

## Thoughts on Gold's Place in a Portfolio

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SECTION 1

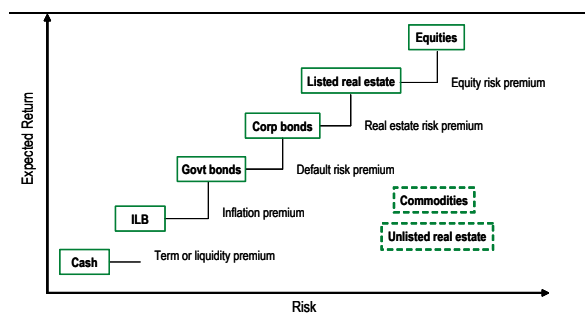
## Gold in a portfolio framework



## Commodities (and property) don't fit easily

### A 'ladder' of risk premiums

A risk premium framework



Source: UBS Note: We do not mean to imply that commodities and unlisted real estate are 'high risk-low return assets'. Instead, their placement in this diagram suggests that they do not fit in the same risk premium 'ladder' as the other assets. ILB = Inflation-linked bonds



## Forecasting 'equilibrium' returns

### Asset returns framework

	YIELD PLUS GROWTH		RISK-FREE RATE PLUS RISK PREMIUM	
	Yield	Long-term capital growth	Risk-free rate	Risk premium
1 Cash	Long-term cash yield	Zero	Long-term cash yield	Zero
2 Inflation-linked bonds	Real yield	Inflation	Long-term cash yield	Liquidity premium
3 Government bonds	Bond yield	Zero	Long-term cash yield	2 + Inflation premium
4 Corporate bonds	Corporate bond yield	Zero	Long-term cash yield	3 + Default premium
5 Listed real estate	Dividend yield	Dividend growth	Long-term cash yield	4 + Real estate premium
6 Equities	Dividend yield	Earnings growth	Long-term cash yield	5 + Equity risk premium
7 Commodities	Long-term cash yield	Commodity appreciation	Long-term cash yield	Commodity premium

Source: UBS



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## Forecasted returns

### Estimated 5-year global asset returns (p.a.)

	YIELD PLUS GROWTH		RISK-FREE RATE PLUS RISK PREMIUM		5-year total return
	Yield	5-year capital growth	Risk-free rate	Risk premium	
1 Cash	4.1%	0.0%	4.1%	0.0%	4.1%
2 Inflation-linked bonds	1.6%	1.1%	4.1%	-1.4%	2.7%
3 Government bonds	2.0%	0.0%	4.1%	-2.0%	2.0%
4 Corporate bonds	5.7%	0.0%	4.1%	1.6%	5.7%
5 Listed real estate	7.4%	1.1%	4.1%	4.5%	8.5%
6 Equities	3.0%	5.8%	4.1%	4.7%	8.8%
7 Commodities	4.1%	4.2%	4.1%	4.2%	8.3%

Source: UBS



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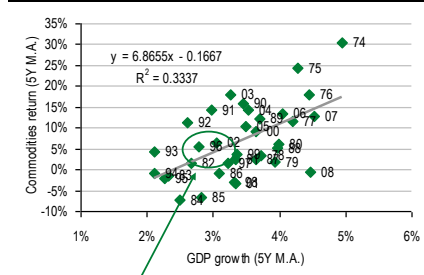
## Realized returns vs. global GDP growth

World real GDP growth and commodities excess return



Source: UBS

World real GDP growth and commodities excess return



Source: UBS

Expected outcomes

*Excess return* refers to investments in futures, which includes changes in the spot price plus/minus roll yield. Ignores the impact of possible reinvestment return on T-bill collateral.



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## How has gold done relative to other asset classes?

US asset class return and risk summary, 1973-2009

	Equities	Government bonds	Corporate bonds	Real Estate	Precious metals
Return (p.a.)	9.0%	8.0%	8.2%	8.9%	7.0%
Standard deviation (p.a.)	15.8%	7.2%	8.2%	19.0%	23.3%
Return/risk	0.57	1.12	1.00	0.47	0.30

Decent long-term returns, high volatility, low correlation

US asset class correlation matrix, 1973-2009

	Equities	Government bonds	Corporate bonds	Real Estate	Precious metals
Equities	1.00				
Government bonds	0.15	1.00			
Corporate bonds	0.34	0.73	1.00		
Real Estate	0.58	0.18	0.33	1.00	
Precious metals	0.03	0.00	-0.05	0.07	1.00

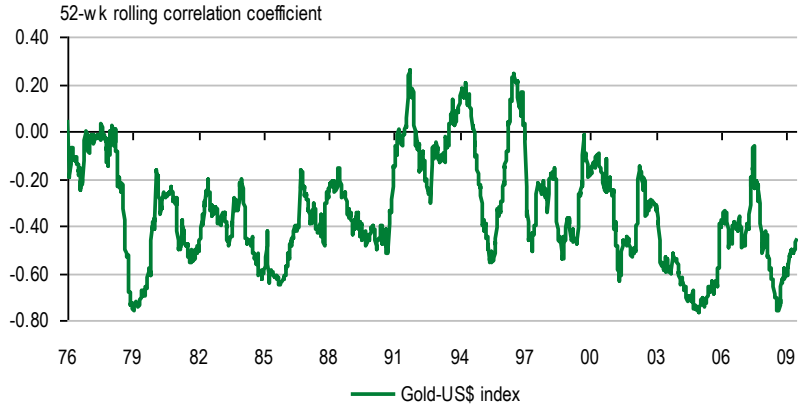


Source: UBS 7

## Correlation to the US dollar

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### Correlation coefficient to US trade-weighted index



Source: Datastream, UBS

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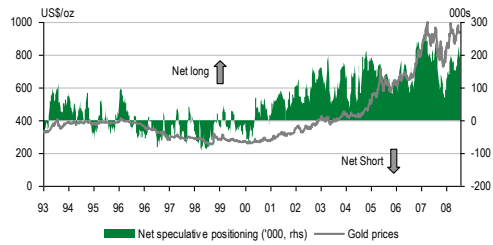
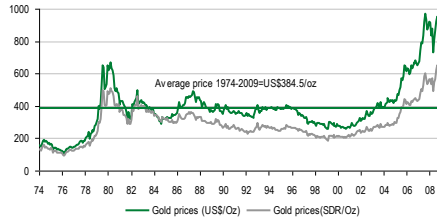
### SECTION 2

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## Historical record



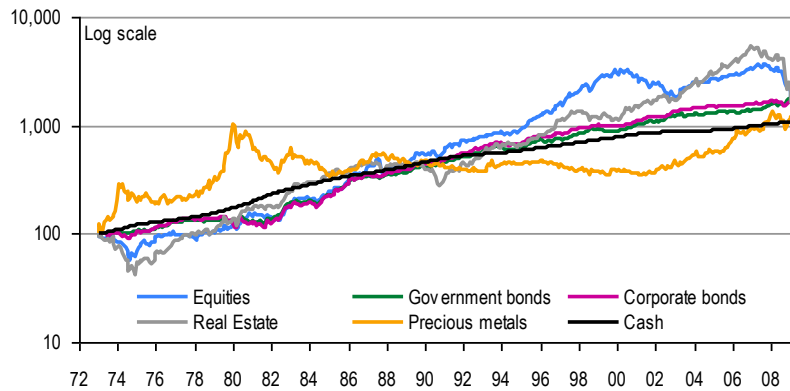
## How has gold done?



UBS Source: Bloomberg, UBS

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## How has gold done relative to other asset classes?

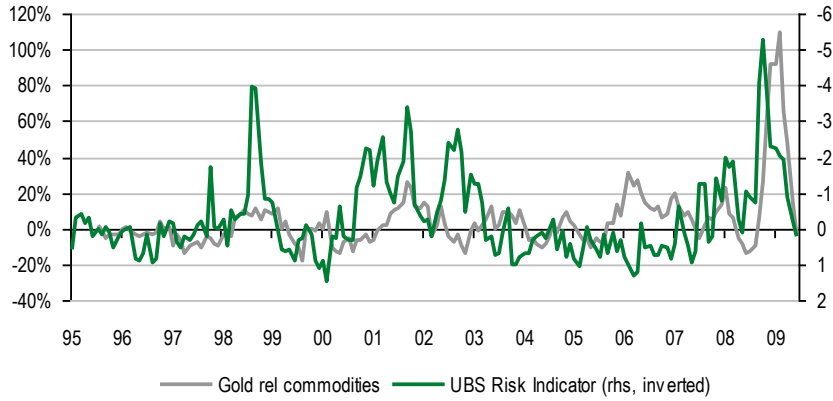


UBS

Source: UBS 11

## Gold and risk aversion

### Relative gold price and UBS risk appetite indicator



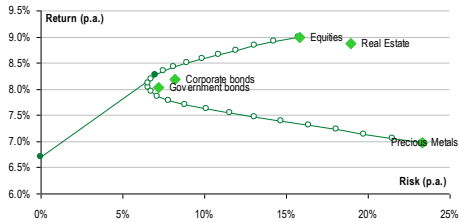
Relative gold price is the ratio of gold prices to the CRB index. When the ratio is above 0%, gold prices have risen faster than the index of commodity prices.



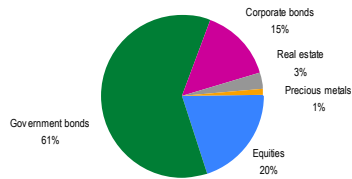
Source: Bloomberg, CRB, UBS Global Equity Strategy

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## Gold in multi-asset portfolios: Performance since 1973



### Optimal allocation



In all ensuing charts 'precious metals' is an index comprised of 90% gold and 10% silver



Source: UBS

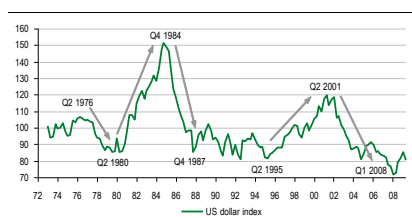
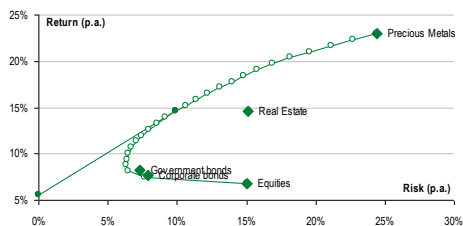
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## SECTION 3

### Sub-periods

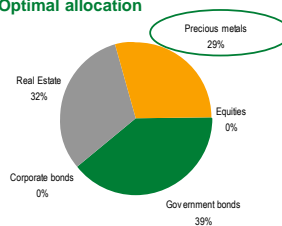


#### 1. Precious metals and dollar weakness



Source: Bloomberg, UBS Note: Dates and arrows denote weak/strong dollar periods used in analyses.

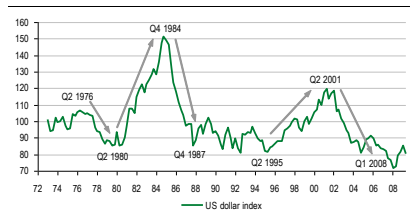
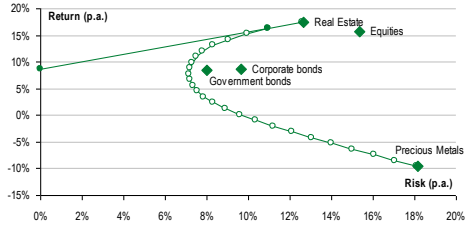
#### Optimal allocation



Source: Bloomberg, UBS

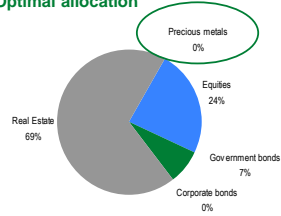
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## 2. Precious metals and dollar strength



Source: Bloomberg, UBS. Note: Dates and arrows denote weak/strong dollar periods used in analyses.

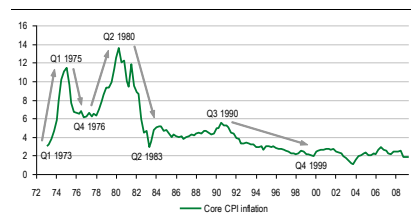
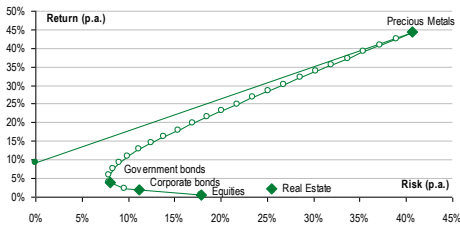
### Optimal allocation



Source: Bloomberg, UBS

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## 3. Precious metals and high inflation



Source: Bloomberg, UBS. Note: Dates and arrows denote high/low inflation periods used in analyses.

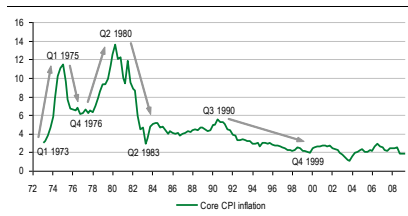
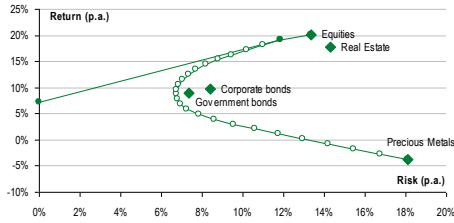
### Optimal allocation



Source: Bloomberg, UBS

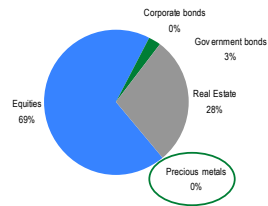
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## 4. Precious metals and low inflation



Source: Bloomberg, UBS Note: Dates and arrows denote high/low inflation periods used in analyses.

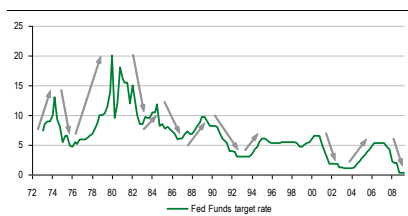
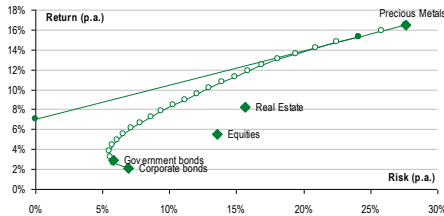
### Optimal allocation



Source: Bloomberg, UBS 18

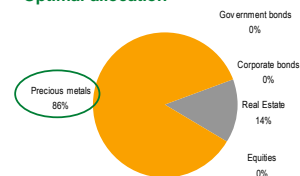


## 5. Precious metals and high interest rates



Source: Bloomberg, UBS Note: Arrows denote high/low interest rate periods used in analyses.

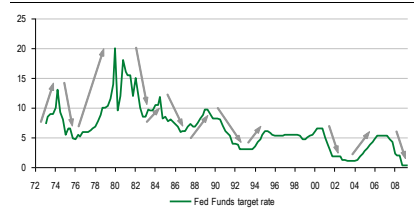
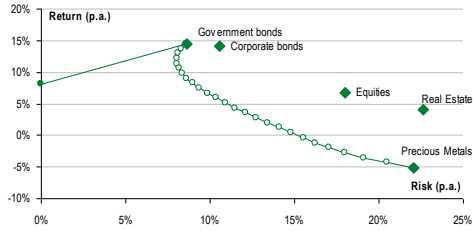
### Optimal allocation



Source: Bloomberg, UBS 19



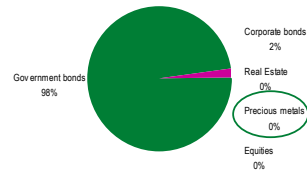
## 6. Precious metals and low interest rates



Source: Bloomberg, UBS. Note: Arrows denote high/low interest rate periods used in analyses.



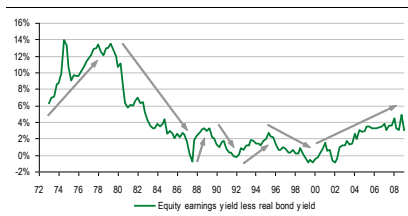
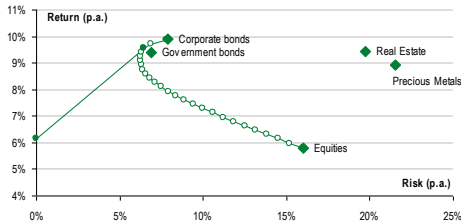
### Optimal allocation



Source: Bloomberg, UBS 20



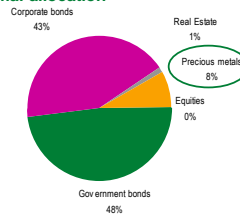
## 7. Precious metals and high equity risk premium



Source: Bloomberg, UBS. Note: Arrows denote high/low interest rate periods used in analyses. We use 12-month trailing earnings yield less real bond yield as a proxy for equity risk premium.



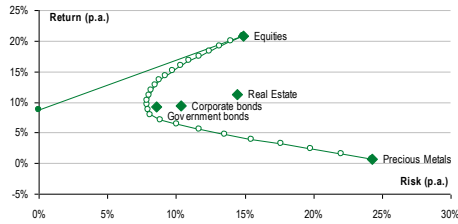
### Optimal allocation



Source: Bloomberg, UBS 21

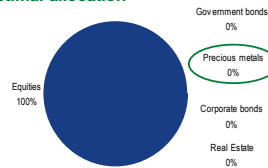


## 8. Precious metals and low equity risk premium



Source: Bloomberg, UBS Note: Arrows denote high/low interest rate periods used in analyses. We use 18month trailing earnings yield less real bond yield as a proxy for equity risk premium.

### Optimal allocation



Source: Bloomberg, UBS 22

### SECTION 4

## Outlook: The gold enigma



## What can we conclude about gold?

### The reason to hold gold is that others want to

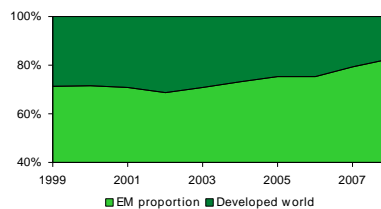
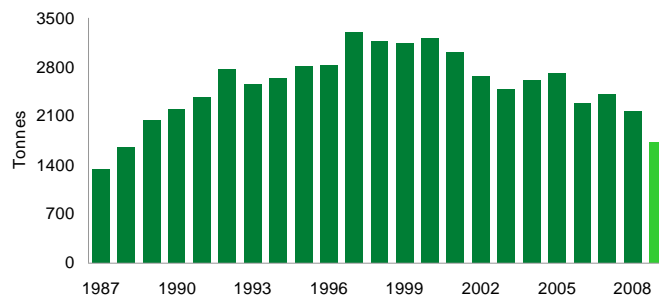
- ◆ Portfolio demand for gold is based on return and correlation, not fundamental valuation
- ◆ Historically, gold has poor Sharpe ratios due to high volatility
- ◆ Over the long run, the 'optimal' holding of gold in portfolios is about 1%
- ◆ However, 'optimal' holdings vary considerably according to the 'state of the world'
- ◆ Gold performed best when inflation, risk aversion and interest rates were high and when the dollar was weak
- ◆ Gold underperformed when economic and financial conditions were broadly stable
- ◆ Gold has helped to manage macroeconomic 'tail risk'



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## Drivers of the gold price: Jewelry demand

### Prices this decade have risen, while demand has dipped



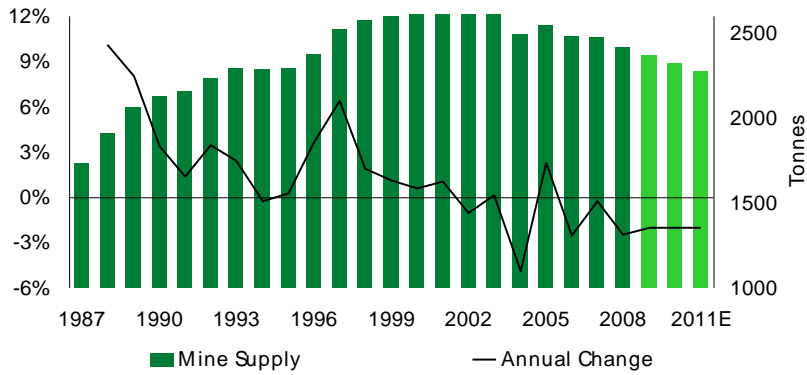
Source: GFMS, UBS forecasts



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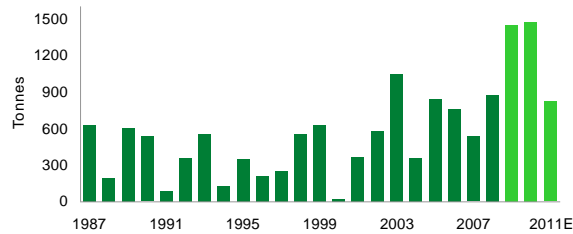
## Drivers of the gold price: Gold supply

Output at mines has been falling, despite higher prices

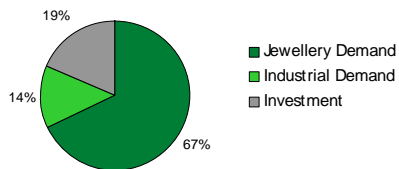


Source: GFMS, UBS forecasts 26

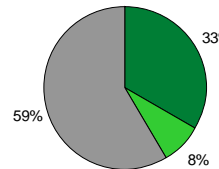
## Drivers of the gold price: Investment demand



Average 2004-2008

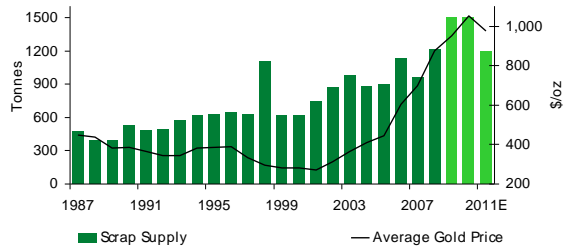


Estimate Q1-09 (annualised)

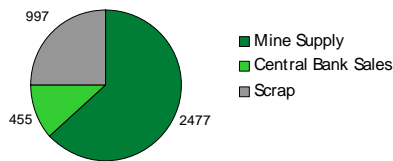


Source: GFMS, UBS forecasts 27

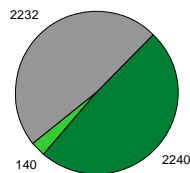
## Drivers of the gold price: Gold scrap supply



Average 2004-2008



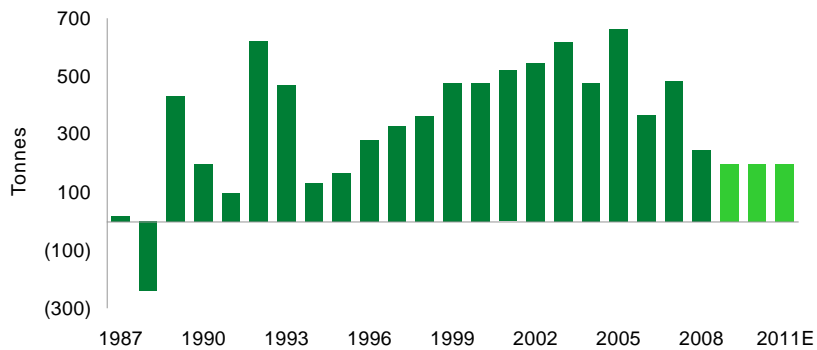
Estimate Q1-09 (annualised)



Source: GFMS, UBS forecasts 28

## Drivers of the gold price: Central bank sales

Central bankers have not been big sellers despite higher prices

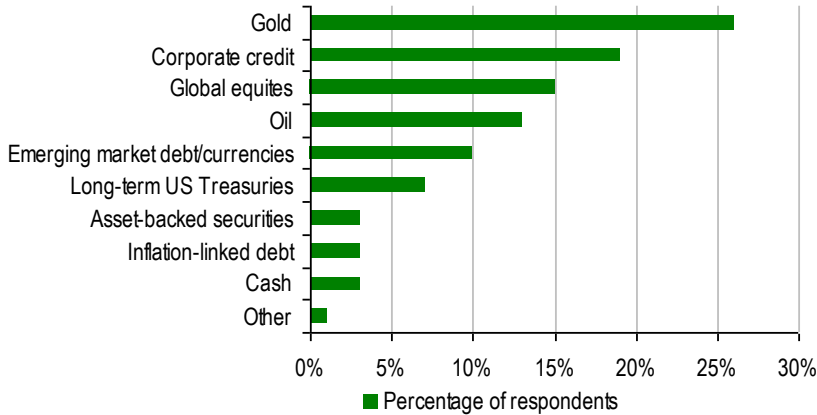


Source: GFMS, UBS forecasts 29

# Drivers of the gold price: Reserve managers

## If anything, reserve managers like gold

### What is likely to be the top performing asset class through year-end 2009?



Based on a survey of reserve managers from approximately 80 institutions, conducted June 2009

Source: UBS survey

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