset volumes for subprime ARMs are set to peak in March 2008, and recast volumes for option ARMs are set to peak in June 2010).

U.S. housing fundamentals get worse before they get better, in our view. We monitor these fundamentals in three categories: (1) house prices, (2) growth in mortgage debt outstanding, and (3) credit.

### 1. National house prices are 13%-14% over-valued

House prices are over-valued and a correction is underway (see Exhibits 4 and 5). The median house price in America today (\$234K is 13%-14% above the level implied by current (and forecast) disposable income and rates (\$202K-\$204K). These two macroeconomic factors (total U.S. disposable income and the U.S. 10-year treasury yield), taken together, can explain 93% of the historical variation in house prices reported since 1972 (see Exhibit 4). The reliability of this relationship was even stronger (96%) prior to 2004; since 1Q2004, house prices have deviated significantly from our model.

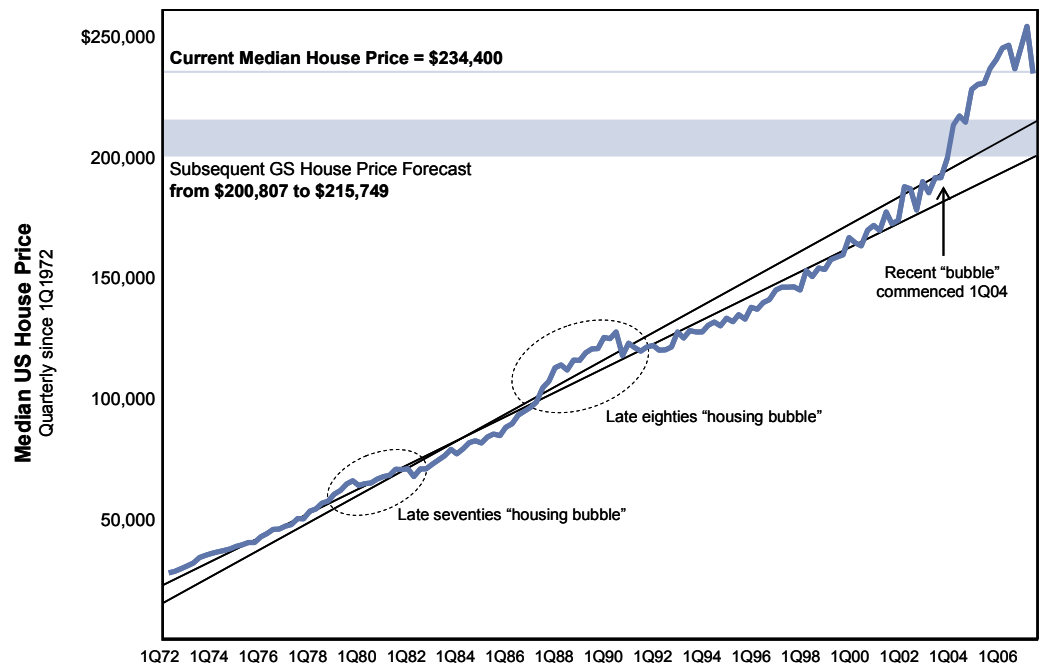
**Exhibit 4: National house prices are 13%-14% over-valued, relative to forecast economic conditions**



Source: Census Bureau, FactSet, Goldman Sachs Economic forecasts, Goldman Sachs Research estimates.

As a check, we compared the current median house price to that implied by a long-term (35-year) trend line; current prices are 8%-14% above the long-term trend (see Exhibit 5). Deviation from the long-term trend, again, started in 1Q2004.

**Exhibit 5: National house prices are 8%-14% over-valued, relative to the long-term trend line**



Source: Census Bureau, FactSet, Goldman Sachs Economic forecasts, Goldman Sachs Research estimates.

In 1Q2004, house prices started trending above levels hitherto predicted (quite accurately) by two macro factors: disposable income and rates. Also in 1Q2004, house prices broke away from a 35-year straight-line trend.

Above-trend house price progression (beginning in 1Q2004) coincided with increased sales of non-traditional mortgage products (see Exhibit 2). Given that lenders – inspired by secondary market demand for high-yielding debt – often pay their captive sales force higher commission rates for sales of non-traditional (higher-margin) products, we are sympathetic to the possibility that commission-encouraged sales of nontraditional (“affordability”) mortgage products may have contributed significantly to the housing bubble.

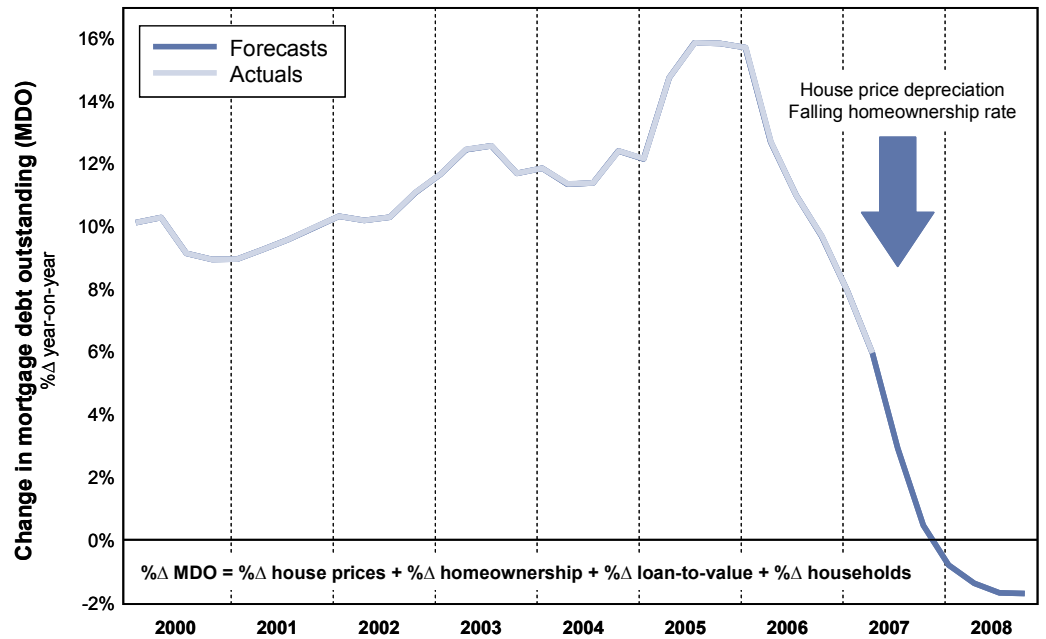
**2. Growth in mortgage debt outstanding (MDO) continues to fall**

The percent change in mortgage debt outstanding is the sum of percent changes in median house prices, the U.S. home ownership rate, the average loan-to-value ratio, and the number of U.S. households:

$$\% \Delta \text{ MDO} = \% \Delta \text{ house prices} + \% \Delta \text{ homeownership} + \% \Delta \text{ loan-to-value} + \% \Delta \text{ households}$$

Historically, these factors, taken together, have had a consistent and positive impact on the increasing growth in MDO (since 1995). However, recent declines in house prices and the homeownership rate have had an impact on MDO growth (see Exhibit 6). Our forecast for house price depreciation of 13%-14% (over three years) and a further decline in the homeownership rate (back to 65%-66%) implies further downside for MDO growth.

**Exhibit 6: Growth in total U.S. mortgage debt outstanding (MDO) continues to fall**



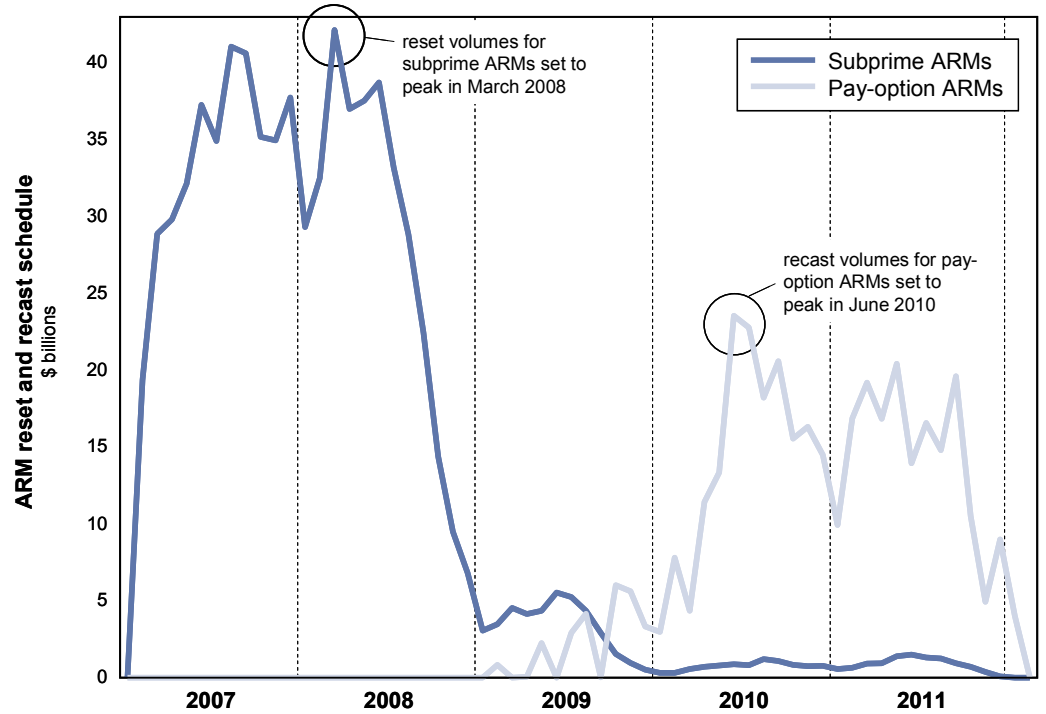
Source: Mortgage Bankers Association, Census Bureau, FactSet, Goldman Sachs Economic forecasts, Goldman Sachs Research estimates.

**3. We have yet to see the worst of residential mortgage credit deterioration**

Our estimated national schedule for adjustable rate mortgage resets (when low-interest teaser rates reset to current rates) and recasts (when the pay-option expires and borrowers are required to pay the fully-amortized rate) suggests that the worst of residential mortgage credit deterioration has yet to be seen across this country.

Reset volumes for subprime adjustable-rate mortgages peak (at \$42 bn) in March 2008; recast volumes for pay-option adjustable-rate mortgages peak (at \$24 bn) in June 2010 (see Exhibit 7).

**Exhibit 7: We have yet to see the worst of residential mortgage credit deterioration across America, in our view**



Source: Goldman Sachs Research estimates.



## Reg AC

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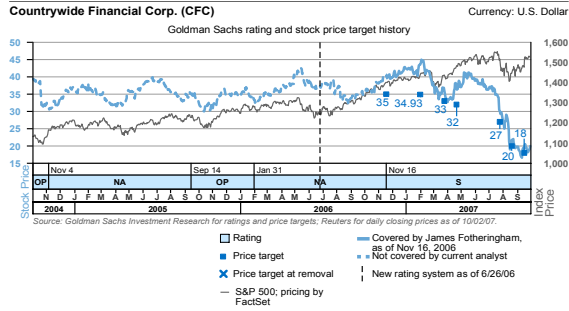
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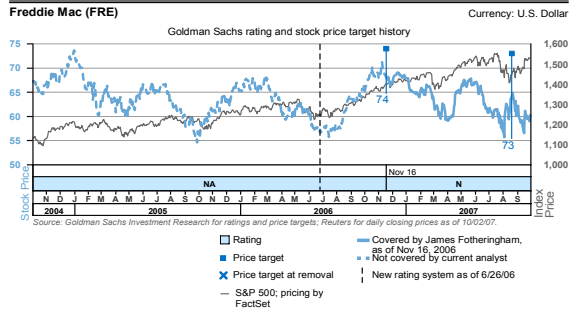
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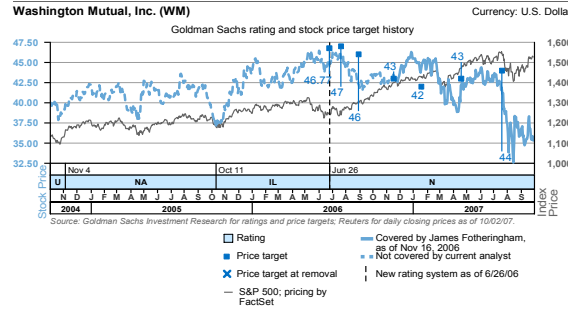
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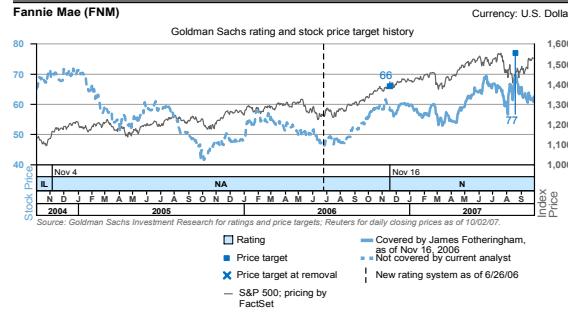
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