

Gold Investor

Risk management and capital preservation

Volume 4

In this edition:

- Why invest in gold?
Gold's role in long-term strategies
- Gold and currencies:
the evolving relationship with the US dollar

October 2013

About the World Gold Council

The World Gold Council is the market development organisation for the gold industry. Working within the investment, jewellery and technology sectors, as well as engaging with governments and central banks, our purpose is to provide industry leadership, whilst stimulating and sustaining demand for gold.

We develop gold-backed solutions, services and markets based on true market insight. As a result we create structural shifts in demand for gold across key market sectors.

We provide insights into international gold markets, helping people to better understand the wealth preservation qualities of gold and its role in meeting the social and environmental needs of society.

Based in the UK, with operations in India, the Far East, Europe and the US, the World Gold Council is an association whose members comprise the world's leading gold mining companies.

For more information

Please contact Investment Research:

Juan Carlos Artigas

juancarlos.artigas@gold.org
+1 212 317 3826

Johan Palmberg

johan.palmberg@gold.org
+44 20 7826 4773

Boris Senderovich

boris.senderovich@gold.org
+1 212 317 3882

Marcus Grubb

Managing Director, Investment
marcus.grubb@gold.org
+44 20 7826 4724



Scan with your mobile device to
access our research app for investors

Contents

Foreword	02	II: Gold and currencies: the evolving relationship with the US dollar	19
<hr/>		<hr/>	
I: Why invest in gold?	03	The link between gold and currencies	20
Gold's role in long-term strategies	03	Gold: currency or commodity?	21
<hr/>		Focus 1: What makes gold a currency?	23
Gold's contribution to a portfolio	04	Gold's relationship to the US dollar	24
<hr/>		Focus 2: Do international investors benefit from gold's currency hedging qualities?	25
Gold's role in preserving capital	04	The relevance of the US dollar in explaining gold price fluctuations	26
What gold as an inflation hedge really means	05	Focus 3: Gold, the US dollar and purchasing power	27
Focus 1: Hedging US CPI	06	<hr/>	
Gold as a currency and as a currency hedge	06	Trends into the future: gold's potential role in the monetary system and its evolving relationship with the dollar	28
Combining inflation and currency hedging to protect purchasing power	08	The state of the US dollar	28
<hr/>		The emergence of other currencies	29
Gold's role in reducing risk	10	Conclusion	30
Focus 2: What risk?	10	<hr/>	
Why does gold reduce volatility?	11	References	31
The importance of having high-quality, liquid assets and gold's function as a systemic tail-risk hedge	12	<hr/>	
<hr/>			
Gold in the context of a portfolio	14		
Should gold be viewed as a tactical or strategic asset?	14		
Focus 3: Defining an investment horizon for gold	16		
<hr/>			
Conclusion	16		
<hr/>			
References	17		
<hr/>			

Foreword



Marcus Grubb
Managing Director, Investment

Welcome to the fourth edition of *Gold Investor*. We are pleased to share a selection of the latest investment research from the World Gold Council with you.

The global economy has come a long way since the 2008-2009 financial crisis and its aftermath. The economic recovery today seems to be on a sounder footing than earlier this year. In the US, the housing sector has not only stabilised but is demonstrating consistent growth, unemployment has declined – albeit the participation rate remains low – and consumer spending continues trending upwards. In Europe, the fear of a catastrophic failure has subsided with the European Central Bank (ECB) prepared to ‘do whatever it takes,’ and recession gave way to a nascent recovery during the summer, buoying European equity markets. In China, an upward surprise in economic growth has eased concerns about the economy and focused attention on policy reform.

But such a rosy picture, while welcome, does not tell the full story. The future does look brighter compared to where we were in 2012, but questions linger about how soon a full recovery will come or how steep the path to get there will be.

The recent US showdown over the federal budget and the debt ceiling has led some economists to downgrade their growth projections for this year. If these forecasts come to pass, it is likely the Federal Reserve (Fed) will maintain its large-scale asset purchase program further out to 2014. It is also likely this will reignite the discussion in other countries about the risk posed by Fed tapering – and the merits of a world economic and financial system dominated by the US and the dollar. Europe’s path to economic recovery will be long, and along the way it will have to create institutions to strengthen the monetary union. This will involve overcoming political hurdles that have the potential to unsettle financial markets and hinder already fragile economic growth, especially that of indebted peripheral European countries. Emerging markets remain volatile and are still likely to be affected by asset- and currency-price variability as a result of fluctuating expectations of Fed tapering and of varying domestic policy responses across emerging regions.

All this has created an environment in which financial markets move with less long-term conviction and are more sensitive to short term tactical views accentuated by derivatives and algorithmic trading.

What can investors do in such an environment? Perhaps apply the single most important lesson learned during the Great Recession: risk management matters. Risk is not something to be feared but embraced as the price investors pay to earn meaningful returns. However, anticipating the unexpected and reducing downsides are key strategies for protecting hard-earned returns in this ‘new normal’ economic reality.

In this edition of *Gold Investor*, we first explore the reasons investors should consider gold as an integral part of their long-term holdings, in *Why invest in gold?* We discuss the benefits of holding gold, such as inflation protection and currency hedging, in the context of global dynamics and its relationship to other assets. We analyse optimal gold holdings and explain why a 2% to 10% allocation to gold in well-diversified portfolios makes sense. In addition, as a continuation of our series on key drivers of gold, in *Gold and currencies: the evolving relationship with the US dollar*, we explore the reasons behind gold’s inverse relationship to the US dollar, its significance in price movements, and the potential effects of a migration to a multi-currency monetary system on gold.

We hope you find this edition of *Gold Investor* informative and stimulating, and we welcome your views.

I: Why invest in gold?

Gold's role in long-term strategies

A lot has been said about the merits of gold as an investment. Investors and market commentators fervently debate whether it could or should be used to protect against inflation, to hedge US dollar exposure, or even used as an asset of last resort. While there is abundant opinion about the rationale for holding gold or what measures should be used to assess its effectiveness, its role in a portfolio (eg, inflation protection, currency hedging, safe haven) and the measures used are quite often inadequately defined. We find that gold serves two main purposes: it protects – even improves – purchasing power and it helps manage risk. Here we define and discuss the measures that support the case for gold as a foundation for investors' portfolios.



Gold's contribution to a portfolio

There is one consistent fact across investment strategies: they aim to obtain the greatest possible return while incurring the least risk. Additionally, a few recurring methodologies may be used (eg, optimisation, liability matching, risk factor decomposition, level of risk tolerance). Similarities end there. Whether a strategy is set to maximise long-term returns, short-term gains or outperform a given benchmark, implementation varies widely. Further, defining risk, let alone how to mitigate it, is a daunting task. Finally, measuring the success or failure of an investment strategy completely depends on the methodology used.

Gold's effectiveness is hotly debated in part due to lack of clarity about the role it plays.

It should not come as a surprise, then, that the role and effectiveness of gold is hotly debated.¹ Broadly speaking, gold is seen as performing two main functions in the context of capital safeguarding: 1) it protects purchasing power and 2) it mitigates risk in a portfolio. However, the lack of specificity as to what those really mean has created not only confusion but also disillusionment among some investors. It has led to multiple interpretations and has made it difficult to quantify gold's success in providing such benefits.

We aim to clarify how gold protects purchasing power and reduces risk.

Considering that investment strategies, their horizons, risk tolerances and even definitions of risk vary widely among investors, we aim to clarify the benefits gold adds to investment portfolios in a precise manner and present measures to quantify its effectiveness.

Our analysis shows that investors should use – and analyse – gold not in isolation but as a strategic component in their portfolios that:

- Protects their 'global' purchasing power (taking into consideration local inflation rates as well as currency fluctuations)
- Reduces portfolio volatility
- Minimises losses during periods of systemic market risk (ie, large shocks that affect multiple economic sectors/world regions)
- Serves as a high-quality, liquid asset that can be used when the selling of other assets can be costly or cause large mark-to-market losses.

Gold's role in preserving capital

In addition to potential losses in asset prices, investors' capital is affected by the erosion of purchasing power through inflation and, in a global context, the relative value of the currency that serves as the benchmark for an investor. While the level of inflation and the value of a currency should be closely related, in practice the two may diverge – imperfect measurements, government interventions and trade restrictions all contribute. In this sense, gold's negative correlation to many currencies, particularly the US dollar, and its relationship to global inflation – as we explain below – make it a particularly useful tool for protecting purchasing power over the long run.

¹ Erb C., and C. Harvey, *The golden dilemma*, June 2012.

Investors commonly see gold as an inflation hedge; however, not everyone agrees what that means.

Gold is linked to global (not only regional) inflation...

...measured in the long run.

While good reasons supported the use of US CPI in the past, today a global approach is needed.

What gold as an inflation hedge really means

A common argument for buying gold is that it is seen as an inflation hedge. The problem, however, is that not everyone agrees on what this really means. In the first place, measuring inflation itself can be daunting. There are numerous well-studied indices and methodologies, but in the end, inflation is not the same for people in different regions or social strata. Consumer price indices measure 'representative' baskets of goods that may well reflect a general price trend, but these will likely not reflect everyone's experience of inflation (see *Gold and currencies: protecting purchasing power*, April 2013). Further, when investors say gold is an inflation hedge, do they mean it hedges inflation in the US, Europe or elsewhere?

We summarise gold's role as an inflation hedge as follows:

- Gold, especially today, should be understood in the context of global inflation: an asset that responds to price pressures in developed markets as well as in emerging markets.² Gold is widely used in many emerging markets, especially in Asian and Middle Eastern countries, as a means to preserve and transfer wealth from one generation to the next.
- Gold helps to preserve capital over the long run. While there is evidence to suggest that the gold price rises more during periods of high inflation, as discussed in *The impact of inflation and deflation in the case for gold*, July 2011, by Oxford Economics, the relationship between gold, inflation and, more broadly, purchasing power should be analysed over long periods of time and not on a monthly basis.

So, why is US inflation (more specifically, US CPI) the measure most widely used to measure gold's effectiveness as hedge? (**Focus 1**) The fact that gold is traded (and influenced) by the US dollar and that real interest rates create an opportunity cost for holding gold make US inflation a logical candidate to use as a reference in long-term pricing. In fact, seminal research works such as *The golden constant*, by Roy Jastram, or *Short-run and long-run determinants of the price of gold*, June 2006, by Levin and Wright, examined and found a strong long-term relationship between gold and US inflation. Their conclusions, however, were influenced by a few additional factors.

First: tradition. In terms of physical demand and volume of transactions, the US market has traditionally been one of the key markets for gold. In fact, during the gold standard – lasting almost 100 years until 1971 – the value of the US dollar was directly linked to gold.³ Second: data availability. US inflation measures are widely available, they have been extensively studied, and they are used as a guide in policymaking. In contrast, other countries' inflation measures, especially those from emerging markets, can be hard to obtain or be considered unreliable in long-term studies. Yet, many things have changed in recent years. Over the past decade, emerging market demand for gold has surged, central banks have become net gold buyers, and the global economy has become, overall, less US-centric.⁴

2 Levin and Wright, in *Short-run and long-run determinants of the price of gold*, June 2006, explore this notion. However, they used the US and world price levels as proxy.

3 A consequence of this is that it is difficult to disentangle the effect of inflation from the effect of the US dollar on gold in the period prior to 1971. Without proper techniques and assumptions, using gold price data prior to 1971 can lead to misleading results regarding gold's ability to protect purchasing power.

4 Levin and Wright acknowledged that gold's long-term performance should be linked to global inflation. However, they used a world index that correlated heavily with US inflation. Thus, data availability prevented them from disaggregating the influence of US inflation from the influence of global inflation on the gold price.

Focus 1: Hedging US CPI

If an investor's objective is solely to hedge US CPI, instruments such as Treasury Inflation Protected Securities (TIPS) are constructed to do exactly that. However, TIPS are highly correlated to (non-inflation linked) US Treasuries through interest rates. When interest rates rise, the value of the underlying bond decreases. Thus, unless they are held to maturity, TIPS are directly influenced by the vagaries of monetary policy. In addition, they are subject to price dislocations (sometimes selling at a premium) due their relatively limited availability – there is less than US\$1tn in TIPS outstanding, equivalent to 8% of total Treasuries outstanding.⁵ Gold's role is broader than hedging US CPI; it complements and enhances the role that TIPS play. As shown in *Gold as a tactical inflation hedge and long-term strategic asset*, July 2009, investors who already hold TIPS benefit from adding gold to their portfolios (**Table 1**).

Table 1: Portfolios containing gold outperform portfolios with TIPS

	Min variance		60/40 Portfolios	
	Portfolio TIPS	Portfolio TIPS + gold	Portfolio TIPS	Portfolio TIPS + gold
Return	4.6%	4.5%	6.6%	6.3%
Volatility	4.3%	4.2%	8.3%	7.6%
Information ratio	1.06	1.07	0.80	0.82
US equities	6%	8%	31%	28%
Global equities	6%	4%	30%	27%
US Treasuries	39%	39%	21%	19%
US corporates	1%	1%	13%	12%
TIPS	48%	41%	6%	8%
Gold	na	7%	na	6%

Reference notes are listed at the end of this article.

Source: Bloomberg, World Gold Council

Gold not only satisfies basic currency criteria, it is a natural hedge to fiat currencies and its liquidity rivals that of major foreign-exchange markets.

Gold as a currency and as a currency hedge

Throughout human civilisation, gold has been used as a currency.⁶ Gold satisfies many criteria that define a currency including its use as a unit of account (convertibility), store of value and medium of exchange. But as discussed in the next article, *Gold and currencies: the evolving nature of the relationship with the US dollar*, October 2013, its geological scarcity and its physical/chemical qualities as a non-corrosive, durable metal make it a natural hedge to paper currencies. Because fiat money can be printed as a result of monetary policies, part of gold's value as a hard asset is derived from its lack of supply growth. In other words, it is linked to an investor's trust (or lack thereof) in the ability and willingness of a government to fulfil its obligations. In addition, gold is a highly liquid asset, with daily trading volumes comparable to major currency pairs such as the US dollar-pound sterling, and is eclipsed only by US dollar-yen and US dollar-euro transactions.

⁵ US Treasury Department, 30 September 2013.

⁶ As early as c. 550 B.C., King Croesus of Lydia (in modern-day Turkey) issued gold coins of standardised purity for public circulation. Three hundred years ago, the British Empire switched from a dual gold and silver standard to gold as the single backer of its currency. The US between 1879 and 1971 backed the US dollar with gold. And the global monetary system between 1944 and 1971, driven by the Bretton-Woods accord, balanced foreign exchange rates by adjusting its gold reserves relative to its US dollar price.

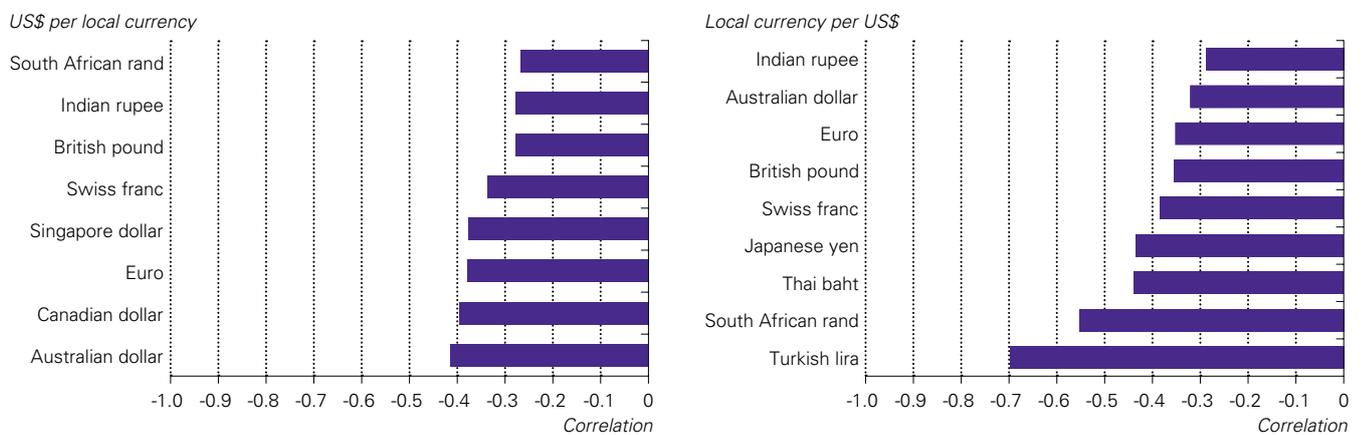
Gold is seen and used as a currency, providing a natural alternative to fiat money.

It has a strong inverse correlation to the US dollar that benefits investors around the globe...

As such, while gold is considered a commodity by many, in practice, its role as currency stands out. It is used by central banks as part of their foreign reserves, accepted in exchange for goods in parts of the world, and traded alongside other currencies in the financial system. Indeed, the Bank for International Settlements (BIS) stated in its 2013 annual report that “gold is to be dealt with as a foreign exchange position rather than a commodity because its volatility [which is almost consistently lower than commodities] is more in line with foreign currencies, and banks manage it in a similar manner to foreign currencies”.⁷

In addition, gold has a consistently negative correlation to the US dollar. Whether measured against a basket or against individual currencies, gold’s negative correlation to the US dollar is particularly strong (**Chart 1a**). However, US investors are not the only ones to benefit from gold’s currency hedging qualities. An allocation to gold, denominated in US dollars, represents an implicit exposure to a foreign currency, providing international investors with protection against falls in their local currency (**Chart 1b**).⁸

Chart 1: (a) Gold’s negative correlation to the US dollar helps US investors, (b) as well as foreign ones



Reference notes are listed at the end of this article.
 Source: Bloomberg, World Gold Council

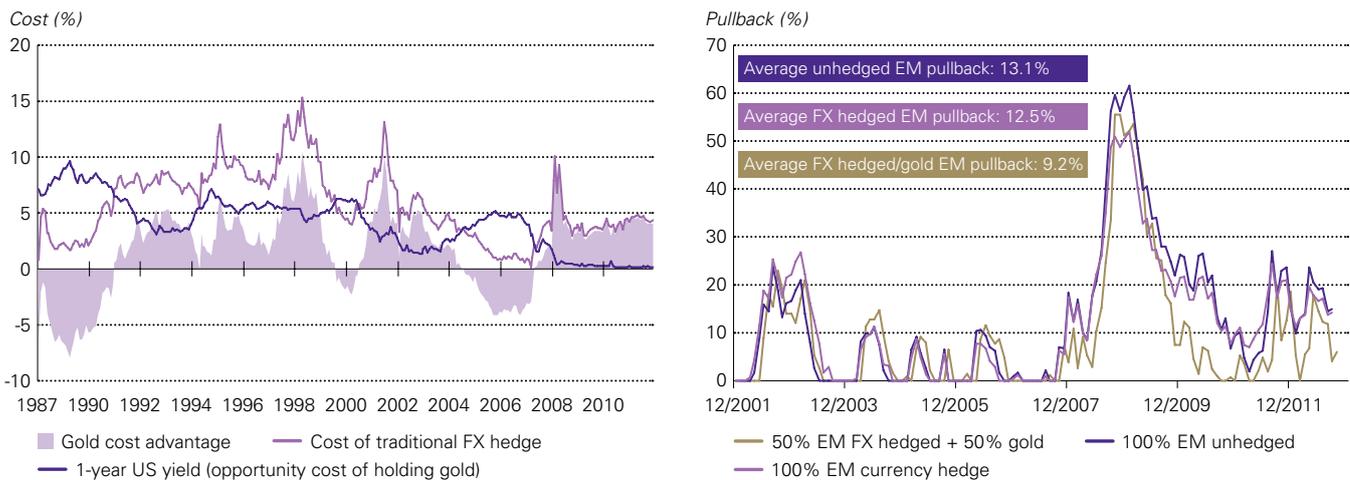
⁷ BIS, *83rd annual report*, June 2013.

⁸ While gold is not the only asset that exhibits this type of behaviour, many governments restrict (or even prohibit) individuals from owning foreign-denominated assets as part of capital control policies.

...providing a useful and cost-effective complement to other hedging strategies.

Further, when evaluating a portfolio's exchange risk in light of its foreign currency denominated holdings, gold can be used as a cost-effective and better-rounded complement to other hedging strategies (see *Gold and currencies: hedging foreign-exchange risk*, January 2013). For example, for a US investor trying to hedge currency risk stemming from emerging market exposure, gold has been historically less costly than a basket of currencies (**Chart 2a**), and including gold as part of the hedging strategy has significantly reduced drawdowns (**Chart 2b**).

Chart 2: (a) Gold is able to hedge exchange rate risk at a lower cost than traditional FX forwards; (b) when used as a currency hedge, gold reduces the draw-down of an EM equity investment



Reference notes are listed at the end of this article.

Source: Bloomberg, Thomson Reuters, Global Financial Data, World Gold Council

The combination of inflation and currency hedging makes gold particularly relevant in protecting purchasing power...

Combining inflation and currency hedging to protect purchasing power

Gold may follow the monthly changes of regional consumer price indices, but it does not have to do that to benefit investors. The value of adding gold to a portfolio comes from protecting **purchasing power**. In other words, gold responds not only to CPI inflation, but also to the indirect effects of currency devaluation, which are particularly relevant in a globalised economy. In theory, exchange rates should reflect inflation rate differentials between countries. However, in practice there are several reasons why they do not (see *Gold and currencies: protecting purchasing power*, April 2013).

As an alternative, *Real Effective Exchange Rates* (REERs) – which measure exchange rates among currencies adjusted for inflation differentials – can be used to better measure purchasing power.⁹ When purchasing power parity fails to hold for free-floating, open-market currencies over the long run, holding other factors constant, the consumer price basket used to compute the REER may not be capturing ‘true’ inflation. Thus, when a free-floating currency depreciates in real effective terms, inflation in the country might be higher than CPI would suggest. Additionally, research by the Bank of International Settlements suggests that “keeping the level of the real exchange rate depreciated (appreciated) for an extended period may lead to a sustained increase (decrease) in inflation”.¹⁰ In other words, a structurally weak currency may fuel inflation over the long run.

9 Catao, L. *Why real exchange rates?* Finance and Development, September 2007.

10 Kamin, S. *A multi-country comparison of the linkage between inflation and exchange rate competitiveness*, Bank of International Settlements, Working Paper No. 45, August 1997.

...which can be measured by using real effective exchange rates (REER).

The reason why the value of a currency (in this case a REER) is relevant to investors who may only hold local-currency liabilities is twofold. First, as well regarded as consumer price baskets can be, they do not always reflect the nominal prices paid by end consumers,¹¹ or understate certain categories (such as tuition or healthcare) which can make up a larger share of the expenditures of some segments of the population than what is reflected in the average consumer basket. Second, currencies are typically quicker (more efficient) in incorporating market views on changes to inflation rates than those generally reflected in consumer price baskets. For example, REERs show that the US dollar has been depreciating fairly consistently for the past four decades and considerably faster over the last 10 years even though inflation, measured by CPI, has been fairly muted over that period.

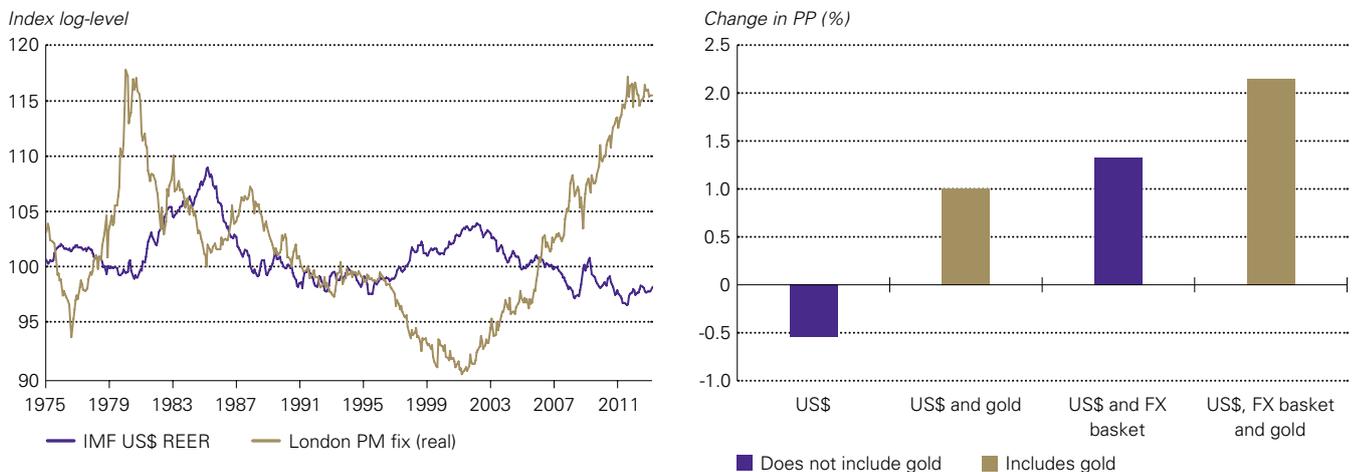
REERs indicate investors have consistently lost purchasing power since the 1970s.

Analysing the period since 1970s – which, as previously discussed, should be the most relevant to current investors as it captures gold’s performance as a free-floating asset – the strong inverse relationship between the purchasing power of a US investor and gold is not only very apparent (**Chart 3a**), but our analysis shows that by holding a portion of their cash portfolio in gold, investors maintain purchasing power and reduce volatility (see *Gold and currencies: protecting purchasing power*, April 2013).

Adding gold as part of cash holdings helps prevent this erosion of capital.

Even if investors already hold other developed market currencies, gold provides additional direct and indirect advantages that improve the performance of their cash holdings (**Chart 3b**). For example, calculations using data going back to the 1970s show that investors with 87% in US dollars and 13% in gold would have increased their purchasing power by 1% per year while maintaining the same level of volatility. Further, holding 47% in US dollars, 18% in gold and the rest in foreign currencies (primarily Swiss franc and yen) would have increased investors’ purchasing power by 2.1% per year without incurring higher risk.

Chart 3: (a) Gold has a negative correlation to the US dollar in real effective terms; (b) gold helps preserve purchasing power (PP) and improves on a basket of currencies



Source: Bloomberg, IMF, LBMA, World Gold Council

11 As an example, consider the price of consumer goods society has come to rely on. The price of high-end computers may have fallen relative to 10 or 15 years ago, but over the past few years, their price has been steady if not rising. However, consumer price baskets adjust for quality, speed, storage capacity, etc. Thus, they appear to have fallen in price, even though a person is spending the same – if not more – money to acquire one.

Gold's role in reducing risk

Gold is also a well-rounded hedge against multiple risks investors face.

One of the most important contributions gold brings to a portfolio relates to risk management. Not only does gold help preserve capital over the long run, but it smoothes the bumpy rides investments may face over the course of time. This includes portfolio volatility, but also goes beyond that (**Focus 2**). Gold is a very well-rounded hedge against multiple sorts of risk. It helps reduce volatility, minimise extreme losses and enhance liquidity. All this at a relatively low cost: gold's real return – ie, the opportunity cost of holding relative to short term cash even when adjusting for inflation – has generally been positive over the course of time (**Table 2**). In this section, we explore how gold behaves as a risk-management vehicle.

Table 2: Gold has outpaced inflation in the US and abroad, as well as short-term rates

	Nominal gold return	Real gold return		Gold return in excess of	
		using US inflation	using global inflation	US cash	global cash
Average since 1971	10.37%	4.19%	5.96%	5.13%	na
25-year average	5.24%	2.56%	1.58%	0.99%	0.09%
10-year average	14.43%	11.94%	12.10%	12.06%	11.04%

Reference notes are listed at the end of this article.

Source: Bloomberg

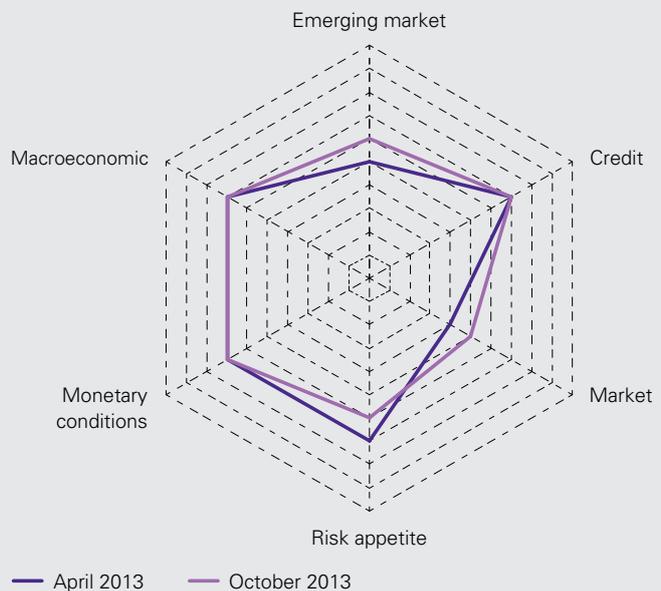
Focus 2: What risk?

To obtain any sort of return, investors will incur risk in one form or another. However, in financial literature, *volatility* is a persistent misnomer for risk. Volatility is a characterisation of risk but it does not define it. Risk implies a chance that a given investment will not deliver its anticipated outcome, regardless of the reason. A simple example is that, for many fixed-income securities, volatility is low, but risks abound: risk of default, risk of the counterparty, risk of changing interest rates, etc.

As the importance of portfolio risk management has increased, especially after the 2008-2009 financial crisis, understanding the implications of such a diverse set of risks and finding the appropriate instruments to manage them is paramount. In its recent *Global financial stability report*, the International Monetary Fund (IMF) has done a thorough job in describing the risks the financial system faces (**Chart 4**).¹² Based on the IMF assessment, the risks that influence investment decisions are:

- Macroeconomic risks (stemming from either developed or emerging countries)
- Financial markets and liquidity risks
- Monetary and financial conditions risks
- Credit risks
- Market sentiment (risk aversion/appetite).

Chart 4: Global financial stability map



Reference notes are listed at the end of this article.

Source: IMF

¹² International Monetary Fund, *Global financial stability report*, October 2013.

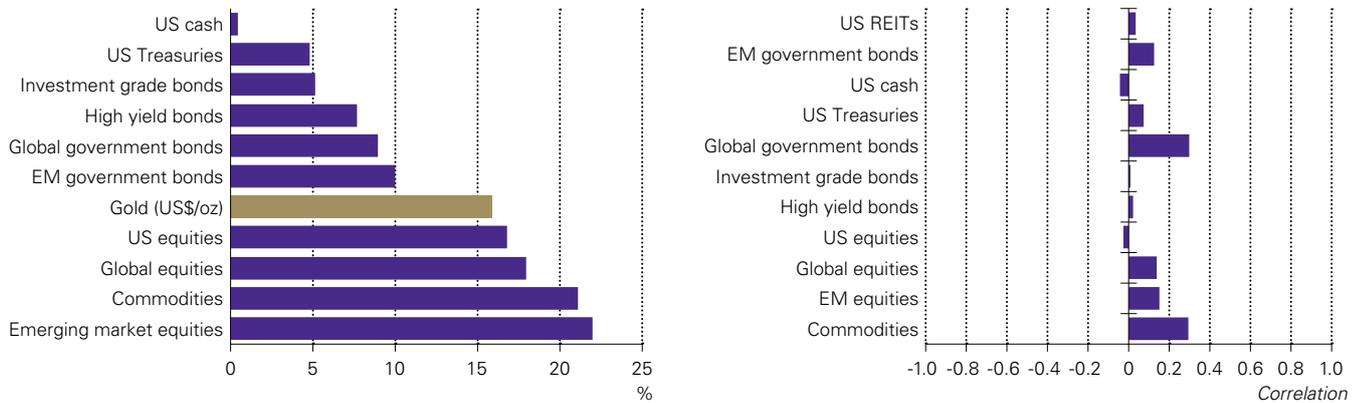
Gold reduces volatility through diversification.

Why does gold reduce volatility?

Diversification sits behind gold’s role in reducing portfolio volatility. In itself, gold is not a low volatility asset. And while gold is generally less volatile than many ‘risk’ assets, such as stocks, commodities or Real Estate Investment Trusts (REITs) – an impressive feat considering that these indices are made of many individual securities – it is still considerably more volatile than corporate bond indices and three times as volatile as US Treasury bond indices (**Chart 5a**). However, portfolio volatility is dictated not only by individual asset price variability but also by how these assets correlate to each other – in financial terms, their cross-correlation. Gold has very low correlation to most assets over the long run (**Chart 5b**). Thus, gold does not contribute as much to portfolio volatility and, in most instances, helps to reduce it significantly.

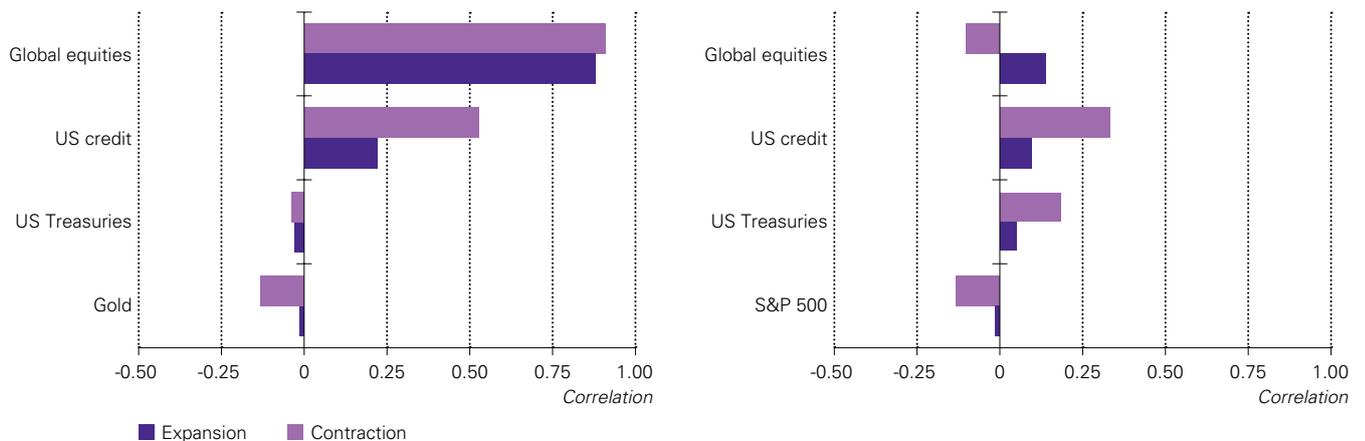
Further, unlike other assets, gold’s cross-correlation is fairly steady in periods of economic expansion and contraction. This rare quality makes gold a very useful diversifier in good and bad economic times, something we refer to as ‘true’ correlation (**Charts 6a and 6b**).

Chart 5: (a) While gold is more volatile than bonds, (b) it has low correlations to most assets, thus helping reduce portfolio volatility



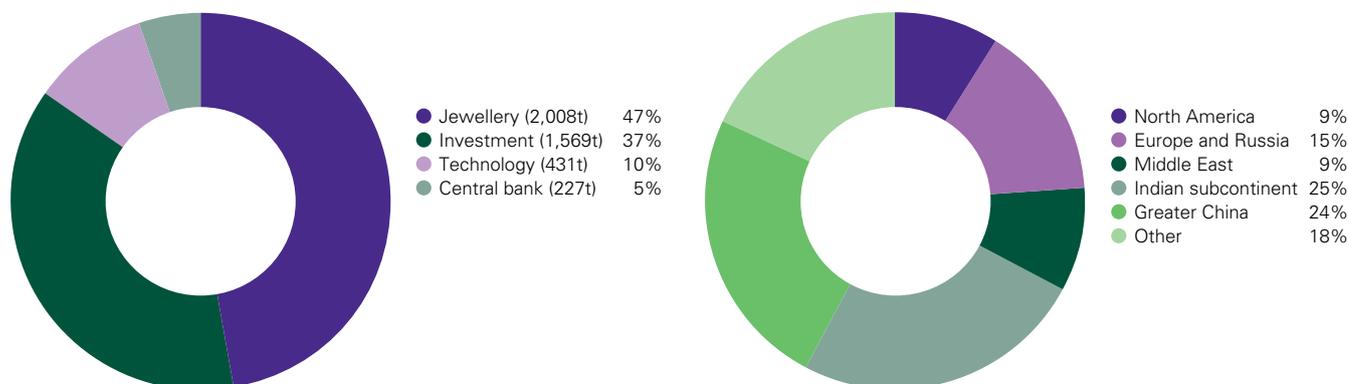
Reference notes are listed at the end of this article.
Source: Barclays, Bloomberg, J.P. Morgan, LBMA, World Gold Council

Chart 6: (a) Equities’ correlation to other assets increases during recessionary periods, (b) while gold’s correlation decreases



Reference notes are listed at the end of this article.
Source: Bloomberg, World Gold Council

Chart 7: (a) Gold's sources of demand are diverse (Q3'08 – Q2'13); (b) gold demand is geographically diverse



Reference notes are listed at the end of this article.
 Source: Thomson Reuters GFMS, World Gold Council

But why? The reason is rooted in gold's fundamental sources of supply and demand. Gold's demand is driven as much by consumer demand – and therefore linked to economic growth – as it is by investment. As a high quality liquid asset, investors use it in periods of financial turmoil (**Chart 7a**). In addition, central banks hold gold on the back of policy decisions aimed to diversify reserves. Further, geographically, demand is also fairly diverse (**Chart 7b**). And while the gold market can be heavily influenced in the short term by trading in developed markets (in particular the US), the long run is driven by a more diverse set of factors, many of which are linked to emerging markets.

The importance of having high-quality, liquid assets and gold's function as a systemic tail-risk hedge

It is common to find the term 'risk-free asset' in economic and financial literature; however, it should be clear that such a term stretches reality. After the 2008-2009 financial crisis and its aftermath – when even the costs of insuring against a US default increased¹³ – a greater acknowledgement of risks previously considered negligible (such as the collapse of well-regarded institutions like Lehman Brothers and the consequences to counterparties) has helped investors realise the importance of having a comprehensive risk management investment strategy. Investors must realise (even embrace) the fact that sustainable returns are achieved by incurring and prudently managing risk.

¹³ The premiums paid by investors buying 5-year credit-default swaps on US government debt increased from virtually zero to 100 basis points in Q1 2009 and has remained at an average of 40 basis points since then.

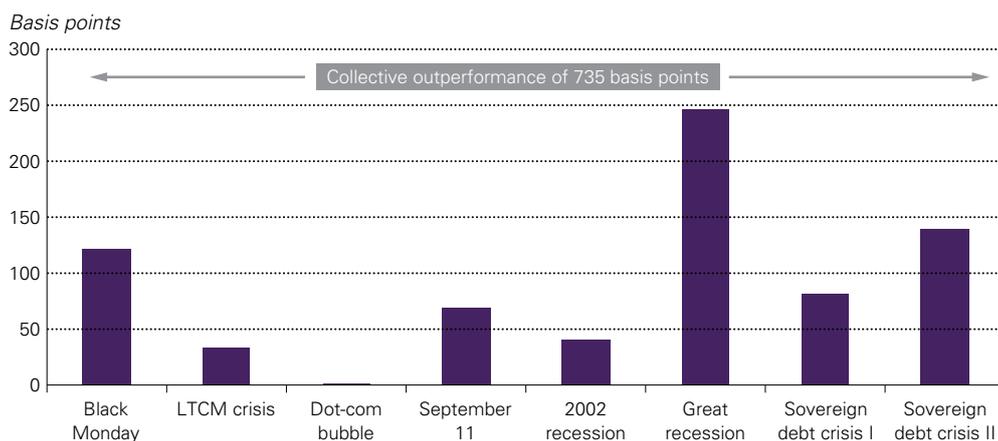
Gold provides liquidity when investors need it most...

...and helps reduce losses during periods of systemic risk.

In this light, including 'high-quality, liquid assets' as part of a portfolio can reduce risks, especially during periods when liquidity dries up. During these periods, investors 'fly to quality,' and demand for such assets increases. Because gold bears no credit risk it is viewed as a high-quality asset – it is no-one's liability and many forms to own it bear no counterparty risk.¹⁴ Further, gold's market is deep (large), accessible, and extremely liquid (see *Liquidity in the global gold market*, April 2011). Therefore, investors can actually use gold to meet immediate liabilities without having to sell other assets in a portfolio that may either have lock-up periods and gating clauses (such as hedge funds or private equity funds), or may be mispriced and heavily discounted thereby exacerbating losses (eg, mortgage-backed securities during the financial crisis).

As a by-product of gold's correlation to other assets during periods of financial turmoil and its properties as a high-quality, liquid asset, it helps balance portfolio risks stemming from the low-probability, high-impact events typically referred to as 'tail-risk' events.¹⁵ Tail risks are linked both to inflation and systemic risk. While gold should outperform other assets during periods of extreme inflation (see *Oxford Economics, The impact of inflation and deflation in the case for gold*, June 2011), it has also been seen to be the most effective tool for helping reduce losses during periods of systemic risk (see *Gold: hedging against tail risk*, October 2010 and *Tail-risk hedging: an international perspective*, January 2013). In other words, gold is particularly useful during periods when more than one economic sector (or region) is affected (see **Chart 8**).

Chart 8: Gold reduces portfolio losses during tail risk events



Reference notes are listed at the end of this article.

Source: Barclays Capital, Bloomberg, Hedge Fund Research, J.P. Morgan, Thomson Reuters, World Gold Council

14 While derivative gold contracts (such as futures, forwards, swaps and options), as well as unallocated gold accounts do incur counterparty risk, gold directly held in physical form or in allocated accounts (such as many gold-backed ETFs) has no inherent counterparty risk exposure.

15 These events, which can substantially erode the capital of an investor's portfolio in unexpected ways, produce portfolio returns that fall in the "tail" of a distribution. Depending on the likelihood of these occurrences (ie, how far into the tail of the distribution they lie), they are known as 2-sigma (2σ), 3-sigma (3σ) or 6-sigma (6σ) events – where σ is the mathematical expression to denote standard deviation.

Gold in the context of a portfolio

It should be fairly apparent by now that gold has many useful qualities for investors. However, it is particularly important to understand these qualities in the context of other assets held by investors. Very few investors hold only one or two assets. Most investment strategies rely on diversification to avoid binary – all or nothing – outcomes.

Gold's role should not be seen in isolation but in the context of other assets...

The advantage of using gold in a portfolio is that, while it may not be the best at individual tasks (hedging one particular asset type or currency, one particular measure of inflation, or one specific event), it is a cost-effective investment that can give protection from simultaneous events without reducing long-term returns. In this section, we explore how investors should characterise gold's role in a portfolio.¹⁶

Should gold be viewed as a tactical or strategic asset?

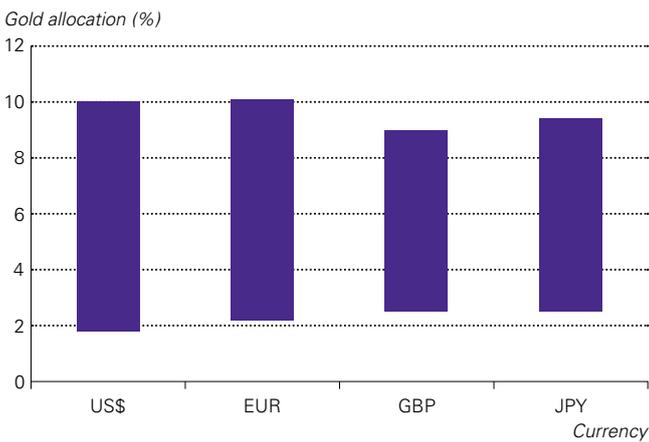
There is nothing to prevent an investor from using gold as a tactical or short-term investment purely driven by price performance. However, research has consistently shown that the true value of gold is linked to a modest, strategic allocation that serves as a core part of a portfolio – a foundation.

This has not been demonstrated by the World Gold Council alone (see www.gold.org/investment/research). Examples abound of other well respected organisations that have arrived at the same conclusion. These include New Frontier Advisors, Oxford Economics, J.P. Morgan, Mercer, and The University of Virginia Darden School of Business, among others.¹⁷

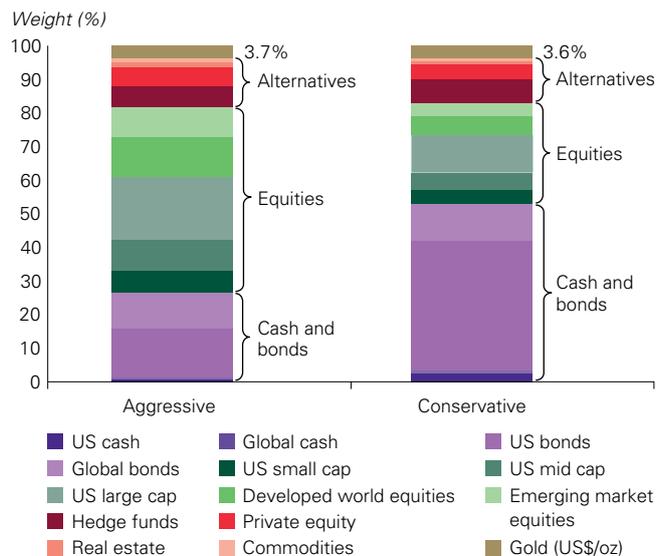
...as a strategic component to all portfolios.

Indeed, gold's benefits should not be solely linked to its price. The key lies in gold's ability to diversify and, thus, lower volatility; reduce losses in periods of financial turmoil, in part due to its role as a high-quality, liquid asset; and preserve purchasing power. Even under the assumption that gold's average annual return is a modest 2%-4% over the long run – lower than its historical return and akin to the global rate of inflation (see **Table 2** in the previous section) – gold's benefits mean that holding 2%-10% in gold can greatly benefit investors seeking a well balanced, diversified portfolio. Interestingly, this range also applies to the international investors' portfolios (**Chart 9a**).

Chart 9: (a) An allocation of 2% to 10% is optimal for broadly diversified portfolios denominated in several currencies; (b) in a diversified portfolio that includes alternatives, optimal gold allocations are still significant



Reference notes are listed at the end of this article.
Source: World Gold Council



Reference notes are listed at the end of this article.
Source: Bloomberg, Barclays, J.P. Morgan, World Gold Council

Modest allocations between 2% and 10% can reduce risk without sacrificing long-term returns.

To be sure, 2%-10% is a broad range. Let us start from a commonly used portfolio composition and explain how gold allocations should be adjusted. In particular, our research shows that a 5%-6% allocation to gold is 'optimal' for investors with a well balanced 60/40 portfolio (ie, approximately 60% in equities and alternative assets and 40% in cash and bonds). This holds true even for investors that already hold commodities, real estate and hedge funds (**Chart 9b**). See *Gold: a commodity like no other*, April 2011 and *Gold: alternative investment foundation asset*, October 2011.

What drives the allocation higher or lower? Risk. The higher the risk in the portfolio, the larger the share in gold should be.

Having a permanent allocation to gold is beneficial over the long run. However, as with any other investment, investors can increase or decrease (overweight or underweight) their core gold holding depending on various factors. For example:

- Portfolios with higher volatility require more gold to balance the additional risk incurred by investors (see *Gold in the Great Rotation*, April 2013). But, as previously discussed, risk is not limited to volatility.
- When the risk of holding bonds increases, (eg, long-term bonds during periods of rising interest rates or sovereign bonds in imminent threat of default) so should the share of gold in the portfolio (see *Gold in the Great Rotation*, April 2013 and *Gold and US rates: a reality check*, July 2013).
- During periods of heightened uncertainty, especially linked to systemic shocks to the economy, a higher gold allocation can reduce losses further (see *Gold: hedging against tail risk*, October 2010).
- Similarly, in periods of expected higher inflation, a larger allocation to gold is warranted (see Oxford Economics, *The impact of inflation and deflation in the case for gold*, July 2011).
- Finally, if investors expect their local currencies to lose value, the gold weight in a portfolio should be increased (see *Gold and currencies: protecting purchasing power*, April 2013, *Gold and currencies: the evolving nature of gold's relationship to the US dollar*, October 2013).

16 In *What drives gold?* July 2013, we explored seven main factors (including currencies, inflation, systemic risks and economic growth, among others) that influence gold's performance. While factors such as the value of the US dollar tend to exert significant influence, how these factors interact is more important in determining the gold price in the long run. That is one of the reasons gold does not behave like a perfect inflation hedge or currency hedge alone. Rather, these factors highlight gold's ability to protect investors from multiple risks.

17 See: New Frontier Advisors and World Gold Council, *Gold as a strategic asset*, September 2006; New Frontier Advisors, *Gold as a strategic asset for European investors*, December 2011; Oxford Economics, *The impact of inflation and deflation in the case for gold*, July 2011; J.P. Morgan, *Gold in asset allocation*, July 2012; Mercer, *Gold as an asset class for institutional investors*, February 2011; Matos, P. and R. Evans, *Gold as a portfolio diversifier: the World Gold Council and investing in gold*, Darden Business Publishing, University of Virginia, September 2012.

Focus 3: Defining an investment horizon for gold

How long is long term? As previously discussed, gold ought to be seen in the context of a portfolio. Gold helps improve purchasing power in a more stable fashion approximately five years from the time of investment and achieves consistent purchasing power outperformance three years ahead of portfolios without gold (**Chart 10**).

Chart 10: A portfolio that contains gold is better able to protect purchasing power



Reference notes are listed at the end of this article.

Source: Bloomberg

Conclusion

There is a great deal of debate regarding the function gold plays in a portfolio. Misunderstandings about gold's properties have given rise to an abundance of articles contesting gold's role as an inflation hedge, currency hedge, and tail risk hedge, among others. We contend that by properly defining these functions and using appropriate measures, gold's benefits as means for preserving purchasing power and managing portfolio risk become apparent. While gold's ability to hedge inflation or protect against a very specific kind of risk could be managed by including securities constructed specifically with those objectives, these can often be costly or add an additional set of risks (such as credit or counterparty risk exposure). Gold is a well rounded, cost effective strategic asset, which when held even in a modest amount (typically 2%-10% of a portfolio, with an average allocation of 5%-6% in a well-balanced, moderate portfolio with 60% in equities – and other risk assets – and 40% in cash and bonds) can help investors reduce risk without sacrificing long term returns.

References

Table 1: Portfolios that contain gold outperform portfolios with TIPS

A re-sampled optimisation methodology was used to derive the portfolio allocations. Historical return, volatility and correlation assumptions were used in the optimisation process. 60/40 portfolios are chosen such that the US equity, global equity and gold allocations are around 60% of the portfolio while fixed income and cash allocations tally to a 40% allocation.

Chart 1: (a) Gold's negative correlation to the US dollar helps US investors, (b) as well as foreign ones

- (a) The correlations are based on monthly data from 1993 onwards. The chart shows the correlation between gold in US\$ with various dollar exchange rates.
- (b) This chart shows the correlation between gold in respective local currency to those currency's dollar exchange rates. Monthly data from 1989 onwards was used to compute these correlations.

Chart 2: (a) Gold is able to hedge exchange rate risk at a lower cost than traditional FX forwards; (b) when used as a currency hedge, gold reduces the draw-down of an EM equity investment

- (a) Cost of traditional hedging is computed using the percentage difference between spot and futures markets (basis) which is typically determined by the interest rate differentials between the two currencies. Country weights from the MSCI emerging market index were used and combined with each currency's interest rate differentials. The 1-year treasury yield was used as a proxy for the opportunity cost of using gold as a currency hedge. The spread between the cost of traditional hedging and the 1-year yield, quantifies the cost advantage of using gold.
- (b) These three lines are representing peak-to-trough draw downs of the MSCI EM index, the currency hedged MSCI EM index and the MSCI EM index that's 50% currency hedged with a 50% gold overlay. Peak-to-trough drawdown is computed as rolling percentage return from the index peak. The asset that contains the gold overlay has had a lower average drawdown than a 100% currency hedged and un-hedged EM index.

Chart 3: (a) Gold has a negative correlation to the US dollar in real effective terms; (b) gold helps preserve purchasing power (PP) and improves on a basket of currencies

- (a) This chart shows the inflation adjusted gold price against the US\$'s real effective exchange. A real effective exchange rate is an index of currencies adjusted for relative price differences between the two countries.
- (b) This chart compares 4 different baskets including one that contains just US dollars, a basket of dollars and foreign currencies, a basket of dollars and gold and finally a basket of US dollars, foreign currencies and gold. As you could see a basket that contains gold is able to increase the purchasing power of a currency portfolio when measure real effective terms.

Table 2: Gold has outpaced inflation in the US and abroad, as well as short-term rates

This table shows the average returns for gold, average increases in US CPI, the average increases in the OECD global inflation measures as well as the average annualised yield on a 3-month T-bill between 1972 and 2013.

Chart 4: Global financial stability map

This chart was taken directly out of the IMF global financial stability report published in October 2013. The chart tries to reflect the overall risk and conditions present in the global financial system. A data mark away from the centre of the web indicates higher risks, easier monetary conditions or higher risk appetite.

Chart 5: (a) While gold is more volatile than bonds, (b) it has low correlations to most assets, thus helping reduce portfolio volatility

- (a) This chart shows the annualised volatility of cash, fixed income, gold, equities and commodity indices. Volatility is computed using weekly return between September 1988 and September 2013.
- (b) Correlations are computed using weekly returns between December 1987 and December 2012.

Chart 6: (a) Equities' correlation to other assets increase during recessionary periods, (b) while gold's correlation decreases

- (a) Contraction and expansionary periods are determined by business cycles as determined by the National Bureau of Economic Research (NBER). Correlations are computed using monthly returns conditionally on periods of expansion and contraction between the S&P 500 index and other portfolio assets.
- (b) Contraction and expansionary periods are determined by business cycles as determined by the National Bureau of Economic Research (NBER). Correlations are computed using monthly returns conditionally on periods of expansion and contraction between gold and other portfolio assets.

Chart 7: (a) Gold's sources of demand are diverse (Q3'08 – Q2'13); (b) gold demand is geographically diverse

- (a) The pie chart shows the average quarterly demand for 20 consecutive quarters between Q3 2008 and Q2 2013. Investment demand includes bars, coins, ETFs and OTC purchases.
- (b) The pie chart shows geographic split of gold demand by region in 2012.

Chart 8: Gold reduces portfolio losses during tail risk events

Standard portfolio is defined as one having 55% equities, 25% fixed income and at most 5% cash with the remaining weights optimally allocated to alternatives assets such as gold, commodities and real estate. The optimal gold allocation is 5%. Gold's allocation when included is 5%. Black Monday: 9/1987-11/1987, LTCM: 8/1998, Dot-com: 3/2000-3/2001, September 11: 9/2001, 2002 recession: 3/2002-7/2002, Great recession: 10/2007-2/2009, Sovereign debt crisis I: 1/2010-6/2010, Sovereign debt crisis II: 2/2011-10/2011.

Chart 9: (a) An allocation of 2% to 10% is optimal for broadly diversified portfolios denominated in several currencies; (b) in a diversified portfolio that includes alternatives, optimal gold allocations are still significant

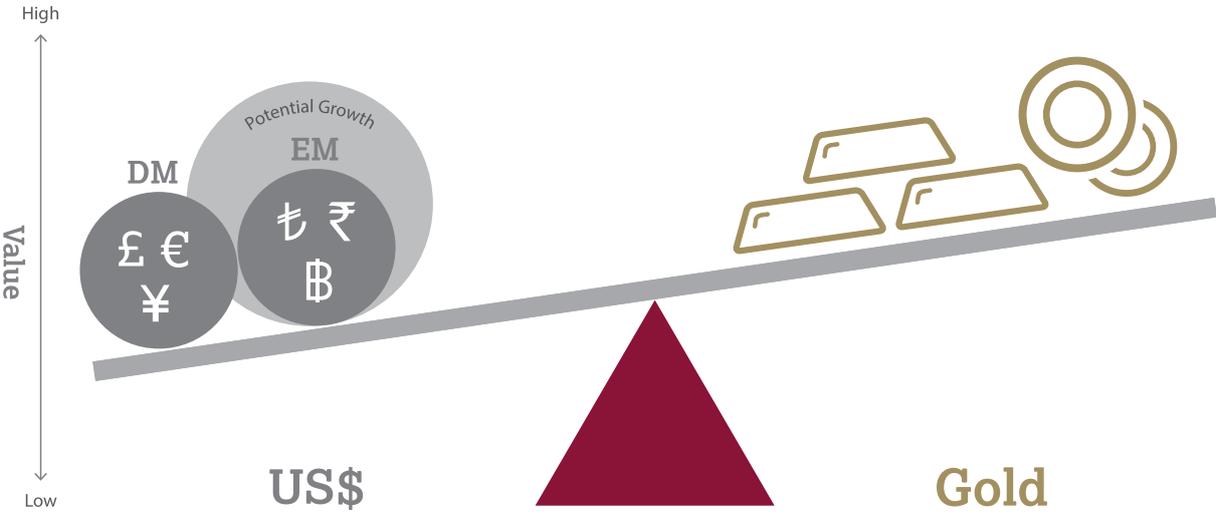
- (a) The chart shows the optimal gold allocations to portfolios denominated in US dollars, pound sterling, euro and yen. The lower (upper) end of the bar represents the bottom (top) of the optimal gold allocation range. These results were derived across several portfolio studies conducted by Oxford Economics, New Frontier Advisors and the World Gold Council. The portfolios examined were diversified and included assets like cash, fixed income, equities, alternatives and gold.
- (b) These results display the optimal portfolios that were found for the *Gold: alternative investment, foundation asset report* published by the World Gold Council in October 2011. Hedge fund index data was sourced HFRI while private equity index data was sourced from a proprietary index published by Thomson Reuters.

Chart 10: A portfolio that contains gold is better able to protect purchasing power

Monthly data from January 1987 was used. Loss in purchasing power is defined as an increase in inflation combined with decreases in the trade-weighted US\$ index. The portfolio that contains gold includes 35% in US equities, 15% in global equities, 10% in gold, 20% in treasuries, 15% in US credit and 5% in cash. The no-gold portfolio contains a 40% allocation to US equities, 20% allocation to global equities, 20% to treasuries, 15% to US credit and another 5% to cash.

II: Gold and currencies: the evolving relationship with the US dollar

For centuries, gold has played integral roles in the monetary system as a unit of exchange and a monetary anchor. While gold’s official role has diminished under the existing system of floating exchange rates, it has retained several currency characteristics. As such, gold acts as a natural hedge to the US dollar – the world’s reserve currency – and it is significantly influenced by it. Investors use gold as they seek the safety of supply-constrained hard assets, especially as governments implement inflationary policies. Central banks use gold no differently: they view it as an integral part of their foreign reserves, providing diversification and buffering geopolitical and sovereign risks. Looking forward, as the monetary system likely evolves into a multi-currency platform, gold will remain a key asset to balance the risks present in fiat currencies.



The link between gold and currencies

Gold is driven by seven interrelated global themes. This article focuses on the currency theme.

In *What drives gold? Gold Investor Volume 3*, we introduced a framework based on seven interrelated global factors that influence gold's performance, namely: currencies, inflation, consumer spending and income growth, systemic risks, interest rates, short-term flows and tactical positioning, and supply-side drivers. This framework allows investors to understand gold's behaviour as a function of the individual dynamics of these variables as well as the interrelationships among them. In this article, we focus our attention on the relationship between gold and currencies.

Gold is influenced by three currency-related elements:

- **The value of the US dollar vis-à-vis other currencies.** As gold is usually traded relative to its US-dollar price, the value of the dollar has a meaningful impact on gold. More importantly, gold is viewed (and used) as a natural hedge to the US dollar as it is not directly linked to the monetary or fiscal policies of a particular government. This characteristic strengthens their inverse relationship.
- **The stock of global money supply.** When the global money supply increases in excess of the rate required by global growth, inflationary pressures mount: more money chasing fewer goods, services and assets. This is likely to cause inflation and currency debasement, leading to increased interest in hard assets like gold (see *Linking global money supply to gold and to future inflation*, February 2010).
- **Gold's role in foreign reserves.** Because the US dollar is the primary currency used in global transactions and is seen as a stable and reliable unit of exchange, countries aim to have ample reserves to be able to meet their US dollar denominated liabilities. As such, the dollar forms the lion's share of foreign reserve portfolios. However, governments need to manage the concentration risk in their reserves by diversifying into high quality, liquid assets that lack credit risk – like gold.

The value of the US dollar is the factor that most influences the gold price.

While all these elements are very influential in the gold market over the long run, the fluctuation of the US dollar is one of the most important drivers in the short-term. Tactically, the US dollar is used by traders as a high frequency indicator to guide their positions in the gold market. Over the long term, however, a protracted devaluation in the US dollar showcases the value of hard currencies such as gold.

Gold is characterised as both a commodity and a currency...

Gold: currency or commodity?

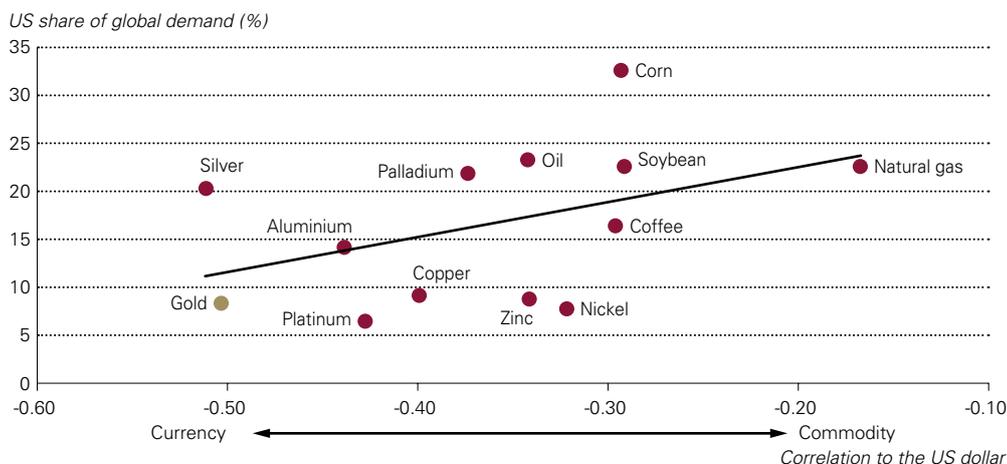
Gold is one of the few assets labelled as both a currency and a commodity. It is sought after by jewellers and designers as a metal with unique physical properties, and it is used as a store of value and unit of exchange by investors and central bankers. This duality as a commodity and a monetary asset is what makes gold truly unique. And while gold is included in commodity indices and studied by many commodity experts, in reality, it is traded alongside major currencies and its characteristics closely resemble them.

Indeed, the Bank for International Settlements (BIS) stated in its 2013 annual report that “gold is to be dealt with as a foreign exchange position rather than a commodity because its volatility is more in line with foreign currencies, and banks manage it in a similar manner to foreign currencies”.¹

...two traits that are responsible for its strong inverse relationship with the US dollar.

Commodities are broadly used, uniform materials that serve as an input to the production of other goods or services. As such, gold shares some economic characteristics with the broader commodity complex, including a negative relationship with the US dollar. The reason behind this relationship is quite simple: the incremental demand resulting from a weaker dollar, originating from non-US buyers, should have a positive impact on commodity prices. However, as discussed in *Gold: a commodity like no other*, gold investment related sources of demand produce a unique behaviour. Gold’s strong inverse relationship to the US dollar – the strongest of all commodities (Chart 1) – is in part driven by a large portion of demand (c. 90%) coming from outside the US, but also by its use as an alternative currency and a US dollar hedge.

Chart 1: Gold has one of the strongest inverse relationships with the US dollar, partly driven by the US share of global gold demand and gold's quality as a currency



Reference notes are listed at the end of this article.

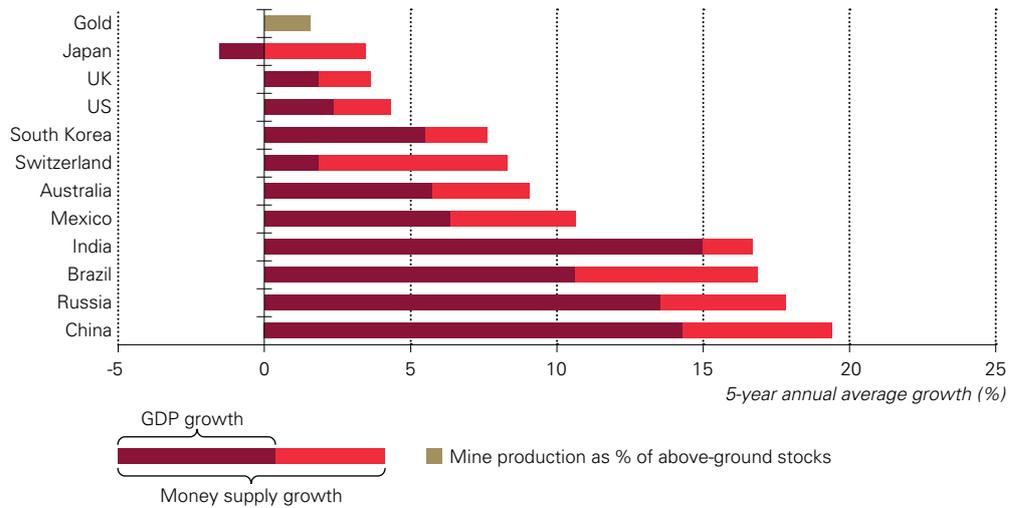
Source: Bloomberg

¹ BIS, 83rd annual report, June 2013.

Part of gold's value is derived from its geological scarcity.

Indeed, gold's geological scarcity and its physical qualities as a virtually indestructible element make it a natural hedge to paper currencies (**Focus 1**). Gold's steady growth in above ground stocks of less than 2% per year is significantly lower than the supply growth experienced by other major currencies (**Chart 2**). Money supply is not naturally constrained because of monetary policies; meanwhile, part of gold's value as a hard asset is derived from its lack of supply growth. In other words, it is linked to investors' trust (or lack thereof) in the ability and willingness of a government to fulfil its obligations. As such, gold becomes especially attractive when confidence in fiat currencies declines.

Chart 2: Gold's supply growth pales in comparison to that of fiat currencies



Source: Bloomberg

Focus 1: What makes gold a currency?

Gold satisfies many characteristics that define a currency, including its use as a unit of account, store of value and medium of exchange.

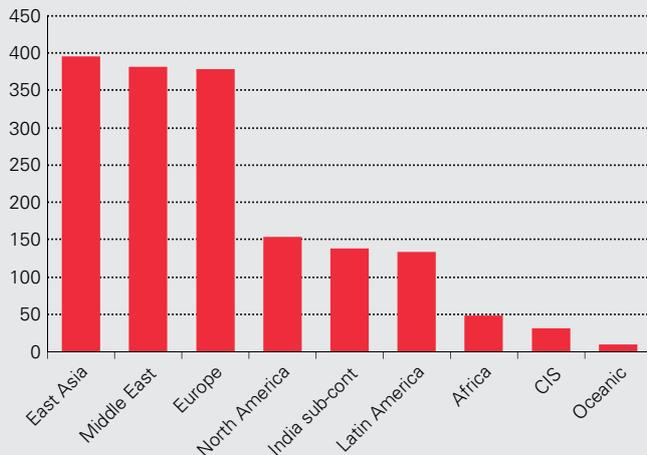
- Unit of account (convertibility):** Gold is traded 24/7 around the globe in all of the major trading hubs. Its active and deep market provides an effective clearing mechanism for transactions all over the world. It is widely recognised as a high-quality and liquid asset.² Few hard assets can be converted to local cash as easily as gold, even when it is in the form of jewellery (**Chart 3a**).
- Store of value:** Gold is a virtually indestructible non-corrosive metal, making it an ideal vehicle for preserving wealth. In fact, it has served this function over the course of human civilisation, protecting against inflation and currency devaluations.

- Medium of exchange:** While gold is not an official currency, it can be used to purchase goods and services in many parts of the world. It buys houses in Vietnam and chickens in Malaysia.³ It is accepted as legal tender in some regions⁴ and the subject of increasing interest as an alternative currency in places like Switzerland and Mexico.⁵

In addition, gold is a highly liquid asset, with daily trading volumes comparable to major currency pairs such as the US dollar-pound sterling, and is only eclipsed by US dollar-yen and US dollar-euro transactions (**Chart 3b**). Further, a large share of gold trading is made in physical form (non-derivative), which reduces its fluctuations especially when compared to commodities that are mostly traded through derivatives markets.

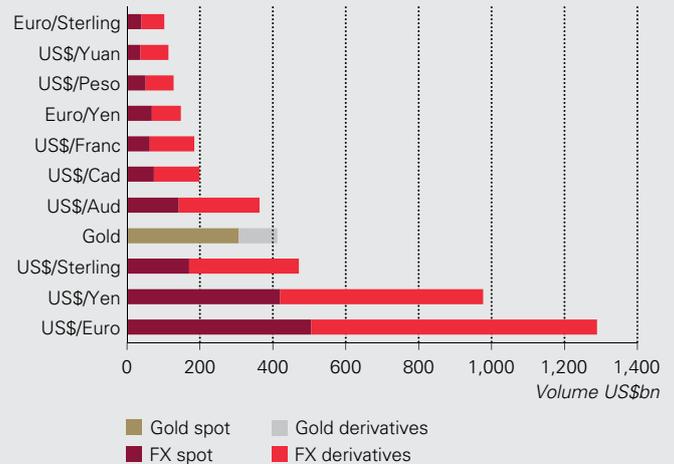
Chart 3: (a) The sources of recycled gold are geographically diverse; (b) gold's daily volumes are comparable with some of the most liquid exchange rates

Tonnes (3-year average)



Note: Reference notes are listed at the end of this article.

Source: Thomson Reuters GFMS, World Gold Council



Source: BIS, LBMA, World Gold Council

² World Gold Council, *Liquidity in the global gold market*, April 2011.

³ Dr Olivier Ledit, LBMA, *Alchemist 69*, January 2013.

⁴ Wall Street Journal, *Utah doubles down on gold laws amid inflation fears*, April 2011.

⁵ Dr Olivier Ledit, LBMA, *Alchemist 69*, January 2013.

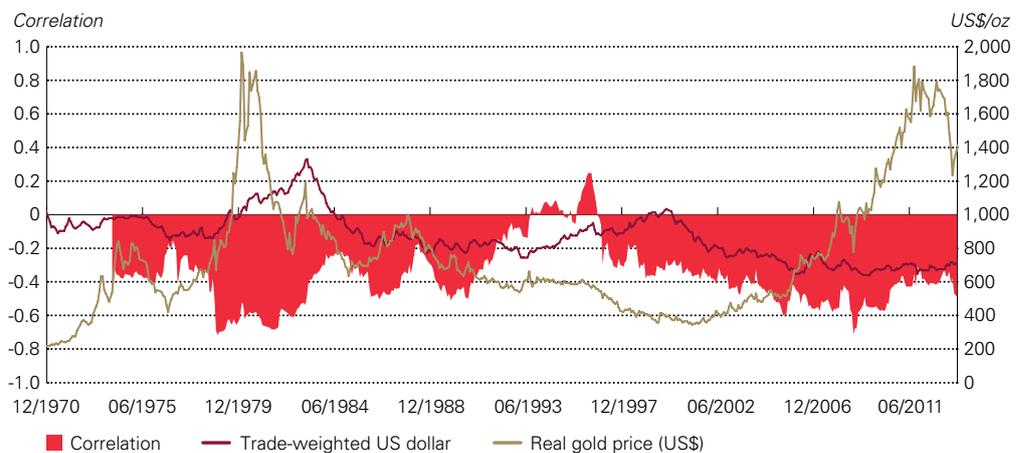
Gold's relationship to the US dollar

Gold has had a consistently negative correlation to the US dollar since the 1970s.

Once we have established gold's role as a currency, we look at its particular relation to the US dollar exchange rate. The value of the US dollar should not be seen in relation to a single currency, but relative to its broader performance against all currencies (eg, the US trade-weighted dollar index). Using this as a proxy, gold has had an average correlation of approximately -0.4 to the US dollar since the 1970s – the period that marked the beginning of a floating gold price. As such, gold has provided a consistent hedge against the US dollar, helping investors preserve purchasing power (**Focus 2**).

While the average correlation between gold and the US dollar exchange rate has been relatively strong, there have been periods when the relationship has weakened, particularly in the mid-1990s (**Chart 4**). This period of lower than usual correlation coincided with lower inflation and a stronger US dollar, reducing the demand for inflation protection.

Chart 4: Gold is negatively correlated with the trade-weighted US dollar

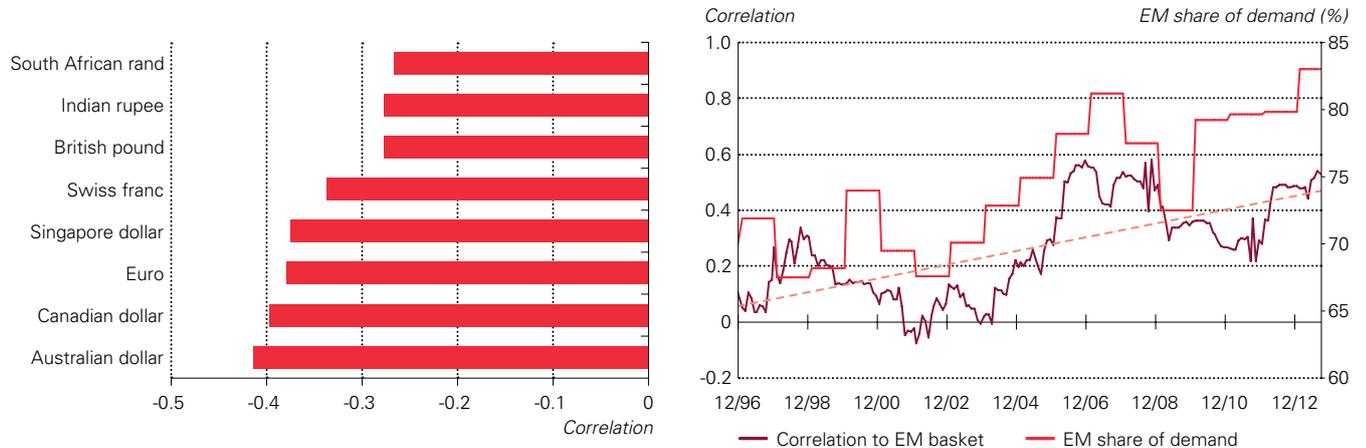


Source: Bloomberg

Gold has a strong relationship to currencies that are linked to sources of demand and supply with EM becoming a more influential component.

Seen individually, gold has a particularly strong relationship to some US dollar-foreign currency pairs (**Chart 5a**). Linked to their global weight as commodity producers, the currencies of Australia and Canada exhibit the strongest inverse relationship with the US dollar. Other relevant currencies for gold include the Indian rupee, South African rand, British pound, Swiss franc and the Singapore dollar also have a relative strong inverse correlation. Representing an increasing share of gold supply and demand, emerging market (EM) currencies are forging stronger links with the price of gold (**Chart 5b**).

Chart 5: (a) Gold is inversely correlated with several dollar-currency pairs; (b) gold's correlation to EM currencies has increased with EM's share of global gold demand



Source: Bloomberg

Focus 2: Do international investors benefit from gold's currency hedging qualities?

US investors are not the only ones that benefit from gold's currency hedging qualities. An allocation to gold, while being denominated in US dollars, represents an implicit exposure to a foreign currency, providing international investors with protection against falls in their local currency. While gold is not the only asset that exhibits this type of behaviour, many governments restrict or even prohibit individuals from owning foreign-denominated assets as part of capital control policies. Gold is not usually included in this list.

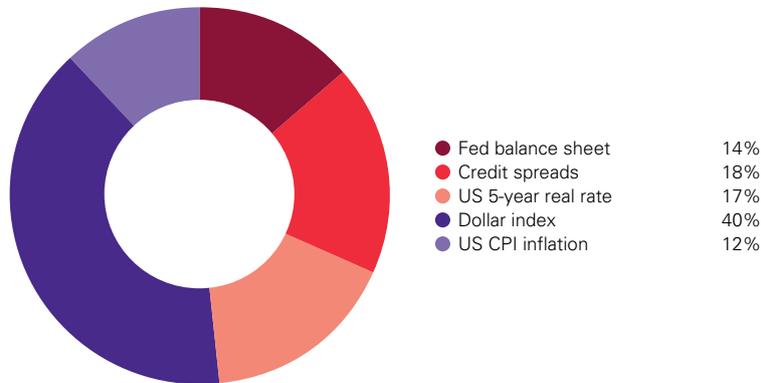
The relevance of the US dollar in explaining gold price fluctuations

As influential as the US dollar can be to gold prices, as seen by their strong inverse correlation, it needs to be studied in the context of other drivers that determine gold's performance. How these factors interact is arguably more important than their individual behaviour.

The value of the US dollar is a more significant variable, by a wide margin, than the size of the Fed's balance sheet, US real rates, CPI or credit spreads.

In its paper, *The impact of inflation and deflation on the case for gold*, Oxford Economics presented a model that explained gold's long-term performance using five primary macroeconomic variables: the size of the Fed's balance sheet, the value of the US dollar, the US consumer price basket, credit spreads and the US 5-year real rate. As discussed in *Gold and US interest rates: a reality check, Gold Investor Volume 3*, the US dollar has the most persistent significance in explaining long-term gold fluctuations. Indeed, using quarterly data from Q3 1976 to Q1 2013, we re-estimated the model and found that the US dollar has at least twice the significance of any of the other long-term macroeconomic variables (**Chart 6**).

Chart 6: The dollar has more influence on gold prices than other macro variables



Reference notes are listed at the end of this article.

Source: Oxford Economics

Focus 3: Gold, the US dollar and purchasing power

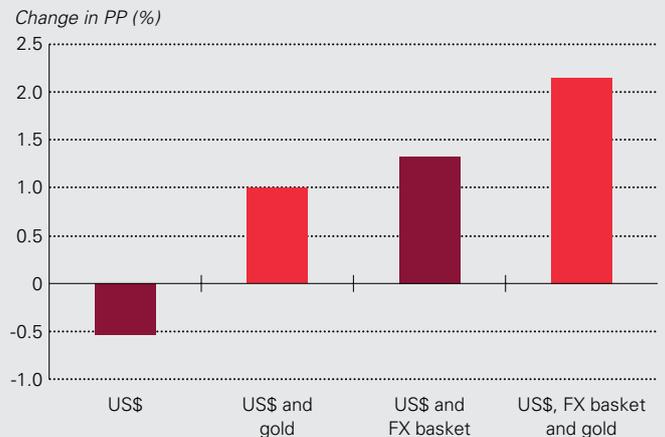
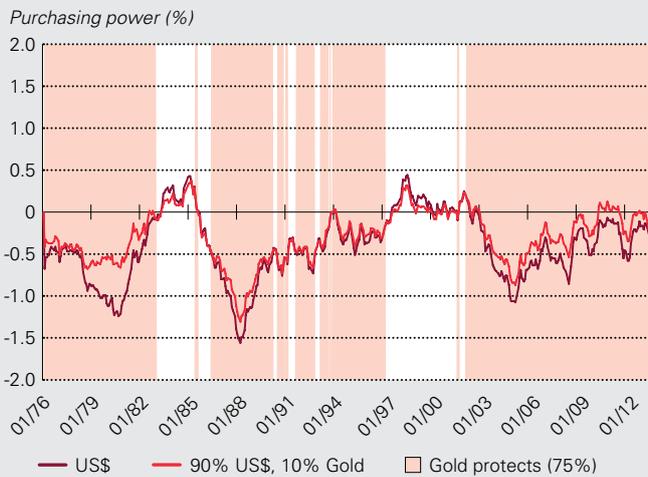
Gold preserves purchasing power (and investors' wealth) by virtue of its strong inverse relationship to the US dollar and its role in hedging long-term inflation. In *Gold and currencies: protecting purchasing power*, we showed that the long protracted devaluation of the US dollar in real (inflation-adjusted) terms, such as the one that we have seen over the past 15 years, indicates an erosion of purchasing power – even for those individuals who do not have direct foreign currency liabilities.

As the purchasing power parity framework explored in the paper shows, the long-term depreciation of a currency (as indicated by its real effective exchange rate) implies that individuals experience inflationary pressures even when traditional measures such as the consumer price index (CPI) are muted. In other words, an extended fall in a currency reflects a capital flight from a country with more expensive goods and services into countries with cheaper goods and services. As freely-floating assets, currencies have the potential to reflect more information than static, survey-based and methodology-changing consumer price baskets.

Chart 7a shows that for the majority of the period from 1976 to today (about 75% of months considered), gold was able to reduce the loss in purchasing power of US\$ holdings. In many instances this outperformance was very significant, especially during the high inflation periods of the late 1970s, early 1980s and during the period of dollar devaluation in the 2000s.

But investors could also preserve their 'global' purchasing power by buying a basket of currencies to diversify the potential risk of holding only US dollars. Our research showed that while holding a diversified basket of currencies helped, adding gold to such basket was even more efficient, increasing purchasing power and reducing risk (**Chart 7b**). Further, even if other assets such as stocks, bonds, real estate and commodities were taken into consideration, having a currency basket that included gold improved the long-term performance of the portfolio.⁶ In fact, assets such as short- and long-term government bonds, typically deemed virtually 'risk free', are less effective in protecting against the loss of purchasing power when the impact of inflation and currency fluctuations is taken into consideration.

Chart 7: (a) Gold has protected against losses in purchasing power over time; (b) gold helps preserve the purchasing power of a portfolio



Reference notes are listed at the end of this article.

Source: Bloomberg, World Gold Council

⁶ This analysis scaled all asset returns by fluctuations in the dollar's real effective exchange rate. The optimal allocations to gold maximise portfolio returns net of the historical loss in purchasing power. In other words, these portfolios are taking into consideration the effect of inflation and currency devaluation together.

Trends into the future: gold's potential role in the monetary system and its evolving relationship with the dollar

The state of the US dollar

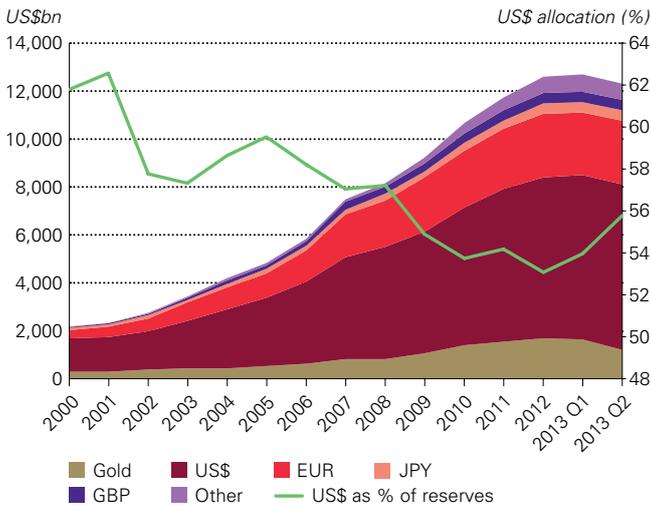
The purchasing power of US investors has eroded over the past four decades. In fact, they lost almost 80% of their purchasing power to inflation and another 30% to a protracted devaluation of the US dollar.⁷ And while the US dollar will continue to be one of the most (if not the most) relevant currencies, many economists expect the US dollar to be challenged in the longer term by EM currencies. Market consensus forecasts indicate US-dollar depreciation against 14 out of the 27 major currencies including the Chinese yuan, Australian dollar, Mexican peso, Singapore dollar and Korean won by 2016.⁸

Bearish views on the US dollar are supported by weak fundamentals that will influence the dollar in the long term.

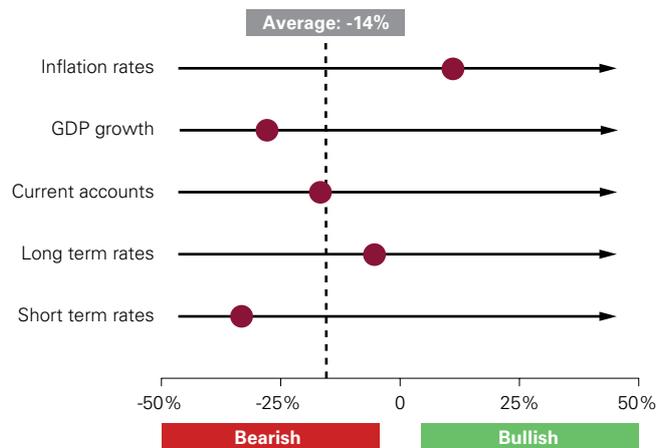
More importantly, these bearish views are firmly supported by weak fundamentals. Traditional currency drivers indicate a bleak outlook for the US dollar (**Chart 8**).⁹ Relative GDP growth, current account deficits and short- and long-term interest rates suggest that the dollar is poised for a decline. The relatively lower US inflation rate is the only factor that appears to be in favour of dollar strength.

These trends are likely to continue as deficit spending continues in the face of a low-rate, low-growth environment. While technical factors, including momentum and investment flows, drive the US dollar in the short term,¹⁰ fundamental factors have more influence over the long run. In light of these developments, reserve asset managers have decreased their US dollar allocation considerably, from 63% in 1999 to 53% in 2012.

Chart 8: (a) US\$ allocations in reserve portfolios have fallen; (b) the US\$ appears to be fundamentally weak



Source: IMF COFER, IMF IFS, World Gold Council



Source: Bloomberg, Economist

7 1971 is the year in which the dollar began to trade as a free floating currency. These figures are based on a increase in the US CPI and the % return of the trade-weighted dollar index.

8 Consensus forecast for currencies is sourced from Bloomberg.

9 Bloomberg data was used to rank the US against other countries within the above mentioned seven factors.

10 Technical analysis typically refers to charting patterns and other elements of price behaviour that some observers claim are likely to influence future price fluctuations.

The recent growth in emerging markets has led to increased interest in their currencies.

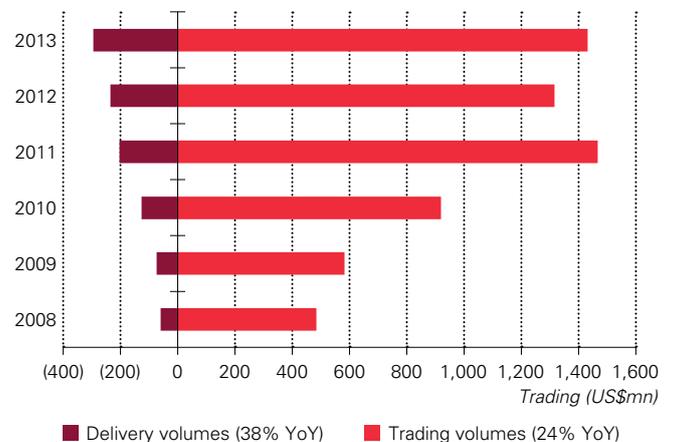
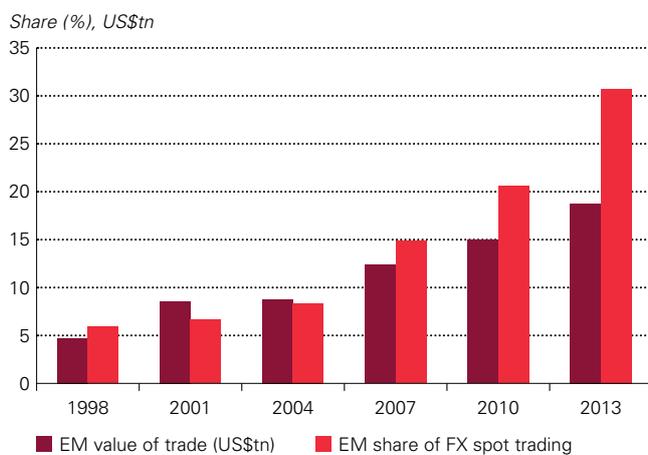
As EM currencies become more relevant in the monetary system, they will have a stronger influence on assets like gold.

The emergence of other currencies

The unprecedented growth of emerging markets, coupled with the decline in the US dollar over the past decade, has led many policy makers to consider whether EM currencies should play an increasing role in the global monetary system. In its paper, *Gold, the renminbi and the multi-currency reserve system*, the Official Monetary and Financial Institutions Forum (OMFIF) observed that the ongoing internationalisation of the renminbi will add an additional currency to the reserve system. As emerging markets continue to capture an increasing share of global trade, their currencies will likely acquire a bigger share of reserve portfolios. Over the past 15 years, the growth of emerging nations’ international trade activity has translated into an increased use and liquidity in their currency (**Chart 9a and 9b**).

The trend of internationalisation has also been seen in the gold market. With investment gold increasingly flowing towards the East, emerging markets are likely to overtake developed markets in their gold ownership in the not too distant future. Recent trends indicate that an increased proportion of gold demand is coming from developing economies and that trading hubs in Shanghai, Hong Kong, Singapore, Mumbai and Istanbul are drawing liquidity away from the traditional US dollar-dependent New York and London markets. For example, the Shanghai Gold Exchange has grown tremendously since its founding in 2002, expanding its trading volume at a 24% CAGR and increasing delivery volume at 38% CAGR in the past five years. As this trend develops, the direction and fluctuations of the Chinese yuan will likely have a material influence on gold prices in years to come.

Chart 9: (a) Emerging market FX spot volume has increased together with EM participation in global trade; (b) the Shanghai Gold Exchange has experienced tremendous growth in trading



Reference notes are listed at the end of this article.

Source: Thomson Reuters, Bloomberg

Source: Shanghai Gold Exchange

As the world moves towards a multi-currency reserve system, gold will play an important role as a foundation asset that diversifies risk. As more currencies are included in the reserve system, gold’s relationship with other currencies will likely evolve. It is likely that gold will retain its generally negative relationship with the US dollar, but it will also serve as a hedge against all fiat currencies.¹¹ Gold will retain its quality of being a hard asset without being anyone’s liability, and it will remain a buffer against geopolitical uncertainty.

11 OMFIF, *Gold, the renminbi and the multi-currency reserve system*, January 2013.

Conclusion

Gold has played a prominent role in the monetary system throughout history. In the current system of floating exchange rates, gold continues to be seen as a monetary asset. It provides a natural hedge against currency devaluation, and it plays a role as a foundation of foreign reserves. These characteristics are so prevalent that gold behaves more like a currency than a commodity and is treated like one by investors, analysts, central bankers and regulators alike. As the monetary system evolves to make room for alternative reserve currencies, gold will have a growing prominence as a balancing mechanism against the risks inherent in fiat currencies.

References

Chart 1: Gold has one of the strongest inverse relationships with the US dollar, partly driven by the US share of global gold demand and gold's quality as a currency

Correlations are computed using 10 years of weekly commodity data. For commodities, spot indices were used unless unavailable in which case front month futures total return indices were used. Demand was computed using 10 years of annual global demand data.

Chart 2: Gold's supply growth pales in comparison to that of fiat currencies

The entire bar represents money supply growth, while the first part of the bar represents GDP growth. The second half of the bar reflects additional money supply growth not accounted for by GDP growth. Money supply growing in excess of GDP growth could lead to inflation and/or currency devaluation. In Japan's case, the GDP growth is negative and thus excess money supply appears to be larger than overall money supply. Money supply growth was computed using a broad money aggregate that includes M0, M1, M2 and M3. Growth in gold supply was computed by averaging yearly increases in the above ground stock of gold resulting from annual mine production.

Chart 3: (a) The sources of recycled gold are geographically diverse; (b) gold's daily volumes are comparable with some of the most liquid exchange rates

(a) A three year average of annual recycled gold supply was used for the computation. Europe includes western European, eastern European and Nordic countries. North America includes the US and Canada. Latin America includes South American countries, Mexico and the Caribbean. Middle East includes all countries in the region plus Turkey. The Indian subcontinent includes India, Afghanistan, Pakistan, Bangladesh and Sri Lanka. East Asia includes Japan, Greater China and all the countries in Southeast Asia. CIS represents Russia and other former Soviet Republics. Oceanic region includes Australia. The majority of recycled gold is sourced from jewellery and the rest from technological components.

(b) Spot transactions include only physical transactions for gold and cash transactions for foreign exchange. Derivatives include futures, forwards, options, swaps and etc. Foreign exchange data was sourced from a BIS survey of dealers during April 2013. For consistency, LBMA turnover, COMEX volume and other gold related data from April 2013 was used.

Chart 4: Gold is negatively correlated with the trade-weighted US dollar

Correlations are computed using the nominal gold price and the trade-weighted dollar index as reported by the Federal Reserve. Correlation was computed using rolling 36-month data. The real gold price was computed using nominal gold prices adjusted by the US CPI index.

Chart 5: (a) Gold is inversely correlated with several dollar-currency pairs; (b) gold's correlation to EM currencies has increased with EM's share of global gold demand

(a) Correlation was computed using monthly return from 1993 to 2013. All currencies listed on the y-axis were measured against the US dollar.

(b) Emerging market share of demand was computed using quarterly demand figures from Thomson Reuters GFMS. Half of demand that was categorised as 'other' was assumed to originate from Emerging markets. Correlations were computed using monthly data from 1993 to 2013.

Chart 6: The dollar has more influence on gold prices than other macro variables

These figures are a comparison of t-statistics of individual macro-economic variables that were used in the gold model developed by Oxford Economics for the paper entitled 'the impact of inflation and deflation on the case for gold'. Other variables were included in the model including lagged values of the gold price and an error correction term. The dollar was the most significant variable out of all the macro-economic variables selected as measured by its t-statistic. The model used quarterly data from 1976 to 2013.

Chart 7: (a) Gold has protected against losses in purchasing power over time; (b) gold helps preserve the purchasing power of a portfolio

- (a) Purchasing power is measured by increases in US CPI inflation and declines in the trade-weighted US\$. The US\$ line represents a non-interest bearing cash position. The gold line represents a 90% allocation to a non-interest bearing cash position and a 10% gold position. Gray areas denote instances when gold was able to improve investor's purchasing power.
- (b) This chart illustrates the purchasing power of several portfolios in real effective terms. The US dollar real effective exchange rate was used for the US\$ holdings. This chart compares the purchasing power of a US\$ cash holding to a US\$ cash and gold holdings to US\$ cash and foreign currency holding to a US\$ cash, foreign currency and gold holding.

Chart 8: (a) US\$ allocations in reserve portfolios have fallen; (b) the US\$ appears to be fundamentally weak

- (a) US\$ as a % of foreign reserves is computed using quarterly data of US\$ denominated holdings as reported by the IMF against total foreign reserves (including gold).
- (b) The US was ranked against 20 other countries/regions with a distinct currency. Values shown are derived from the US ranking against 20 other countries in inflation rate, GDP growth, current account deficit, long term interest rates and short-term interest rates.

Chart 9: (a) Emerging market FX spot volume has increased together with EM participation in global trade; (b) the Shanghai Gold Exchange has experienced tremendous growth in trading

- (a) Emerging market share of FX spot trading was sourced from the BIS survey of dealers. EM value of trade includes, exports, imports and re-exports by emerging market countries as any type of trade flow leads to a foreign currency transaction.
- (b) Trading volumes represent volumes across all gold-related products that are traded on the SGE. Delivery volumes only include those transactions that lead to a physical delivery of a bar. The Shanghai gold exchange includes several products including 50 gram, 100 gram, 1 kg, 3 kg and 12.5 kg physical bars and gold forwards.

Disclaimers

This report is published by the World Gold Council, 10 Old Bailey, London EC4M 7NG, United Kingdom. Copyright ©2013. All rights reserved. This report is the property of the World Gold Council and is protected by US and international laws of copyright, trademark and other intellectual property laws. This report is provided solely for general information and educational purposes. It is not, and should not be construed as, an offer to buy or sell, or as a solicitation of an offer to buy or sell, gold, any gold related products or any other products, securities or investments. It does not, and should not be construed as acting to, sponsor, advocate, endorse or promote gold, any gold related products or any other products, securities or investments. This report does not purport to make any recommendations or provide any investment or other advice with respect to the purchase, sale or other disposition of gold, any gold related products or any other products, securities or investments, including without limitation, any advice to the effect that any gold related transaction is appropriate for any investment objective or financial situation of a prospective investor. A decision to invest in gold, any gold related products or any other products, securities or investments should not be made in reliance on any of the statements in this report. Before making any investment decision, prospective investors should seek advice from their financial advisers, take into account their individual financial needs and circumstances and carefully consider the risks associated with such investment decision.

While the accuracy of any information communicated herewith has been checked, neither the World Gold Council nor any of its affiliates can guarantee such accuracy. The World Gold Council does not undertake to update or advise of changes to the information in this report. Expressions of opinion are those of the author and are subject to change without notice. In no event will the World Gold Council or any of its affiliates be liable for any decision made or action taken in reliance on this report or the information or opinions contained herein or for any consequential, special, punitive, incidental, indirect or similar damages arising from, related to or connected with this report, even if notified of the possibility of such damages.

This report contains forward-looking statements. The use of the words "believes," "expects," "may," or "suggests" or words of similar import, identifies a statement as "forward-looking." The forward-looking statements included herein are based on current expectations that involve a number of risks and uncertainties. These forward-looking statements are based on the analysis of the World Gold Council. Assumptions relating to the foregoing involve judgments with respect to, among other things, future economic, competitive and market conditions all of which are difficult or impossible to predict accurately. In addition, the demand for gold and the international gold markets are subject to substantial risks which increase the uncertainty inherent in the forward-looking statements. In light of the significant uncertainties inherent in the forward-looking information included herein, the inclusion of such information should not be regarded as a representation by the World Gold Council that the forward-looking statements will be achieved. We caution you not to place undue reliance on our forward-looking statements. Except in the normal course of our publication cycle, we do not intend to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, and we assume no responsibility for updating any forward-looking statements. Past performance is no indication of future results.

Thomson Reuters GFMS content is the intellectual property of Thomson Reuters – © 2013 Thomson Reuters. All rights reserved. Any copying, republication or redistribution of Thomson Reuters content, including by framing or similar means, is expressly prohibited without the prior written consent of Thomson Reuters. Thomson Reuters shall not be liable for any errors or delays in content, or for any actions taken in reliance thereon.

No part of this report may be copied, reproduced, republished, sold, distributed, transmitted, circulated, modified, displayed or otherwise used for any purpose whatsoever, including, without limitation, as a basis for preparing derivative works, without the prior written authorisation of the World Gold Council. To request such authorisation, contact research@gold.org. In no event may World Gold Council trademarks, artwork or other proprietary elements in this report be reproduced separately from the textual content associated with them; use of these may be requested from info@gold.org.



Pulps used to produce this paper are
Elemental Chlorine Free (ECF).

The paper mill and printer are accredited
to ISO14001 environmental standards.

