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Avoiding avoidable mistakes.

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Regardless of one's ideas about asset allocation, market efficiency or market timing, the evidence has become compelling that, at the very least, all investors should be on the lookout for bubbles and be prepared to sidestep them when they appear from time to time.

In this note we will argue that bubbles are a regular feature of the investment landscape, can affect very large parts of the investment universe, are capable of drawing in even the most sophisticated investors and, critically, are enormously damaging in both the short and long term.

We will also argue that they are often, but not always, detectable in advance, and that once identified, bubbles almost always deliver on their deadly promise.

In short, we think all investors, regardless of philosophy, should at least make sure that they avoid the avoidable mistakes, particularly when the impact of these mistakes are likely to be large and permanent.

FOREVER BLOWING BUBBLES

In this note we examine 5 case studies of relatively recent bubbles; Japanese equities in 1989, US equities in 1999, US REITs in 2007, Japanese residential property in 1989 and gold in 1979. We believe these are worthy of study on a number of bases:

- They were big
- They were credible at the time
- The downside has been considerable
- The damage was, or is likely to be, permanent
- They were clearly identifiable ahead of time

Big and credible

In 1989 the Japanese sharemarket was the worlds largest. It represented 35% of world market capitalization. For the average Australian super fund with a 15% exposure to international equities it represented around 5% of their portfolio. For many Japanese investors it would have been 50% or more of their portfolio. And what a wonderful investment it had been. In the ten years between 1980 and 1989 the Japanese sharemarket had increased by 600% as Japanese companies, Japanese products, Japanese technology and Japanese management techniques swept the world. Japan was clearly set to become the worlds dominant industrial power. The market was seen as a little expensive, but then again skeptics had being saying that for years and year after year had been proven wrong as the market climbed ever higher.

At this time Japanese property – both residential and commercial – was also enjoying a boom. It has been said that at this time the land value of the Tokyo Imperial Palace was equal to the value of all the land in California. This too was a big market. And for Japanese investors a compelling one. Demand for land in Tokyo was skyrocketing as companies scrambled for space in the new centre of the industrial world, supply was fixed, prices had to rise and rise. And so they did. For a time.

By 1999 the Japanese bubble had long been burst and forgotten as the tech boom was roaring along taking prices of anything with a hint of technology with it. Low tech companies joined in the boom by adding some form of internet string to their bow – even if just to add the magic suffix '.com' to their name. Prices soared in the common knowledge that the internet was going to change the world; the newest and most savvy exploiters of the new technology would dominate the commercial landscape – the geeks would inherit the earth. Those who resisted turning their business models upside down were labeled dinosaurs, as were the small band of investment skeptics who believed that no matter what the potential of the new technologies the valuations were just too steep. The new generations of investors had made fortunes on the back of Microsoft, Intel and a host a dot com start ups – the dinosaurs were left behind to ponder just how they could have got it so wrong.

At this time international equities had been the top performing asset class for the previous 25 years. Technology light Australian equities had lagged in a major way, held back by large exposures to old world industries such as banking, property and, worst of all, resource stocks which had spent decades going nowhere. Australian investors were urged by their professional advisers to substantially lift weights away from the old world towards the new. The arguments were irresistible to most superfunds which by this time had increased weights in predominantly tech dominated international equities to 25% to 30% of their portfolio.

Roll forward to 2007. In the wake of the tech wreck investors had learnt their lessons and embraced the value of sustainable cash flows as the basis for making sound investment decisions. During the tech wreck one sector stood out like a beacon, not only holding its value but actually providing stellar returns – listed property, or REITs as the sector has come to be known world wide. By 2007 REITs had been the best performing asset class for the past two decades and, once again, the logic was impeccable. Property produced long term stable income streams, which when supplemented with some judicious gearing, produced excellent returns. Better still, with listing, REITs also provided instant liquidity. High returns, low risk and liquidity all of which coupled with an impressive 30 year track record made for an irresistible asset. And it got better – Europe and Asia had discovered the wonders of the REIT structure. Soon savvy, experienced managers from the US and Australia were scouring global property markets snapping up bargains from seemingly unsuspecting vendors who were oblivious to the REIT revolution going on around them. The world's commercial property markets, estimated by The Economist to be around 75% of the size of world equity markets, were all up for grabs. A new gold rush was on.

Which brings us back to 1979, when there was a real gold rush on. On the back of seemingly unshakable worldwide inflation, confidence in paper money was at a low ebb and investors everywhere turned to that famous inflation hedge, gold. The price

soared from $35 per ounce in 1973 to a peak of $850 per ounce in 1979. Those who realized early that inflation was endemic and that gold was underpriced did more than just protect the value of their assets, they made fortunes. Gold bullion, gold coins and gold shares were the assets of choice for the most canny investors the world over. Even if it didn't soar like it had in the previous decade, canny investors *knew* in 1979 that gold prices would at the very least keep track with inflation – then well over 10%pa in most of the developed world.

When fairy tales end the downside is substantial and permanent

When small children discover there is no Santa their disappointment is substantial and permanent. Santa never comes back. And so it is too with bubbles – when even utterly credible fairy tales are revealed as such, the disappointment is major and the value destroyed is permanent. This is not a case of it's time in that counts.

Let's look at these markets in chronological order;

Figure 1: When bubbles burst

Asset	Year of peak	Fall from peak to trough	Time till trough
Gold (US$)	Jan 1980	-71%	19 yrs
Japanese equities (Yen)	Jan 1990	-82%	19 yrs
Japanese residential property[1] (Yen)	1991	-65%	14 yrs
US equities (US$)	Mar 2000	-56%	9 yrs
US REITs (US$)	Mar 2007	-71%	2 yrs

[Sources: Nikkei 225, Japan Real Estate Institute, S&P500, Nareit]

1. Land prices, 6 major cities

The size of the falls tend to get ones attention. In each case the fall is in excess of 55%, with Japanese equities leading the pack at 82%. Now there is a temptation for the eyes to glaze over when falls of this size occur – after all, is an 82% fall that much worse than a 65% fall? Actually it is dramatically worse if you think of what's left. The victim of a 65% fall has 35% of their capital left, almost twice as much as the victim of the 82% fall. Nonetheless, in both cases, investors are very much poorer for the experience.

The second point to note is the length of the downturn – 19 years in the case of gold and Japanese equities, 9 years in the case of US equities. These are no short term blips. The corrections are very long term in nature. And they may not be over yet. Japanese equities, US equities and US REITS all made their lows in March 2009, and may yet revisit these lows. Japanese residential property was just 2% above the 2005 low as of early 2010.

These are indeed markets that are worth avoiding – and to repeat the point made earlier – these are not markets that can simply be ridden out in the mistaken belief that in the long term equities always outperform.

Real long term damage.

It is also worth looking at the damage in terms of long term purchasing power and against the low risk alternative, 10 year government bonds. In Figure 2 we look at the value of $1000 (or yen) invested at the peak, with all dividends reinvested. If the often heard mantra of 'in the long term it will work out' holds true, then we should see the risky assets outperforming fixed interest over 10 years, or at the very least 20 years. And we certainly should not expect to see any loss of purchasing power.

Figure 2: 10 and 20 years after the bubble bursts

Asset	Year of peak	Real value of $1000 invested at peak after 10 years (including reinvested income)		Real value of $1000 invested at peak after 20 years (including reinvested income)	
		Overvalued asset	Govt bonds	Overvalued asset	Govt bonds
Gold (US$)	Jan 1980	$297	$1990	$155	$3458
Japanese equities (Yen)	Jan 1990	Y328	Y1977	Y496	Y2386
Japanese residential property (Yen)	1991	Y561	Y1962	Y689[1]	Y2271[1]
US equities (US$)	Mar 2000	$729	$1819	na	na
US REITs (US$)	Mar 2007	na	na	na	na

[Source: Nikkei 225, Japan Real Estate Institute, S&P500, Nareit, Bank of Japan, US Federal Reserve, farrelly's analysis]

1. Results 19 years after peak

The facts simply do not support the notion that holding for the long term and hoping for the best can be relied upon. Overvalued assets can lose substantial purchasing power and dramatically underperform government bonds. It is worth looking at each case separately.

Gold

The so called great inflation hedge. During the 10 year period after the 1980 peak gold lost over 70% of its purchasing power. A period where inflation averaged over 5%pa. Over the 20 years to 2000 gold gave up 85% of its purchasing power – that is the $1000 invested in 1980 would purchase goods worth just $155 by 2000. Gold can be a great inflation hedge, but only if bought at reasonable prices, but more on that later.

The comparison with bonds is even more stark. After 20 years an investor in 10 year US treasuries would have $3458 in purchasing power – over 22 times as much money as the gold investor. This is not a trivial outcome.

It also should sound a cautionary note to anyone looking to buy gold in the belief that it will protect against inflation regardless of the price paid at the outset.

Japanese equities

Another long term disaster, and exhibit A in the case against the 'Equities always outperform in the long term' disciples. 10 years down the track Japanese equity investors had lost 67% of their purchasing power, after 20 years recovering somewhat to have only lost around 50% of their purchasing power.

In comparison Japanese bond investors – even given they were buying at quite low yields – have doubled their purchasing power. The net effect is that after 10 years the Japanese bond investor had around 6 times the capital of an equity investor, and after 20 years around 4.5 times the capital. Again these are not trivial differences in wealth.

Japanese Residential Property

The data should also make sobering reading for the 'Can't go wrong with bricks and mortar' crowd. In 1990 Japanese real estate was widely expected to continue to increase in price on the back of a shortage of supply and ever increasing demand. Instead we have seen prices falling steadily for 14 years before stabilizing 65% below their starting levels. And that, of course, is ungeared property. Those who borrowed a conservative 70% against the value of their investment have lost over 200% of their initial capital.

After ten and twenty years the investor who chose government bonds would have over three times the capital of the ungeared property investor. And obviously they would be infinitely better off than the, most likely bankrupt, geared property investor.

(As an aside, investors in Japanese commercial real estate would have fared considerably worse than residential investors, but that is another story.)

US Equities

Those who had bought US equities at the height of the tech boom have seen10 years of negative price returns – a 30% loss of purchasing power. By contrast investors in bonds would have almost doubled their purchasing power. Investors in bonds would have about 2.5 times the capital of the equity investor, not just a little bit more, two and a half times the capital. Huge.

And, by our estimates, very little of this advantage will be given up by 2020 – again buying grossly overvalued assets produces damage that is both significant and long term.

US REITs

We are now only 3 years after the peak, so we can't say with certainty how extensive the long term damage may be. However, if we consider that the growth in REIT income distributions is unlikely to be much faster than inflation, then it will be 15 to 20 years before the price of REITs get back to their 2007 levels. Again the damage here is likely to be both significant and long term.

ARE THESE DISASTERS PREDICTABLE?

Now, this is all interesting but perhaps unhelpful. It could be argued that the observation that buying at the top of the market produces poor long term returns is self evident. On the other hand if any of this can be avoided then surely damage of this scale is worth avoiding. Happily, looked at through the right filters, these sort of outcomes are not only predictable, but in fact self evident.

Occams Razor.

One such approach is the Occam's Razor methodology developed by John Bogle[1] , named after Sir William of Occam who declared the simplest explanation is generally the best. And this is indeed a simple approach, and all the more powerful because of it.

This approach to forecasting decomposes market returns into three main drivers

- Income
- Growth in income
- Effect of changing valuation ratios

The three elements can then be simply added together to produce very useful long term return forecasts.

Forecast return = Income + Growth in income +Effect of changing valuation ratios

Income is simply the yield at the start of the forecast period. The growth in income is the expected growth rate of that income stream. And finally the effect of valuations is the rate of change of the valuation multiple (PE ratio for shares, the capitalization rate for property) over the forecast period.

For example; let us assume a stock has a yield of 5%, earnings of $1.00 and a PE of 15, hence a share price of $15. If over the course of a year earnings rose 20% to $1.20 per share and the PE multiple remained static then the share price would also rise 20% to $18 per share giving a total return of 25% (5%from income plus 20% growth). However if the PEs rose from 15 to 16.5, then the share price would increase by a further 10% to $19.80 – matching the 10% increase in the PE ratio. In this case the total return would be approximately 35%; 5% from dividends, 20% from earnings growth and 10% from multiple expansion.

Now if all those changes occurred over a much longer period of time, say 10 years, then the annualized total return would be around 8% pa; 5%pa from dividends, 2%pa from EPS growth, and 1%pa from PE expansion. (2%pa for 10 years being approximately 20% and 1%pa for ten years being approximately 10%)

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[1] John Bogle. Investing in the 1990s: Remembrance of Things Past and Things Yet to Come. Journal of Portfolio Management, Spring 1991, pp. 5-14

In fact, over long periods of time earnings growth tends to be around 2% below GDP growth and valuation multiples tend to revert back to long term. As a result we can normally produce quite good long term market return forecasts. Normally good but by no means perfect.

However, where the methodology does become close to perfect is at market extremes, and in particular when markets enter a bubble phase. At these times it becomes virtually impossible to make assumptions that are in any way reasonable that suggest anything other than long term disaster for the market concerned. We will review our five case studies to show how each of these would have appeared at the time of the bubble. In doing this we will first look at the equity markets, show how the model can be adapted to deal with property markets, and finally use a somewhat different approach to dealing with gold.

US Equities – 1999

In late 1999 the S&P 500 had a dividend yield of 1% and a PE ratio of 29 times 1999 earnings.

Figure 3 shows 10 year return forecasts based on three sets of assumptions. The central forecast essentially called for a return to more normal times. Growth a little slower than GDP growth, PE ratios falling from 29 to a still quite high 21 with the end result being a forecast for returns of just 2.5%pa, well below the December 1999 US bond yield of 5.9%pa. Of course no one was expecting a return to normal in 1999, after all, we were on the verge of a new age, a new millennium with the world revolutionised by the wonder of the internet.

So let's look at optimistic forecasts. Growth faster than usual, PEs remaining at well above average levels at 25 and we still get forecast returns that are below yields on government bonds. So even with optimistic assumptions we get a poor return. In fact to get anywhere close to the traditional equity risk premium of 4 to 5%pa above bonds required outrageous assumptions.

This one was never going to work. With the benefit of hindsight we now know the result came in about midway between the pessimistic and central forecasts at around -1%pa for 10 years.

Figure 3. 10 year Forecast returns for US equities as at December 1999

	Central assumption	Optimistic assumption	Pessimistic assumptions	Actual outcome
Dividends	1.2%	1.2%	1.2%	1.2%
10 year nominal EPS growth (%pa)	4.5%	6.0%	2.0%	-0.7%pa
Impact of PE ratio change	-3.2%[1]	-1.5%	-7.0%	-1.5%pa
Forecast 10 year total return	**2.5%pa**	**5.5%pa**	**-4.0%pa**	**-1.0%pa**
Forecast PE Ratio 2009	21x	25x	14x	25x

Note 1. PE falling from 29 to 21 reduces returns by 3.2%pa

Furthermore the pessimistic forecast actual performed a very useful sanity check. To think about the true risk of an asset think about where PE ratios might fall to, how slow EPS growth might be. In this case the pessimistic assumptions were not so outrageous, as the average PE on the US stockmarket has in fact been close to 14.

Japanese equities 1989

If an investment in the US equity market in 1999 was never going to work in the long term, the Japanese market in 1989 was never, ever going to work. By 1989 Japanese PE ratios had risen to a stratospheric 70 times earnings. But given we were in the midst of the Japanese economic miracle a central assumption of 6%pa EPS growth was reasonable as was a return to PE ratios of 25 (well above Western market norms, but Japan has always traded at higher PE ratios.) As shown in Figure 4, even with these somewhat optimistic assumptions the end result was a 10 year forecast of -3.3%pa.

So lets get really optimistic; 10%pa nominal EPS growth, something Japanese companies had not achieved since the inflationary 70's, and PEs of 30x. The result, 2.4%pa total returns, again well below the return then available on Japanese 10 year bonds of 6%pa

Figure 4. 10 year Forecast returns for Japanese Equities as at December 1989

	Central assumption	Optimistic assumption	Pessimistic assumptions	Actual outcome
Dividends	0.5%	0.5%	0.5%	0.5%
10 year nominal EPS growth (%pa)	6.0%	10.0%	2.0%	-8.1%pa
Impact of PE ratio change	-9.8%[1]	-8.1%	-11.8%	1.5%pa
Forecast 10 year total return	**-3.3%pa**	**2.4%pa**	**-9.3%pa**	**-6.1%pa**
Forecast PE Ratio 1999	25x	30x	20x	81x

Note 1. PE falling from 70 to 25 reduces returns by 9.8%pa

The actual outcome was a -6.1%pa annualized return, about halfway between the pessimistic and central forecasts.

In 1989 it was absolutely clear that Japanese equities would, eventually, be an investment disaster, and in the past twenty years the market has not disappointed.

US REITs - 2007

We can use the same process for property forecasting as for equities. For dividend yield we use either rental yield or yield from distributions in the case of REITs. Yield is dividend divided by price. Because REITs and rental property tend to return most of their cash flow to investors their income is equivalent to earnings. Therefore the inverse of the yield, that is price divided by dividend (P/D), is analogous to a PE ratio.

So to forecast returns we need to estimate future earnings growth and the future yield (or the price to dividend ratio.)

In the case of listed property estimated distribution growth is generally quite straight forward. Distributions grow at much the same pace as rents, and rents tend to grow at the same pace as inflation. We should add a little growth for the impact of gearing, and, it would be nice to think that we should add a little for the impact of sound management. So if inflation was expected to be 2.5%pa we should expect growth of about 4.0%pa. Unfortunately, in practice, the sound management piece never quite seems to deliver, so we will stick with 2.5%pa for our Central forecast and let the optimists run to 4.0%pa.

What sort of yield or P/D ratio should have we expected?

Figure 5 shows the long term P/D multiples paid on US Equity REITs; normally they were around 13x, and at times up to 18x, but by March 2007 investors were paying almost 30 times dividends. Our central assessment was that multiples would drift back towards 18 (equivalent to a yield of 5.5%), a very optimistic assessment could have them at 22 (or a 4.5% yield), while a more pessimistic estimate would be to simply have them falling back towards their long run average of 13x (or 7.7% yield)

Figure 5. US Equity REIT Price to Dividend Multiple.

The central forecast was for returns of just 0.9%pa for ten years. That is 3.4% dividends, plus 2.5% growth in earnings and a damaging -5%pa resulting from a re-rating of the price to dividend multiple from 30x to a somewhat more reasonable 18x. As can be seen in Figure 6, this yields a forecast return of just 0.9%pa. Even the starry eyed optimists with growth forecasts of 4% and a final multiple of 22 times dividends could only get expected returns up to 4.3%pa – below the yields then available on US government bonds.

Again, viewed through an Occam's Razor framework, this clearly was not going to work in the long term. And while we are only 3 years past the peak we would confidently expect that in ten years time these forecasts will, if anything, prove to be optimistic.

Figure 6. 10 year Forecast returns for US REITs as at March 2007

	Central assumption	Optimistic assumption	Pessimistic assumptions
Dividends	3.4%	3.4%	3.4%
10 year nominal EPS growth (%pa)	2.5%	4.0%	1.0%
Impact of PE ratio change	-5.0%[1]	-3.1%	-8.0%
Forecast 10 year total return	**0.9%pa**	**4.3%pa**	**-3.6%pa**
P/D Ratio 2012	18x	22x	13x

Note 1. PE falling from 30 to 18 reduces returns by 5.0%pa

Japanese Residential Property

By 1991 the yield on Japanese residential property had fallen to around 1.8%pa. That is, Japanese investors were paying around 55 yen for each 1 yen of rent. Effectively a PE ratio of 55 times. And, as we have seen before, rents tend to grow about the same rate as inflation, but given the shortage of available land in Japans thriving cities it would have been reasonable to assume rental growth in excess of inflation which was around 1.5%pa at that time. As shown in Figure 6, these assumptions coupled with a slight easing In yields from 1.8 to 2% gave a total forecast return of just 3.8%pa.

Figure 7. 10 year Forecast returns for Japanese Residential Property as at 1991

	Central assumption	Optimistic assumption	Pessimistic assumptions	Actual
Rental yield	1.8%	1.8%	1.8%	1.8%
10 year nominal rental growth (%pa)	3.0%	4.5%	1.0%	1.0%
Impact of Yield change	-1.0%[1]	0.0%	-7.7%	-8.7%
Forecast 10 year total return	**3.8%pa**	**6.3%pa**	**-4.9%pa**	**-6.7%pa**
Forecast Price to rent ratio 2001	50x	55x	25x	22x
Forecast yield 2001	2.0%	1.8%	4.0%	4.5%

Note 1. Price to rent ratio falling from 55 to 50 reduces returns by 1.0%pa

At least this time the optimists could get their forecasts something close to the return available from Japanese government bonds, then around 6.5%. But only close. And as I hope is becoming glaringly obvious, when we need optimistic forecasts to get even close to the return on government bonds, then disaster awaits. And never fails to deliver.

Over the subsequent years the shortage of land was resolved as local governments released significant new land for development, the economy slowed and, critically,

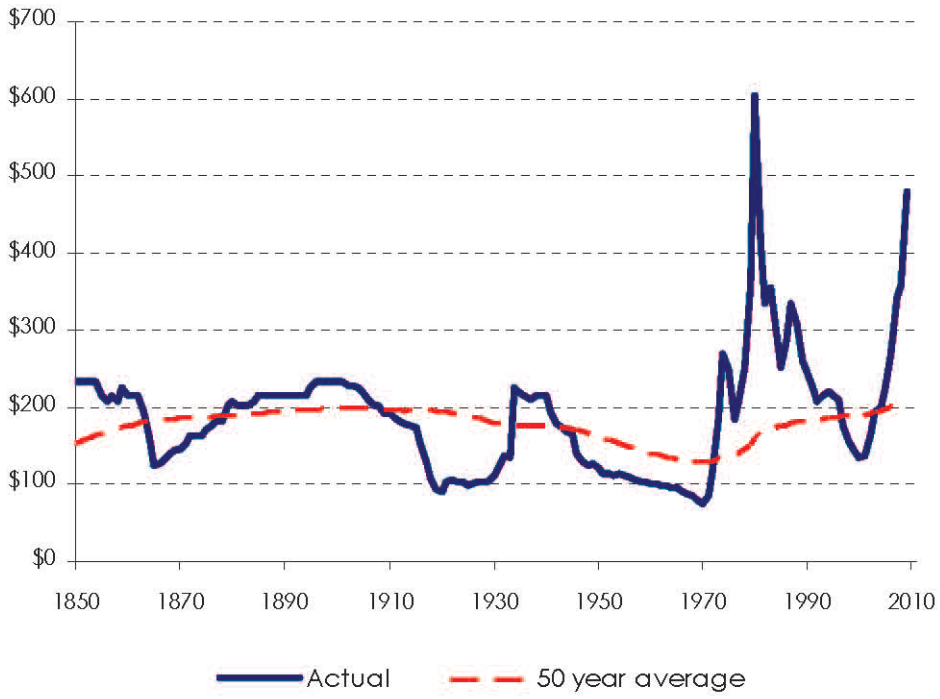
the population stopped growing. The inevitable results that rental growth slowed and multiples collapsed.

While the demographic issue was clearly well known in advance, the collapse of the economy and the release of land were not. Nonetheless, regardless of whether the assumptions made were optimistic or pessimistic, what should have been utterly predictable was that this was not going to be a good investment.

Gold in 1980

This one is a little more difficult. An investment in gold produces no income, has no earnings so presents something of a challenge to value. Nonetheless it is possible. The clue lies in the often remarked upon quality that gold is a hedge against inflation or a store of value. If that is the case we should expect the price of gold to rise about the same rate as inflation in the long term, sometimes faster, sometimes slower but on average about the same rate as inflation. In fact, in practice this is how it does work as is shown by the Figure 9. This shows the real price of gold (based on 1980 prices), has essentially moved sideways for 160 years, in other words, it has kept pace with inflation over that period.

Figure 9. Gold in 1980 US dollars actual and 50 year average real prices.



So if gold does rise at about the same rate as inflation then we should expect to earn real returns of zero – if we buy it at fair value. We should expect negative real returns if we buy it at above fair value and positive real returns if we buy it at less than fair value. But what is fair value? We don't know, but if we assumed it was close to the average real price over the previous 50 years we would get the red dashed line in Figure 9 which was around US$150 in 1980. Alternatively we could just assume that at

some stage gold was going to return to the upper end of the pre 1980 range of US$100 to $250, a fall in real terms of some 61%.

This is equivalent to a return of -13%pa real over a decade, and in fact was very close to the actual performance of gold between 1980 and 1990. However the important aspect of this process is that it didn't matter whether you assumed that the fair value of gold was US$150 or $240 or $400 for that matter, you were going to achieve a poor outcome. And again, the potential was delivered.

Figure 9. 10 year forecast for real returns from Gold as at January 1980

	Central 10 year forecast	Optimistic 10 year forecast	Pessimistic 10 year forecast	Actual outcome
Assumed fair value of gold (1980 dollars)	US$150	US$240	US$100	**US$250**
Forecast Real return	-16%pa	-12%pa	-19%pa	**-12%pa**

Inevitable, if eventually.

Without wanting to labour the point, we strongly believe that viewed through an appropriate analytical framework these bubbles are absolutely predictable ahead of time. Furthermore we would argue that once identified the ultimate outcome is inevitable. When even the rosiest tinted glasses yield poor relative returns it is time to head for the hills. But when?

The difficulty with all of this is that on their way to becoming a fully fledged bubble asset prices go from being fairly priced, to fully priced, to overpriced (defined here as when the central assumption is for returns lower than 10 year government bonds), to being grossly overpriced and this process can take many years to play out. When do you stop buying? When do you sell? It is not a trivial question.

The cycles involved are very long term in nature. In Figure 10 we show our estimates of when these assets could have been classed as overpriced and when they could have been assessed as grossly overpriced; that is expected returns at least 3%pa below that of government bonds.

Figure 10. Time between market first becoming overpriced and the peak

	Date became overpriced	Date became grossly overpriced	Date of peak	Date prices returned to overpriced level
Gold	Apr 1973	Mar 1974	**Jan 1980**	Apr 1992
Japanese equities	Sep 1983	Jun 1986	**Jan 1990**	Sep 2001
Japanese Residential property	1985	1987	**1991**	2001
US Equities	Apr 1996	Jan 1999	**Aug 2000**	Oct 2008
US REITs	Mar 2005	Dec 2006	**Jan 2007**	Oct 2008

What this shows is that often many years can pass between the time an asset gets expensive and when it peaks. Also that it can take many years in which to return to the levels at which it first became expensive.

Hence, Keynes famous quip, " *Markets can stay irrational much longer than you can remain solvent.*"

So what to do in the face of these types of markets is an important but difficult decision. If everyone *knows* these markets will continue to rise, can you take the risk that this time, somehow, it really will be different? Do you just stay for the ride in the hope that you will, somehow, be able to identify just the right time to get out? Or do you build a strategy around avoiding these kinds of markets and dealing with whatever short to medium term fallout goes along with that?

The bare minimum

Our view is that at a bare minimum investment professionals should do the following:

1. Admit that while normally reasonable efficient, markets from time to time move to irrational extremes.
2. Resolve never to buy into an over-priced market. Assets that are bought at overpriced levels will eventually hurt you, even if it's years after the event.
3. Don't sell at the first moment an asset becomes overpriced, but do decide at what level of overpricing existing holdings will be gradually start to be sold down.
    - If an asset is bought at a reasonable price and subsequently becomes a little expensive before falling in price then no real harm is done, and quite a lot of transaction costs and taxes can be avoided.
    - Because value based investment processes tend to buy too early and sell too early there is generally no hurry to sell.
    - There will come a time when prices are so crazy that selling will be the right strategy for everyone, but there is often(but by no means always) a lot of money to be made between the time an asset first looks expensive and when it starts to turn down.
4. Learn to be patient. This is not about market timing. Value based processes have very little to say about when a market move will occur. They have a lot to say about the high likelihood that a move will eventually occur. Patience will be required, but well rewarded.

In summary, all investors should ensure that their investment process is designed to cope with the inevitable bubbles that the market throws up, and that, at the bare minimum, avoidable mistakes are avoided.

Appendix 1 ; Forecasting using Occam's Razor

Forecast return = Y + G + V

Where

Y is the current investment yield, a known quantity; hence no forecasting is required for this input.

G is the annualized growth in income or earnings for the asset, for

- Property it is growth in rents
- Equities it is growth in Earnings Per Share
- Fixed interest growth is zero, by definition

V is the Valuation effect; it is the compound effect of an increase or decline in PE ratios or yields on the value of the asset.

So for equities, over a one year period

V = PE at end of period / PE now -1

For longer time periods we use the compounded growth rate;

$$\mathbf{V= (PE\ at\ end\ of\ period\ /\ PE\ now)^{1/10} - 1}$$

Using the same example over 10 years

$V= (12/10)^{.1}-1 = 1.0183-1= +1.83\%pa$