The Role of Commodities as a Portfolio Diversifier

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Good morning. It’s an honour for me to speak here this morning, especially considering that I am probably the least knowledgeable in this room about precious metals. I compliment the organisation on their open-mindedness in inviting me, also because my message might not be that popular in this audience. I was a bit apprehensive about this beforehand, but you have stomached two unpopular speeches already, so I think you can manage another one.

I represent an unusual type of participant in the precious metals market, or maybe a relatively new one: institutional investors with passive long-only exposures, typically pension funds.

I thought it would be appropriate to start by explaining a bit about the organisation I work for, PGGM in the Netherlands. We are the second largest pension fund in the Netherlands and about fourth largest in Europe, measured in the assets we have under management. At the end of 2003 we had around €53 billion under management. We have about 1.7 million people who rely on us for their pensions. We are a so called ‘second pillar’ fund: everybody in the Netherlands gets a basic minimal pension from the government, and we are responsible for topping that up to something you can live from. We have about 130 investment professionals, including operations. As investment professionals, we have to take care that the assets yield a return such that the 1.7 million people who rely on us have a pension that is worth something in the end.

I haven’t mentioned our participants. We are the pension fund for the healthcare sector in Holland, which means that a lot of our participants are nurses, and that gives us the benefit of being a long term investor. Nurses are typically young when they contribute to their pensions and that gives us more time to get return from investments.

The asset mix we have is very important for us. We invest about €53 billion in total, which is not money we can shift around on a daily basis. Strategically, what we decide to invest in is ultimately the most important factor for our return. The choice of assets is far more important than opportunistic timing, as is the way we implement an investment in a particular asset class. Typically the choice of assets decides whether we make a profit or a loss in a particular year, and whether those are single or double digits. The way we time and take tactical positions opportunistically, and the way we implement them, can make a difference of 1% or 2% – which is still important, with over €50 billion.

If we look at PGGM’s strategic mix, we see a gradual moving out of fixed income. That has to do with the fact that we want to provide a pension that grows with wage inflation. With the development of an older and older population, we need return to provide that. What is remarkable in the context of this conference is that it hasn’t all gone to equity, but also to alternative assets like real estate, private equity, and, in the last four years, commodities.
If we look at our present allocations, there is a 4% allocation to commodities in terms of assets. But if we look at risk, and you can think of a measure like the monthly value at risk that a particular asset has within PGGM, commodities represent a much larger part of the total mix. Equities still pose most of the risk – together with private equity. But the amount of risk represented by commodities is comparable to fixed income and real estate, although fixed income and real estate have a 39% and 15% allocation respectively. That has everything to do with the high volatility of the commodity markets.

We have implemented commodities since 2000. I’ll give you some quick facts and then go on. From 2000 we allocated 4%, because of our size. That sounds small, but compared to other institutional investors, this is a substantial allocation. Certainly we were one of the first pension funds to do so. Ontario Teachers in Canada made a major substantial allocation just before us. It also instantaneously made us one of the biggest investors in the world in commodities.

PGGM’s investment in commodities is based on future contracts on commodities. The obvious reason to invest in commodities via futures is that we don’t want all the operational hassle concerned with physical commodities. However, there is also – and this is very important – a question of return: futures can yield a return that physicals cannot. In the end, that will be one of the important conclusions from my story. That’s the most important factor in this.

We are benchmarked against the GSCI, the Goldman Sachs Commodity Index, which has developed into a kind of market index for passive long-only investments in commodities. As one of the largest investors in commodities, we are member of the policy committee of that index, representing investors.

For the rest of this morning, I will concentrate on why we are allocating to commodities and then, to make it more specific for this conference, what the role of precious metals is within the commodity allocation.

The basic decider of our strategic mix is asset liability modelling (ALM). It’s a lot of statistics. You can put a lot of question marks around how reliable it is, but it gives you an idea of how things work together. The thing with ALM is that people very often think some kind of return comes out of the ALM model. In the end, you put the return numbers in yourself. You can base it on history, or adjust it for reasons of being prudent, but return and volatility assumptions of different asset classes are an input to the ALM, not an output. That needs to be clear.

Here are the inputs we used for our ALM study that made the decision for our strategic allocation in 2000. We typically do this every five years. You see that commodities as a standalone investment is very unattractive. It has the highest volatility and the lowest return. To be fair, we assumed a lower return than we got out of historical numbers. That was because it was a new asset class for us and we wanted to be on the prudent side.

Even with these prudent assumptions, as a standalone investment it is not interesting, so the added value should be derived from either positive correlation with liabilities or/and diversification with other assets.

These (prudent) assumptions for commodities did not provide value as a stand alone investment → added value should be derived from positive correlation with liabilities and/or diversification with other assets.
Then you start looking at correlations. Commodities are very favourable when it comes to having a negative correlation with other assets, but also a positive correlation with wage inflation.

This inflation number is a bit doubtful because the figure we need for wage inflation is the Dutch healthcare sector wage inflation, where government and negotiations to a certain extent regulate wages, and it seems to lag the wage inflation of other sectors a bit. And we are a bit doubtful about the positive correlation with the US.

When we looked at 100% allocation to commodities, it still didn’t look favourable – despite the positive correlation with our liabilities. Commodities still yielded the highest contribution; that’s the contribution on the x-axis – the contribution our participants have to pay. In a way that’s a measure of the risk you have to take versus the return. On the y-axis is the shortfall probability – the probability that in the end we won’t be able to pay our pension. This still doesn’t look good for commodities.

We had to look at diversification. There the real added value comes out. Even under the prudent assumptions for commodities, if you took a standard mix of 30/55/15 – the kind of mix we had before 2000 for equity/fixed-income/real estate – if we added to that, reduced the whole mix by 20% and instead invested in commodities, substantial reductions in contributions were possible.

Shortfall probability, as I explained, is the probability that in the end we won’t be able to pay the pensions. On the y-axis of the chart below are the contributions our participants had to pay. Adding firstly private equity, because of its higher returns, but then commodities, improved our mix substantially.

That’s it for the statistics, but it’s always important to look at why it works the way it does. As I mentioned earlier, we are benchmarked against the GSCI, which was also used as the basis of our statistical analysis. The reason that that was our benchmark, to be very brief about it, is that we had some requirements. The index had to be in the public domain, it had to be a fair representation of the characteristics we wanted in a certain market, and we wanted total transparency and the availability of financial products on that financial index.
One characteristic of the GSCI is that it has a world prediction weighting, measured in dollars. The more that is produced in a certain commodity, the higher the allocation, the weighting of that commodity within the index, is. To us that went some way in ensuring that the commodities that have a real link to the economy have the highest weighting in that index.

One criticism of the GSCI is that it has very high volatility. What we found is that because of the negative correlation with other assets, we actually like high volatility. If you have an asset that is negatively correlated but doesn’t have volatility, it doesn’t help you much.

In 2002 we actually customised our benchmark and increased the weight in energy. By the way, the way the GSCI works with this, world production weighting means that about 70% of the index is in energy. We actually like even more energy. We changed our benchmark in 2002, and it has served us well because since then, the energy index has outperformed the non-energy index within the GSCI by more than 100%.

These are the weightings. For you, the most interesting is the weighting of precious metals, which is probably disappointingly low at 2.2%, of which 2% is gold. I will argue that maybe I think that is still too high. To look at that, we have to look at futures and at where the return comes from. There are three sources:

- Price change, which is the obvious one
- The yield on the collateral. There is no capital required to buy the futures, but we invest the allocation that is made to commodities in treasury bonds or cash deposits, so we get interest out of that

- The third and most important one is the roll return, and that’s the one that’s often overlooked.

There is a very general prejudice about investments in commodities: there’s no inherent return; they just yield between zero and inflation; and if you consider how the oil price developed over the years until 2003, there might be a small trend, but in the end it’s not more than the rate of inflation. So why should we be interested in it?

If you look at short-term returns, I’ve plotted the spot returns – the return you get because of the price movement on a monthly basis – against the total return. There is an almost perfect correlation. But if you look a bit more closely, you see that the slope is tilted a bit to the right, meaning that the total return is a bit higher than the spot return.

I can very clearly illustrate this by a graph of the development of the oil price during 2003.

The short-term price movements are perfectly correlated between the development of the price and the excess returns, the return without the interest on the collateral. The upper line representing the average has a higher slope than
the lower one – meaning that in the end, although crude oil only rose 4% in 2003, I got a return on my investment, without the interest on the collateral, of 26%. The difference is all due to the roll return – the rolling of the futures. If a future approaches maturity, I buy another future with a higher maturity, wait until it gets close to maturity, then again and again, I roll these futures over. That yields an extra return – however, this is not the case in precious metals. In precious metals during 2003 we had a great price movement – double digits – but my excess return was actually lower.

In oil, the price was only 4% higher, but I got a similar or even higher return in gold. To explain why, we should look at the futures curve. I’ve plotted the closing values of gold and crude oil futures as at 27 August 2004. There is a remarkably different shape. I’ve plotted the maturity date of the futures versus the price. With gold you get a textbook example of how you should price a future. You take into account the carry of storage costs plus interest, and add that to the spot price of the commodity.

With oil, the slope of the curve is negative. What’s happening is that the market believes that a premium should be paid for short-term futures. That is because the market is worried about the supply of that particular commodity, so they’re prepared to pay an extra premium. There are all kinds of explanations; I won’t go into them too deeply, but it has to do with producers selling at the far end and consumers buying at the short end. It also takes a certain set of dynamics to get a commodity out of storage into the industrial process.

This is the main point. Crude oil is an industrial commodity, so it’s used in industrial processes. Whatever the price is, these processes need to go on. People involved in these processes like to pay money for stability and certainty of delivery. How much they want to pay is very much dependent on how critical the system is.

I have borrowed here from the presentation Steve Matthews gave last year. I didn’t put actual numbers behind it, but the trend is clear: live cattle or lean hogs are very hard to store. The forward-days cover – the amount of days the industrial processes can go on with the total amount of the commodity that is in storage – is therefore very low.

Energy is also quite difficult to store in order to get it in the infrastructure system. The situations in agricultural commodities and industrial metals are a bit more relaxed. Silver is on the high side.
answer is: for providing risk capital to ensure the industrial processes can go on. But for precious metals there’s no such case, so there shouldn’t be a reward – and there isn’t any.

In our analysis, roll return is the highest in commodities that are difficult to store and prone to supply disruptions. In the present uncertainty in the world, that is certainly the case for energy. The roll returns also add to the diversification with other assets. Typically if the oil price goes high, it has a negative effect on equity. If prices are high, there is a shortage of supply and people are worried about it, so roll return, the premium they want to pay for immediate delivery, is higher as well. The effect is increased.

In the end, and that’s the most important consideration for us, our strategic investment in commodities is providing risk capital rather than a speculation on spot prices. That is not to say that in the implementation of commodities we wouldn’t take the occasional bet – and there is a place for gold there – but for the strategic allocation, there shouldn’t be.

This shows how important this roll return is. The bottom lines are the price development of energy and precious metals, along with the total return for precious metals. What happens is that the slope of the futures curve for gold is actually positive, meaning that by rolling I lose money. The amount of money I lose is more or less the interest rate. This is compensated by my investments in the cash collateral. In the end the total return is almost the same as the price development. The upper white line is the total return of energy. The dark one, for comparison, is the S&P index. To be fair to my equity colleagues, it’s not completely correct – it’s without dividends – but for the general picture it doesn’t matter that much. I plotted since 1983, because that’s when the futures contract in oil started. It’s better to plot it on a logarithmic scale.

The total return in precious metals is actually a bit lower than the price return on gold, whereas the total return on energy is much better than just the change in price. That’s all due to the roll and makes an investment in energy comparable to equity, unlike an investment in precious metals futures.

How does diversification work? The middle line is the S&P index. The upper and lower lines are where I’ve added commodities to the S&P, to the equities, in such a way that both of them have 13.4% volatility. One is by adding precious metals, the bottom one. The top one is by adding energy. You see that you can achieve diversification with precious metals as well as with energy, but with precious metals it’s at the expense of your return. With energy, you actually add to the return. Again, it’s probably fairer to illustrate it on a logarithmic scale.
Gold is often quoted as particularly providing diversification in times of crisis. Oil does that as well, I think. Around the time of the first Gulf War there was a dip in equity. Adding gold, it still has a dip. With energy the dip actually disappears completely. In recent years we have seen the same kind of development.

As a way of looking at asset classes, energy and non-energy are quite different. This graph is quite particular to the mix of PGGM, so you shouldn't derive any general conclusions from it. It's just to illustrate one case. It takes 5% out of our mix and replaces that with 5% of one particular asset. The most favourable is in the left corner, because that means the probability of full indexation — when we can match full inflation in the pension — is high and the shortfall probability is low, because it's actually improving the shortfall probability.

Energy is so favourable because we have not made — according to our ALM modelling — an optimal allocation to commodities. In our model, commodities are optimally 20-25%. We only allocated 4%, which has something to do with our inexperience in those markets and the total size of the market. Theoretically it's not optimal, so it's no surprise that commodities did the best here. What is very illustrative is that actually the added value of commodities comes from energy, not from non-energy, which is almost the most unfavourable one.

I suspect it won't be any surprise to you anymore that we prefer energy over non-energy. I think energy has a stronger link with the global economy and with the other asset classes we invest in than non-energy. It has the highest average backwardation, which is the amount of premium for the short maturities, and positive roll return. It helps with diversification, as I explained. Backwardation and roll return tend to accentuate price peaks in times of crisis. Energy is more volatile, but the diversifying power is therefore larger.

In the end, arguably energy and non-energy are different asset classes. That is particularly true for precious metals, because precious metals are probably the most non-energy-like commodities. To us they look more like a currency, a financial asset, than commodities. We are in commodities for the particular characteristics of commodities and the dynamics of supply/demand in those markets.

Gold is often quoted as being a currency. For your information, in our strategic mix we also decided to hedge all currency risk out of our mix for the same reasons: you have the volatility and extra risk because of FX changes, without inherent reward for that risk. We should always ask ourselves: why do we get a reward for being passively long in a certain asset? It's not to say that you cannot make money in currencies, or for that matter gold. But by having a strategic long position in them this is not the case.

That concludes my case. One word of commiseration for you is that there will be more institutional money coming into the commodity markets. A lot of that money will be benchmarked against the Goldman Sachs index or other indices. Because they build around fixed rules, there will be an allocation to precious metals. You will profit from that, I guess. ■