

# Research

July 30, 2008

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## US: Taking stock of the bear market

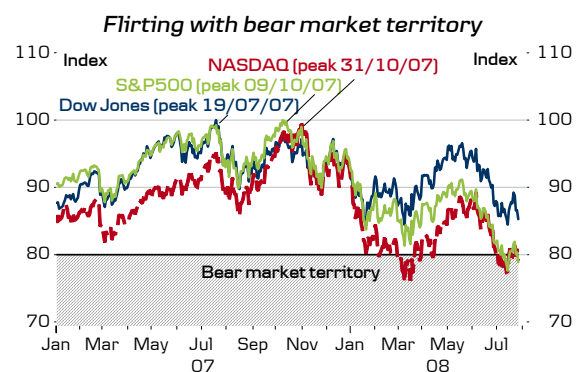
- Over the past year, equity markets have been declining as problems in the financial sector have fuelled risk aversion and the earnings outlook has deteriorated. In the US, the equity market is now flirting with bear market territory.
- The plunge in equity wealth – in the US as well as globally – adds another headwind to the economy on top of the housing market correction, tighter credit, and rising commodity prices. However, for a number of reasons the economy is currently less sensitive to equity market swings than during the previous downturn in 2000-2003. Firstly, household equity holdings now account for a smaller share of household balance sheets and are smaller relative to disposable income. Secondly, corporate imbalances are smaller this time around.
- During this expansion, equity markets have been much less important for GDP growth than in the previous expansion. Over the past four quarters, the stock market has turned from adding a modest ½pp to GDP growth to subtracting a modest ¼pp from growth. Unless equity markets weaken significantly further, this headwind is not set to intensify much.

### Another squeeze on the economy

#### *The bear is back*

Over the past few quarters, the US economy has come under increasing pressure as a slowing labour market and high inflation take their toll on household real income growth. Further, declining housing wealth and tighter credit conditions are making it more difficult for consumers to smooth their way through the current income squeeze.

On top of this malaise, equity markets have nosedived recently. Two of the three major US stock market indices are now flirting with bear market territory, ie, losses running close to 20%. This is adding to the already brisk headwinds facing the US economy



Note: Bear market territory is usually defined as a 20% decline in a stock index from its peak.

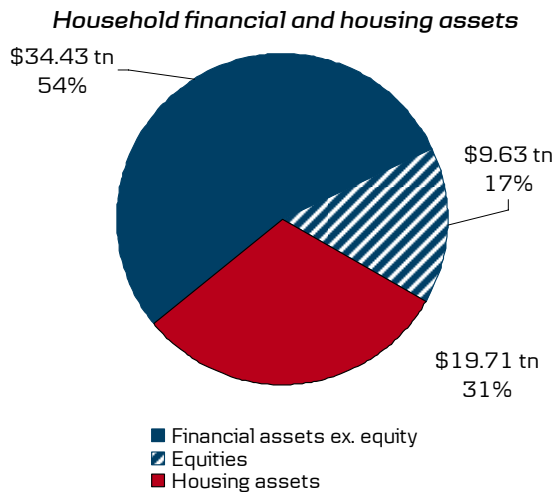
Below, we take a closer look at how equity markets impact on consumer spending and corporate investment behaviour.

**Household wealth under pressure**

Generally, the impact from equity markets on consumer spending growth is governed by four factors:

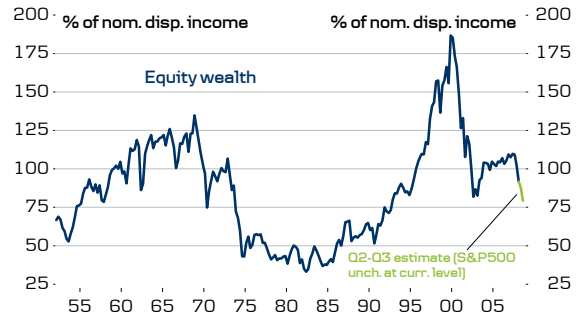
- 1) Size of household equity holdings
- 2) Propensity to consume out of equity wealth
- 3) Size of the decline in equity prices
- 4) Duration of the decline in equity prices

In Q1, direct equity holdings (ie, outside pension funds) accounted for around 17% of total household financial and housing assets. Hence, only a minor share of wealth effects is driven by equities. Even so, changes in equity prices may have a measurable impact on consumer spending. This is particularly so because equity prices tend to move faster and further than other asset prices.



The relevant measure to apply with respect to the impact on consumer spending growth is equity wealth relative to nominal disposable income. This ratio declined from 109% in Q3 2007 to 91.7% in Q1 2008. With S&P500 hovering around 1250, the ratio is likely to dip to around 80% in Q3 this year.

**Equity wealth-to-income ratio is declining**



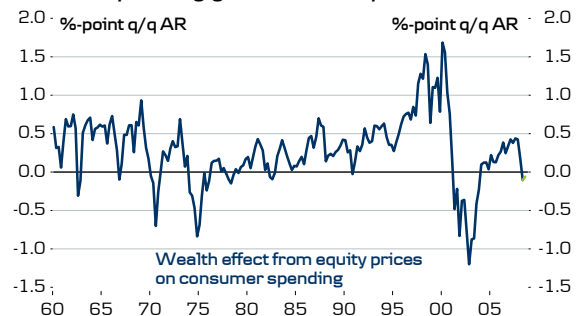
Note: Directly held equity wealth is defined as the sum of corporate equities and mutual fund shares on household balance sheets.

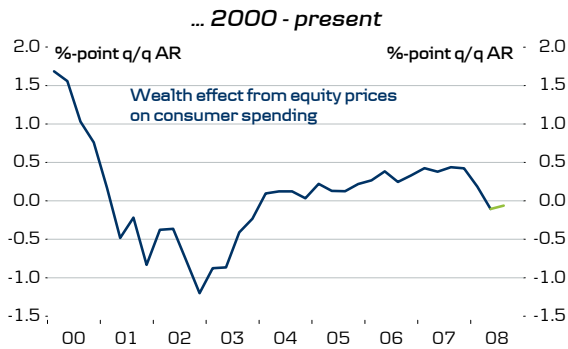
Importantly, the size of household equity holdings relative to disposable income is much smaller today than it was in 2000 (see graph above), when the last bear market occurred. Roughly speaking, this implies that, all else equal, a given decline in the stock market will have less than half the impact on consumer spending today compared to 2001.

According to our US consumption model (Research US: Consumers under siege February 2008 and the appendix) the long-term propensity to consume out of financial wealth is 5 cents per dollar – an estimate which is well within the range of estimates in the economic literature.

The chart below shows the estimated impact on consumer spending growth of equity wealth until Q3 this year, assuming an average S&P500 reading of 1250 for the current quarter. Since late 2007, equity markets have turned from contributing ½pp to consumer spending growth to having a broadly neutral effect on consumer spending.

**Estimated wealth effect from equities on consumer spending growth 1960-present ...**



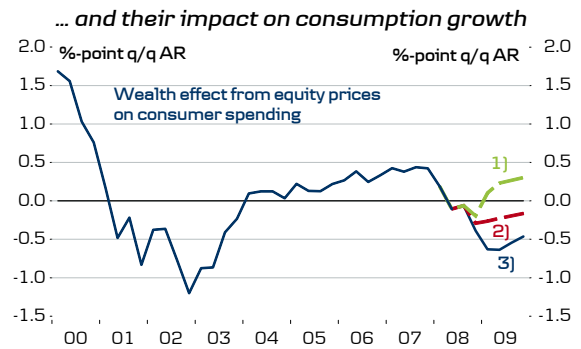
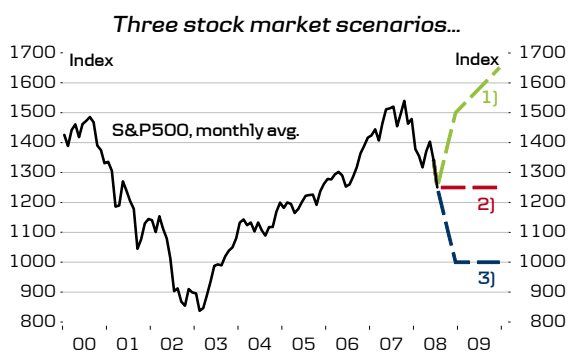


While this effect does not seem very dramatic, we have not yet seen the full effect of the current decline in equity prices, as it will take some time to feed fully through. It is important to realise that, generally, wealth effects do not impact on a day-to-day basis, but gradually over several quarters. Hence, *not only the magnitude, but also the duration, of equity price cycles is an important factor* in the overall impact on consumer spending.

In order to fully judge the equity wealth impact, we need to have knowledge of not only how deep the equity market correction is set to be, but also of how long time it will take to play out.

To get an idea of the dynamics, we have drawn up a couple of scenarios based on the S&P500 index.

- 1) S&P500 recovers to 1500 by year-end and then rises by 10% in 2009
- 2) S&P500 flat at 1250 until end-09
- 3) S&P500 declines to 1000 by year-end and the stays flat in 2009



The simulations provided several relevant observations.

Firstly, in all three scenarios the negative impact from equity prices will increase in H2 – once again due to the lagging nature of wealth effects.

Secondly, none of the scenarios reveal their full effect on consumption until next year, as the impact of lower equity prices takes time to feed through. According to our scenarios, equity prices will impact annual consumer spending growth by between -½pp and +¼pp.

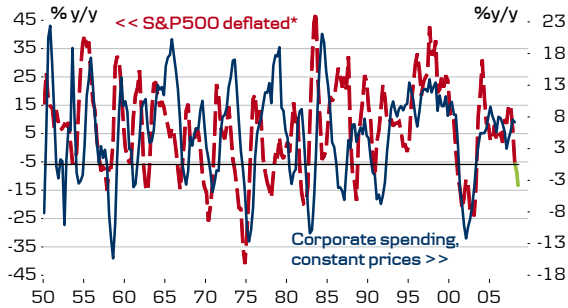
Thirdly, consumers are less sensitive to equity markets today compared to the previous bear market in 2000-2002 (see discussion above). Even in our most negative scenario, which resembles a decline in the stock market similar to that in 2000-2002, the drag on consumption will only marginally exceed ½pp. Back then, declining equity prices took out around 1pp of consumption growth.

**Implications for corporate spending**

It is not only consumption that is sensitive to equity markets, investment is too. However, the investment channel is more subtle, as the impact can come directly from equity valuation, or indirectly, as an effect of future expected earnings – ie, changes in demand.

As the chart below illustrates, the relationship between changes in equity prices and corporate spending growth does indeed exist, but it is relatively unstable over time.

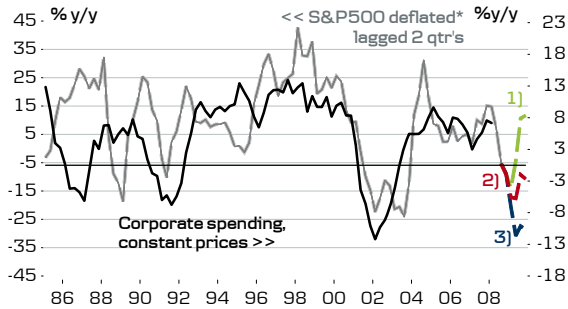
**S&P500 vs. non-residential investment spending**



Note: SP500 has been deflated with the national accounts deflator for non-residential investments.

Correlations on a quarterly basis generally suggest that changes in equity markets lead corporate spending by approximately two quarters.

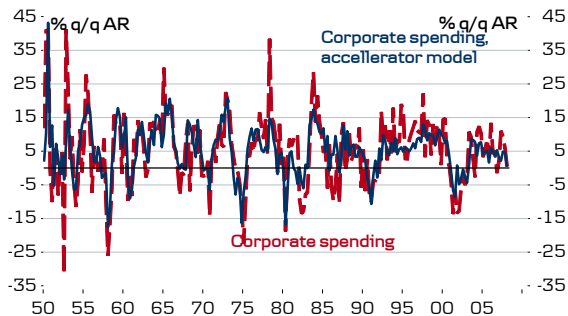
**S&P500 vs. corporate investment spending in the three scenarios**



However, the relationship might not be directly interpretable, as changes in equity prices mirror all kinds of information in the market, not only what is relevant for investment behaviour.

To quantify the impact of lower equity prices on corporate spending we estimated a model based on current and lagged consumer spending, exports, S&P500 and lagged changes in annual GDP growth (an accelerator component). This model is presented in the chart below (see specifications in appendix).

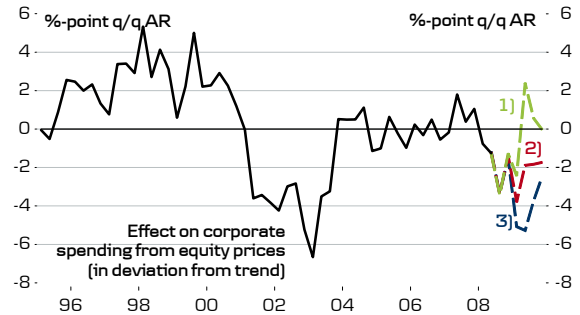
**Modelling corporate spending**



The impacts (a direct impact from equities and indirect impacts via consumption impact, autocorre-

lation and accelerator impact) on corporate spending from changes in equity prices can be measured from coefficients in the regression above (see chart below).

**Impact on corporate spending from equity market**



Note: Impact is measured as deviation from trend, and includes the direct impact from equities, the impact via consumer spending, autocorrelation and the GDP accelerator effect.

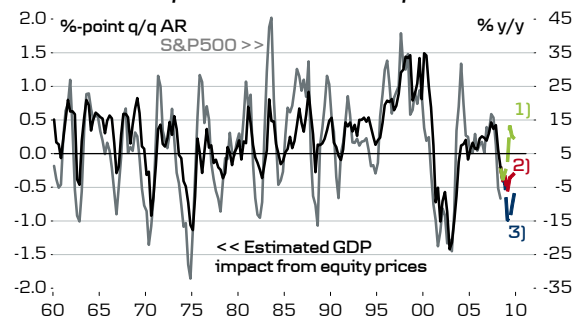
The results suggest that equity markets are already dampening corporate spending moderately (relatively to trend). Moreover, the drag is likely to intensify somewhat if equity markets do not rebound over the course of H2.

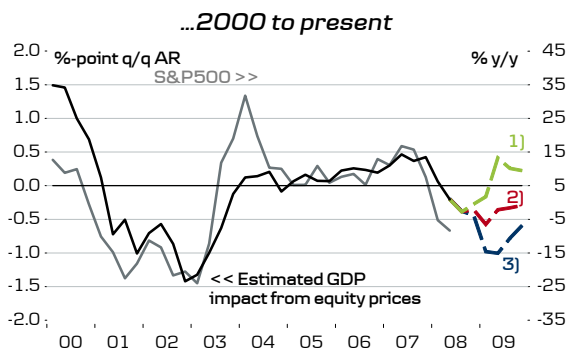
Importantly, the sensitivity of corporate spending to equities prices is likely to vary over time. In particular, corporate spending could be extra sensitive to equity prices when there are large imbalances in the non-financial corporate sector. However, this does not seem to be the case this time around, as there is little sign of overinvestment or over-hiring in corporate businesses. This is an important argument for corporate spending being more resilient this time.

**Adding it all up**

By summing the impact on consumer and corporate spending we end up with the total impact on GDP growth.

**Total impact on GDP 1960-present...**





From our estimations it is evident that equity markets have been far less important for the current expansion than was the case for the expansion in the late 1990s. In the current expansion, rising equity prices have been adding between ¼pp and ½pp

to GDP growth compared to 1-1½pp in the late 1990s.

The effect of equity prices on GDP growth has gradually turned negative in 2008: equity markets are currently subtracting around ¼pp from GDP growth on an annualised basis.

Unless equity markets fall another 20%, this effect is unlikely to become substantially more negative over the coming quarters. On the other hand, if equity markets rebound in H2, they could boost the economy mildly in 2009.

## Appendix: Consumer model

The model for consumer spending which has been applied throughout this piece of research is an error-correction model. Similar models are used by the Federal Reserve staff (see Morris Davis and Michael Palumbo, "A primer on the Economics and Time Series Econometrics of Wealth Effects." Federal Reserve FEDS paper 2001-9). The model is a two-step error correction model consisting of a long-run and a short-run equation. The estimation period is 1960-present.

The long-run equation determines the ratio between the desired long-term target for outlays ( $C^{TARGET}$ ) and incomes ( $Y$ ). This equation is based on the permanent income hypothesis that households perfectly smooth consumption over time in accordance with asset wealth and human wealth (or total future income). The equation is specified using separate propensities to consume out of net housing wealth ( $NW^{HOUSE}$ ) and net financial wealth ( $NW^{FIN}$ ). Further transfer income ( $TR$ ) is included to capture structural changes in the population, ie, changes in the active labour force relative to the total population. The idea is that the person who is not in the labour market (unemployed, young people in education, pensioners) tends to save less.

A short-run equation is modelled around the long-run equation. This relates changes in the consumption ratio ( $\Delta C/Y$ ) to

- Lagged change in the consumption ratio,  $\Delta C/Y$
- The deviation from the target spending,  $\{C^{TARGET}/Y - C/Y\}$
- A measure of the change in credit growth, CREDIT
- Changes in the unemployment rate,  $\Delta U$
- The real fed funds interest rate, RFF. This is specified as nominal fed funds minus long-run inflation expectations from Survey of Professional Forecasters
- Nominal disposable income growth,  $Y(t)/Y(t-1)$
- Headline PCE inflation,  $\pi$

$$\text{Long-run equation: } C^{TARGET}/Y = 0.65 + 0.05*NW^{FIN}/Y + 0.07*NW^{HOUSE}/Y + 0.35*TR/Y$$

$$\text{Short-run equation: } \Delta\{C/Y\}(t) = 0.86 - 0.13*\Delta\{C/Y\}(t-1) - 0.15*\{C^{TARGET}/Y(t-1) - C/Y(t-1)\} + 1.08*CREDIT(t) - 0.41*\Delta U(t) - 0.05*RFF(t) - 0.68*\{Y(t)/Y(t-1)\} + 0.51*\pi(t)$$

$$CREDIT(t) = \Delta\{\Delta\text{ConsumerCredit}/Y\}(t) + 0.25* [ \{\text{NetMEW}^{avg4}/Y\}(t) - \{\text{NetMEW}^{avg4}/Y\}(t-4) ] /4$$

$$\text{NetMEW}^{avg4}(t) = [ \{\text{NetMEW}^{avg4}/Y\}(t) + \{\text{NetMEW}^{avg4}/Y\}(t-1) + \{\text{NetMEW}^{avg4}/Y\}(t-2) + \{\text{NetMEW}^{avg4}/Y\}(t-3) ] /4$$

## Appendix: Corporate spending model

The model for corporate spending,  $CS(t)$ , is estimated as an autoregressive ordinary least squares regression. The estimation period is 1950 to present.

The following explanatory variable is included

- Annual acceleration in annual GDP growth,  $\Delta\Delta GDP$
- Quarterly personal spending growth,  $\Delta C$
- Quarterly export growth,  $\Delta E$
- Quarterly growth in S&P500,  $\Delta SP500$

$$\text{Model equation: } \Delta CS(t) = -4.35 + 0.21*\Delta CS(t-1) + 0.34*\Delta\Delta GDP(t-2) + 1.45*\Delta C(t) + 0.44*\Delta(t-1) + 0.09*\Delta E(t) + 0.07*\Delta E(t-1) + 0.05*\Delta SP500$$

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