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Markets Research

Global

Cross-Discipline

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Long-Term Asset Return Study

Bonds: The Final Bubble Frontier?

Deutsche Bank AG/London

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Executive Summary

- Our annual long-term study offers us an opportunity to delve deep into history to enhance our understanding of financial markets and help us to try and predict the future. We deliberately steer clear of short-term recommendations and instead look at more structural themes with an eye to highlighting medium to long-term relative value across the globe. We think this year's main conclusion is interesting as although we've been in the low yields for longer camp for some time (and still are in the near-term), we do think bonds are starting to exhibit bubble tendencies with very little value for investors trying to create long-term real returns.
- We ask whether bonds are the final bubble in what has been a near two decade rolling series of inter-related bubbles? After the Asian/Russian/LTCM crises of the late 1990s we entered a super cycle of very aggressive policy responses to major global problems. In turn this helped encourage the 2000 equity bubble, the 2007 housing/financial/debt bubble, the 2010-2012 Euro Sovereign crisis and arguably some recent signs of a China credit bubble (a theme we discussed in our 2014 Default Study). At no point have the imbalances been allowed a full free market conclusion. Aggressive intervention has merely pushed the bubble elsewhere. With no obvious areas left to inflate in the private sector, these bubbles have now arguably moved into government and central bank balance sheets with unparalleled intervention and low growth allowing it to coincide with ultra low bond yields.
- This is not to say the bubble will pop in the foreseeable future. The bubble probably needs to continue in order to sustain the current global financial system and the necessary future deleveraging. However future inflation or, even more extreme, the risk of sovereign restructuring would mean most government bondholders are unlikely to achieve a positive real return over the medium to long-term. There is a narrow corridor for future performance with yields recently moving significantly lower in many parts of the world and with debt levels still moving higher. It is because of this that we would argue bonds are exhibiting bubble tendencies.
- Indeed bond yields are currently close to multi-century, all-time lows in many European countries and in their lowest decile in virtually all others. However real yields are less extreme, having been lower on 20-40% of occasions through history for most countries and are currently closer to median levels in the periphery. This is the most compelling argument for suggesting yields could still move lower in the near-term whatever the medium-term view.
- Real yields are higher due to low inflation. However current inflation at the global level is not actually as low relative to history as the perceived wisdom suggests. In the US and UK it's currently around median levels seen since 1790 and 1693 respectively. If we narrow the analysis period to the last 100 years, inflation in these two countries has been lower on 38% and 30% of the time. Looking at the same last 100 year period in Europe, inflation has been lower only 12% of the time for France and Italy and 9% for Spain. So it is here that the low inflation concerns are most justified.
- Even Japan has now returned to above median inflation levels relative to its own history with Abenomics the driver. The post-GFC experience of the US, UK and more recently Japan show that if the willingness is there, inflation can be created via monetary policy even if we feel most of the natural global forces remain deflationary. The ECB seems to be now moving in a deflation fighting direction.

- In a high debt, fiat currency world it seems unlikely that deflation will be sustained anywhere for very long. In YoY terms the globe hasn't had a year of negative price growth since 1933. Prior to this deflation was almost as common as inflation. Modern day central banking has changed the inflation landscape even if the euro area is the economy which faces the most complications in the fight against deflation due to willingness (politics) rather than the ability (monetary policy).
- Interestingly an extensive look back at the G20 countries over the last few centuries has shown that low real yields (base rate and 10 year yields) have encouraged higher inflation and Nominal GDP growth (NGDP) 12 months later but have not had any statistical input on Real GDP (and in some cases it has had the opposite impact). These results may surprise people and supports the view that monetary policy still has a role but also limitations. It seems able to elevate NGDP (a worthy aim given the high debt environment) but more active structural/fiscal policies may be needed to notably improve Real GDP.
- Our theory of rolling bubbles ties in with the increasingly discussed theory of secular stagnation. We explore this theme in a separate chapter. A world of secular stagnation – a view of the world that we're sympathetic to – might alleviate fears of there being a bond bubble. However much of this is priced into government bond markets already. Also one of the policy responses to secular stagnation might be even more aggressive monetary policy that could eventually lift inflation. Finally in a world of true secular stagnation Governments will look increasingly unlikely to be able to fully repay their bonds in real terms due to the impact of both weaker growth and mounting debt. Average G7 debt to GDP is currently at all time highs outside of WWII with yields at all time lows. So bonds can't necessarily hide behind secular stagnation indefinitely.
- We go on to analyse valuations across a broad spectrum of assets to see where value may lie or whether other assets show similar bubble-like tendencies to government bonds. In terms of valuing other asset classes outside of Govt Bonds, Euro IG credit yields are at or close to all time lows but spreads are comfortably above such levels and have generally been tighter around a third of the time through history. Most credit indices have been tighter between 20-40% of the time. Given the rock bottom corporate default rates and continuing artificial drivers behind that, it's hard to argue credit spreads are in a bubble even if they are on the expensive side.
- Equities are more complicated to value, but on the numerous measures used in this study the general conclusion is that it is an asset class slightly more expensive than its median valuation point through history but not at extremes. The US comes out as consistently the most expensive main market but then again it's almost the only DM country to have earnings back above the 2007/08 peak. Most other countries are still below their earnings peak. Indeed in Europe many markets have earnings well below their peak with some back to or below levels seen a decade ago. For valuation purposes it's very difficult to know what the right earnings trend is, especially given the very low and declining trend rate of NGDP growth across the globe in the last decade and especially in Europe. Maybe the US expensiveness can in part be explained by the fact that there has been superior visibility on NGDP and earnings growth.
- We highlight that the dividends of the vast majority of the top Global Investment Grade issuers are higher than their current bond yields. For us IG dividends are the sweet spot for the investor in traditional asset classes in a still uncertain world.

- In terms of EM equities there is certainly no bubble and indeed many markets appear cheap on a variety of measures. Three of the BRICs (Brazil, Russia and China) appear very cheap to their own histories but all have their own fundamental issues, so it could still be a value trap.
- Global house prices are a mixed bag with countries like Canada, Australia, Norway and the UK looking expensive. On the other hand Germany, Portugal and Japan look cheap. The US housing market after being partly responsible for the last major bubble and the GFC is now slightly cheap. The reality is that anecdotal evidence suggests more evidence of bubbles at a regional level, especially in major global cities.
- Commodities are more difficult to fit into a standard mean reversion exercise but industrial metals and currencies substitutes look expensive relative to history with agriculture cheap. We would be more cautious of these results than in other asset classes though.
- Finally in an unrelated but topical final chapter we touch on geopolitics and speculate as to whether the current lack of a clear dominant global leading power is heralding in a new era of higher geopolitical risk. We use this report's usual love of long history to create the argument in support of such a view.
- At the back of the document we publish the usual data sections where we first look at future potential returns of selected assets if mean reversion occurs. We also have extensive charts and tables detailing long-term nominal and real returns across many countries across the globe. This is hopefully a useful reference guide to returns going back several decades with many countries seeing data stretch back well through the 1800s.

Bonds: The Final Bubble Frontier?

It has long been our view that over the last couple of decades the global economy has rolled from bubble to bubble with excesses never fully being allowed to unravel. Instead aggressive policy responses have encouraged them to roll into new bubbles. This has arguably kept the modern financial system as we know it a going concern. Clearly there have always been bubbles formed through history but has there been a period like the last 20 years where the bursting of one bubble has consistently led directly to the formation of the next?

This era perhaps has its roots in the Asian crisis of 1997 and the Russian/LTCM crisis a year later. Fears of severe global financial and economic contagion led to very accommodative monetary policy (especially from the Fed) which fed a burgeoning equity bubble in technology stocks and spread out into a bubble in a wider selection of stocks/indices thus leading to the point in 2000 where equity markets were at their most expensive on a valuation basis in history. The response to this bubble's collapse was again ultra loose monetary policy which arguably led to an explosion in leverage thus fuelling the debt, financial and housing bubbles and busts of 2007-9. In response to the economic collapse, fiscal deficits soared and Government debt ballooned to levels that have historically been associated with defaults and restructurings. This manifested itself most evidently in the Euro debt crisis of 2010-12 in spite of even more accommodative monetary policy globally in the lead-up. Rather than see government defaults that would have been a product of 20 years of aggressive policy maker intervention in free markets, we saw even looser monetary policy with the Fed announcing what was then 'QE infinity' (close to ending now) and ECB president Mr Draghi vowing to do whatever it took to save the Euro. Meanwhile 'Abenomics' in Japan has ensured further liquidity injections into the global economy and China has arguably created a credit bubble to offset the impact on domestic growth of lower global activity - this is a topic we discussed at length in our 2014 Default Study.

In this report we want to see where the rolling bubble has moved onto and whether it had lifted the value of all assets relative to their long term trends. What we found was that bonds are where the bubble has migrated to. This is not to say that the bond market bubble is about the burst –far from it – but that it is a necessary condition for maintaining the debt ladened financial system that has been the by-product of major crisis management over the last two decades. The worry is that there is nowhere left for this bubble to go given that it is now in the hands of the lenders of last resort (governments and central banks with regulators ensuring other large captive buyers). Although we think this bubble needs to be maintained to ensure the solvency of the current financial system, the best case scenario is that it slowly pops over time via negative real returns for bondholders. The worst case scenario being future restructuring. Until we start to see sustainable growth this can't be ruled out in certain countries further down the line.

This report will explore the evidence for there being a global bond bubble and will also examine whether the extremely loose monetary policy has created other bubbles in other asset classes around the world.

The biggest argument against a bond market bubble, specifically that current historically high valuations may actually be sustainable over the medium to long-run, would be if the forces of secular stagnation have been running through major economies and are set to continue to be a dominant theme in the years ahead. We explore the argument in a standalone chapter. Whilst we have been believers in the secular stagnation argument we can't help thinking

that bonds now price in the high probability of such a world being sustained over the long-term. This is clearly possible but the reality is that debt restructuring and inflation could still be long-term consequences of secular stagnation and as such bonds could still be in a bubble under such an environment. The longer we live in a weak growth world, the more debt is likely to be built up as fiscal targets are missed and the more difficult it will be to see a way of Governments returning investors' money back in real adjusted terms.

We begin the main body of this note by analysing valuations across asset classes in order to see where fair value or bubbles may lie.

Where are the Bubbles in this Cycle?

It's been widely discussed in financial markets how the extremely accommodative monetary policy seen around most of the world over the last 6-7 years has elevated the value of many assets beyond where fundamentals suggest they should be trading and has created bubbles in certain areas. In particular QE has been seen as exaggerating this theme. In the main body of this year's report we wanted to examine which assets are expensive globally and to see whether we could find cheap assets across the globe. This exercise will use long-term data where available and the results are based on how different markets are trading relative to their long-term histories.

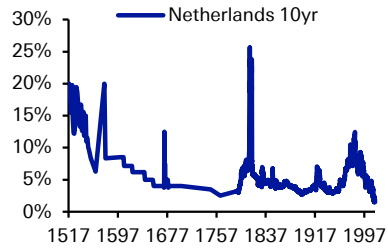
For our sample we have used G20 countries where there is enough data historically to conduct meaningful valuation analysis. Some countries in this universe do not have much historical data and have been omitted where appropriate. We have added Spain to our list as we have comprehensive data through history.

The building blocks for the financial system are Government bonds so this seems the obvious place to start.

Government Bonds – The final bubble?

In previous editions of this report we discussed how the majority of major Government bond markets across the world (especially in DM) have hit multi-century all-time yield lows over the past two years. Indeed the summer of 2014 has seen a major European bond market rally and fresh yield lows again. The longest time series we have covers the Netherlands (which is outside our G20 sample) with data stretching back nearly 500 years. Looking at all the evidence we can safely say that European Government bond yields are currently at around half a millennia all time lows. Figure 2 starts our analysis by looking at long histories of a selection of G20 Government bond markets (plus Spain) many of which are also at or close to all time yield lows.

Figure 1: Netherlands 10yr Yield

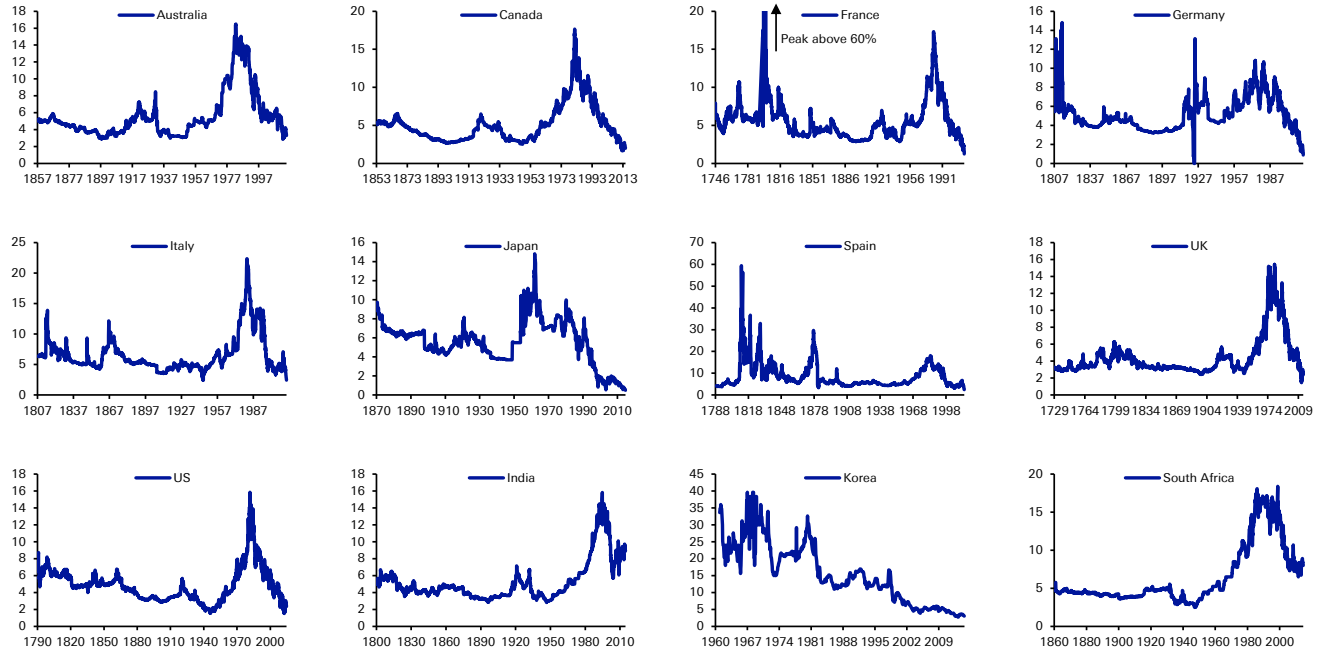


Source: Deutsche Bank, GFD, Bloomberg Finance LP

Although we have often commented on how remarkable it is that we are currently hovering at around these all time lows, it's fair to say that real yields look significantly less extreme due to the unusually low current levels of global inflation. Figure 3 shows the same markets (where data is available) in terms of spot real yields. This is calculated simply by subtracting current inflation away from 10 year yields. An alternative way of calculating would be to look at inflation expectations rather than spot inflation but there would be a very limited history so such analysis doesn't fit within the scope of our methodology of using the longest time series possible.

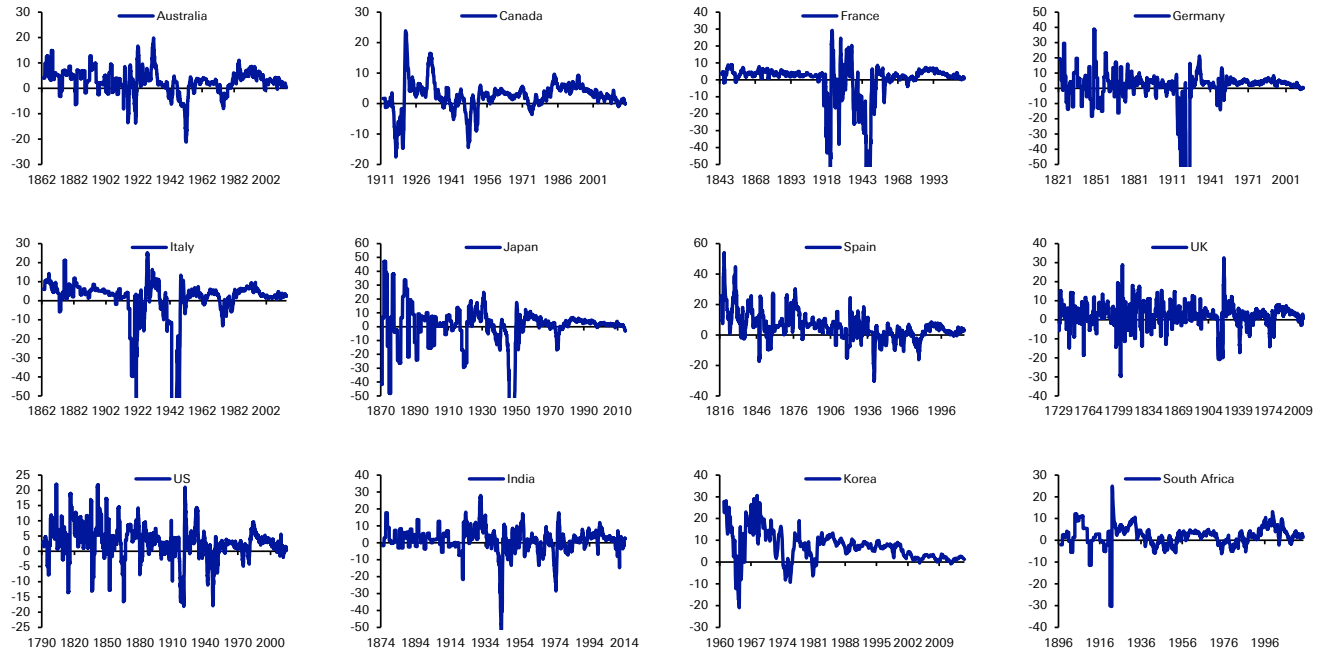
When charting the real series in order to avoid the distortions caused by periods of excessive inflation or hyperinflation we have cut the charts off at -50 where necessary.

Figure 2: Nominal 10yr Yields by Country



Source: Deutsche Bank, GFD

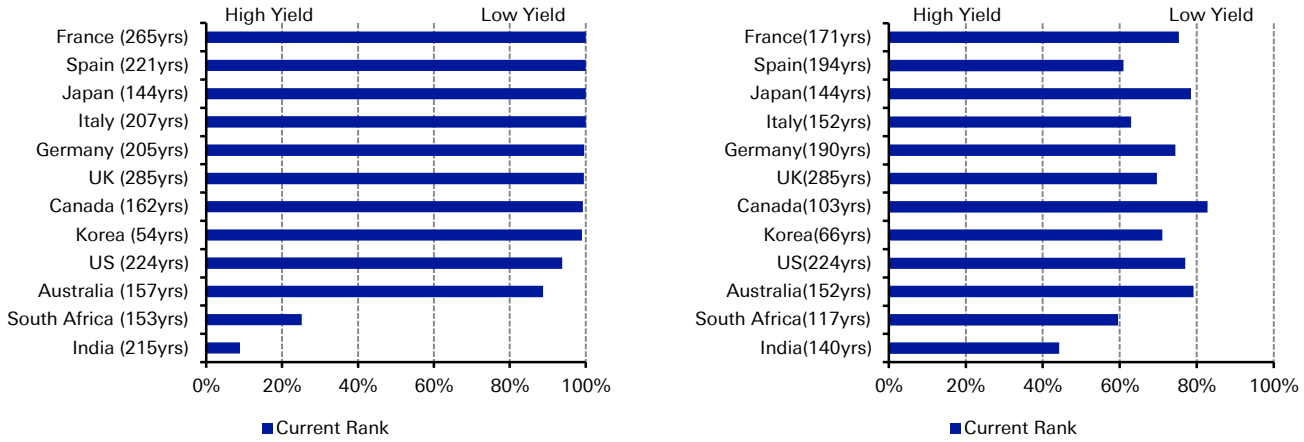
Figure 3: Real 10yr Yields by Country



Source: Deutsche Bank, GFD

To bring this all together, Figure 4 uses the data from Figure 2 and Figure 3 to show where current nominal and real yields are relative to each country's long-term history in percentile terms. Each country's results are started from the point where monthly data is available. This does mean that each country has different starting dates. We show how much history is available for each series within the brackets of the country labels.

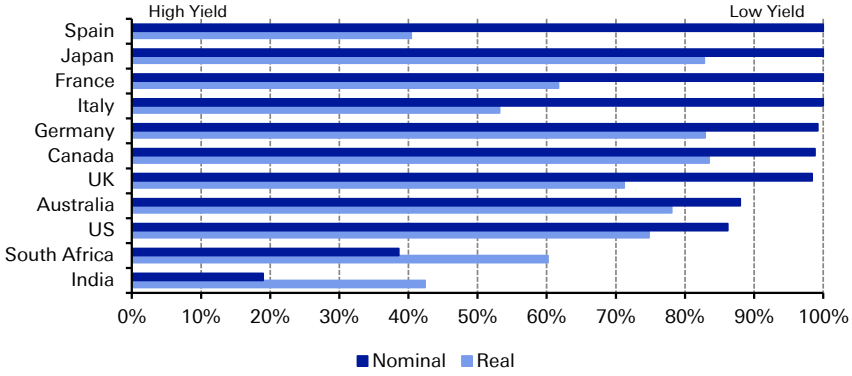
Figure 4: Current Percentile of 10yr Nominal (left) and Real (right) Yields Relative to History



Note: We show in brackets how much data is available for each country.
Source: Deutsche Bank, GFD

To try to see whether a unified starting point changes the data, Figure 5 below shows the same data from the start of 1914, thus taking us back 100 years and perhaps focusing more on the start of the modern era of central banking given that the Fed was set up in 1913. Prior to this point inflation was far more stagnant than it has been since and therefore the last 100 years might be a more realistic comparison point for the modern central bank dominated financial system.

Figure 5: Current Percentile of 10yr Nominal and Real Yields Relative to Last 100 Years (where available)



Source: Deutsche Bank, GFD

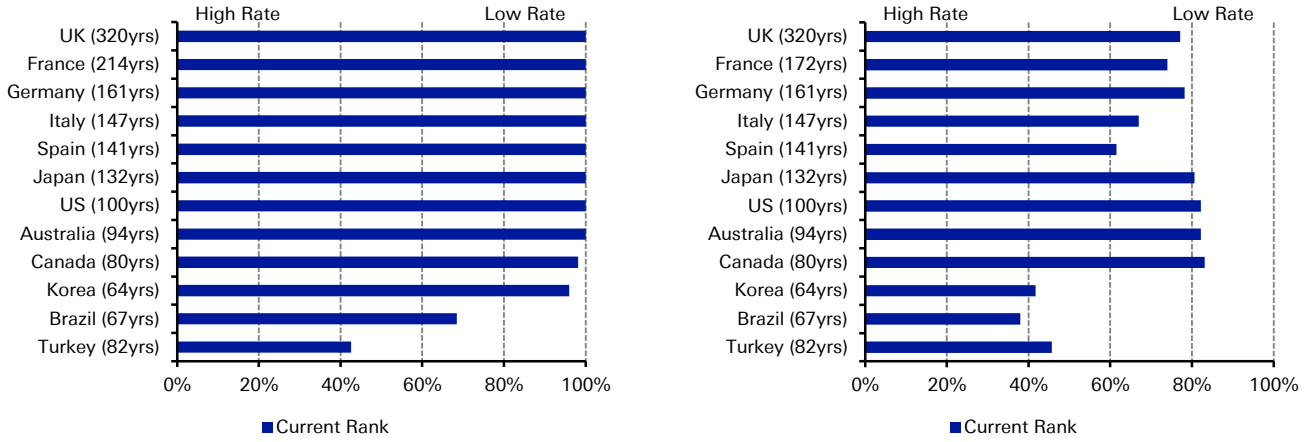
On both measures, nominal yields have rarely been lower than current levels for the majority of countries, particularly in Europe. This is a fundamental starting point for the case that government bonds are in bubble territory. However real yields are not at such extreme levels. Using the full history, most DM countries are in the 60-80% range and have therefore been lower 20-40% of the time. So they are low but not extremely low unlike nominal yields. Japan sees one of the lowest real yield readings relative to its own history in this sample partly due to the rise of 'Abenomics', but with some of this due to the recent inflation spike after the April 2014 sales tax rise. If we go back around 18 months, this number drops from 79% to 59%. On the other side many countries in Europe actually have real yields that are closer to their median relative to history. Italy (63%) and Spain (61%), certainly stand-out, especially

as both are at 100% in terms of nominal yield lows. Indeed if we only look at data over the last 100 years Spain (40%) sees real yields slightly higher than the long-term median and Italy (53%) is close to median. France (62%) is also much closer to its median over this period.

Base Rates – Near zero but have been lower in real terms

A similar story is seen with short-term base rates as with Government bond yields with Figure 6 showing where nominal and real short-term central bank rates are relative to each country's history.

Figure 6: Current Percentile of Nominal (left) and Real (right) Central Bank Base Rates Relative to History

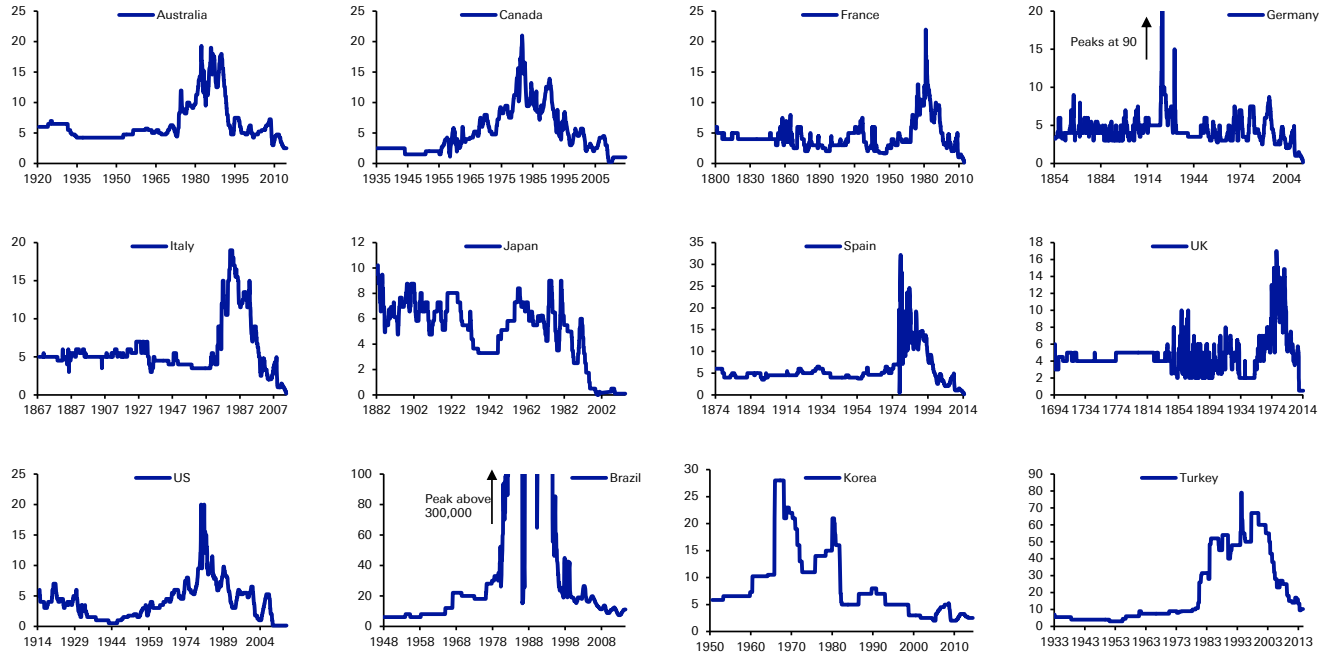


Note: We show in brackets how much data is available for each country.
Source: Deutsche Bank, GFD

In DM virtually all base rates are at all time nominal lows but in real terms the picture again looks less extreme, albeit with most of the DMs seeing real short-term rates around their lowest quartile relative to history. Spain and Italy though have seen real short-term rates lower than current levels in 39% and 33% of observations through history. So it's hard to say that the ECB rate is wildly accommodative for them given their current low inflation and weak growth. Interestingly Korea, Brazil and Turkey all have higher than median real base rates relative to history.

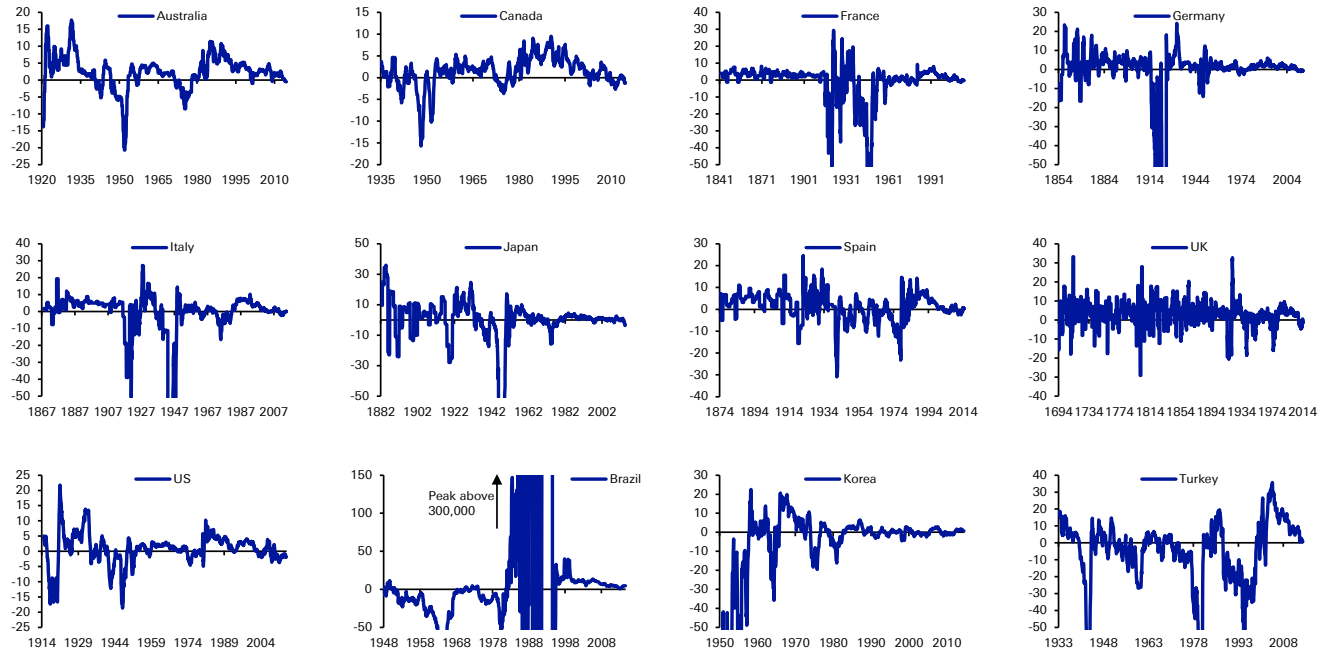
In Figure 7 and Figure 8 we show the full histories of these nominal and real central bank base rates. For countries where we have seen excessive inflation/hyperinflation we have cut the charts off at -50.

Figure 7: Nominal Central Bank Base Rates / Short-Term Rates by Country



Source: Deutsche Bank, GFD

Figure 8: Real Central Bank Base Rates / Short-Term Rates by Country



Source: Deutsche Bank, GFD

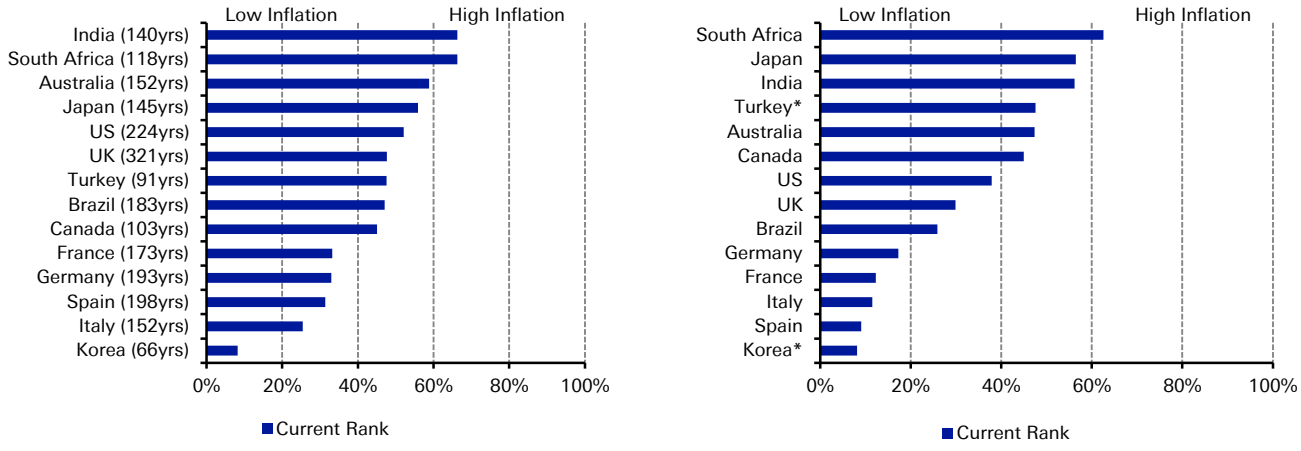
Overall Europe is conspicuous by the fact that short and longer dated real yields are not particularly low relative to history which might help explain both the low nominal yields and the still weak recovery in absolute and relative terms. So with nominal yields close to all-time lows, and real yields not as extreme, arithmetically it must be true that inflation is low relative to history especially in Europe.

Inflation – Key to assessing whether bubbles exist

We now repeat the analysis for inflation. It's difficult to analyse bubbles without an understanding of where we currently are in an inflation context as if inflation was structurally lower for an extended period it might help justify lower bond yields. To account for what we see as a change in the historic monetary regime post the inception of the Fed in 1913, we again repeat the percentile bar charts already used in this chapter for just the last 100 years. The full individual charts are shown in Figure 10. Where necessary charts have been cut off at 100 to avoid distortions caused by hyperinflation.

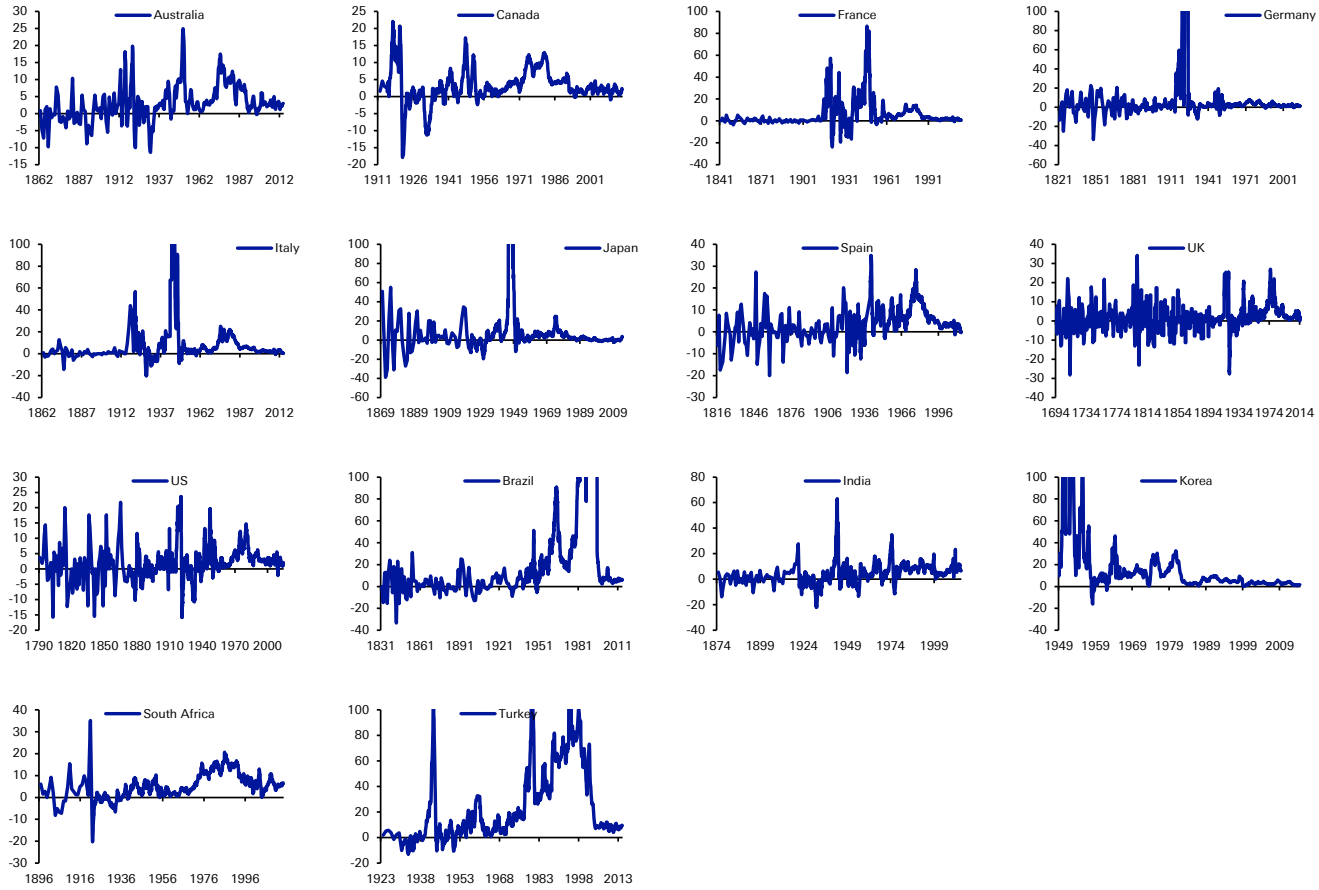
The overall picture on inflation is actually not as extreme relative to history as the ultra low nominal bond yields and current headlines might lead one to believe although Europe is a real cause for concern given that it is where most of the low inflation prints currently reside. The recent edging up of inflation in the US to 2.0% actually means that a fairly high 52% of months since 1790 have seen lower inflation than current levels. This falls to 38% if we just look at the last 100 years. Over the same 100 year period, the UK has seen inflation lower than the current level on 30% of occasions. So inflation rates in the US and UK are not at extremely low levels. Elsewhere, Japan's sales tax distortions actually mean that inflation has been lower 57% of the time so if we return back to end 2013 levels, this number falls to 42%. In fact if we go back around 18 months this number drops below 20% so Japan is currently seeing inflation return broadly to median levels seen through its history and notably higher than the lows of the last two decades. It is once we get to France (12%) and the periphery (Italy and Spain 12% and 9% respectively) that we start to see levels of current inflation that are low relative to the last 100 years.

Figure 9: Current Percentile of CPI Relative to Full Available History (left) and Last 100 Years (right) where Available



*Note: We show in brackets how much data is available for each country. * Korea data only back to 1949 / Turkey data only back to 1923.*
Source: Deutsche Bank, GFD

Figure 10: YoY CPI by Country



Source: Deutsche Bank, GFD

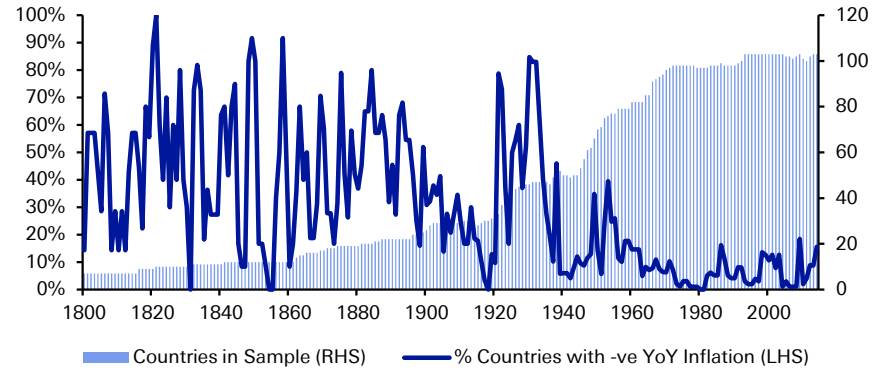
Future inflation is clearly crucial to understanding the future performance of assets and the health of underlying economies. It is also critical to working out whether bond markets are in a bubble or simply reflecting low activity including low inflation.

Looking at the results so far it's a measure of the level of intervention of central banks since the GFC that nominal yields are close to all time lows in many countries whilst inflation is at more 'normal' levels for most countries, albeit starting to get very low in some. Looking forward, given that we live in a fiat global monetary system (and have done since the Bretton Woods regime effectively collapsed in 1971), there is no theoretical constraint on money creation. Since 1971 inflation has had an upward bias relative to most of prior history where the most common system was some kind of precious metal currency peg. In particular deflation should be very rare in a fiat currency system, especially with modern day high levels of debt as central banks would likely be forced to intervene if there was the threat of a run on a country's debt due to any deflation risk and implied solvency issues. The peripheral of Europe is slightly different in that individual countries have lost control of their own monetary policy. However even here the ECB is unlikely to allow deflation to persist for major economies for fear of debt funding problems and damaging contagion to the wider euro area project.

Figure 11 illustrates the positive inflation bias seen in the modern era by showing the percentage of countries (in our progressively increasing sample of

up to 103 countries) with negative annual YoY inflation through time (back over 200 years). Before the last 70 years it was quite common to see periods of annual deflation for over 50% of countries in the sample. Over the last 40-50 years this number has rarely been above 10% of the population.

Figure 11: Percentage of Countries with Negative YoY Inflation since 1800

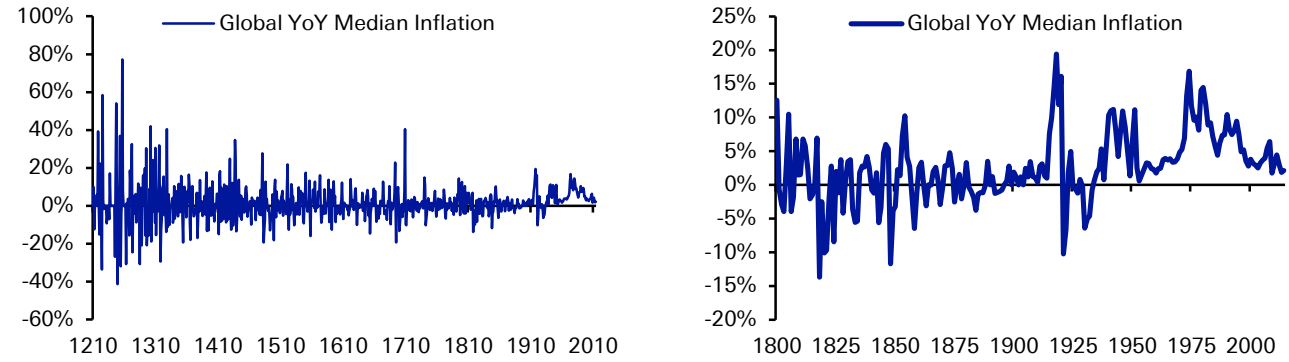


Source: Deutsche Bank, GFD

At a global aggregated level deflation has been non-existent over the last 80 years. Figure 12 uses the same gradually increasingly cohort as analysed above but shows the median global YoY inflation back to 1210 (left) and over the shorter period since 1800 (right).

Prior to the twentieth century, years of deflation were almost as common as years of inflation. However this all changed over the last 100 years or so as global currency links to precious metals broke down periodically and then collapsed as of 1971. Indeed we haven't seen a year of deflation on this median Global YoY measure since 1933, meaning we've now had over 80 years without a global year on year fall in prices even if the annual rate of inflation has been falling fairly consistently since the mid-1970s.

Figure 12: Global Median YoY Inflation since 1210 (left) and 1800 (right)



Source: Deutsche Bank, GFD

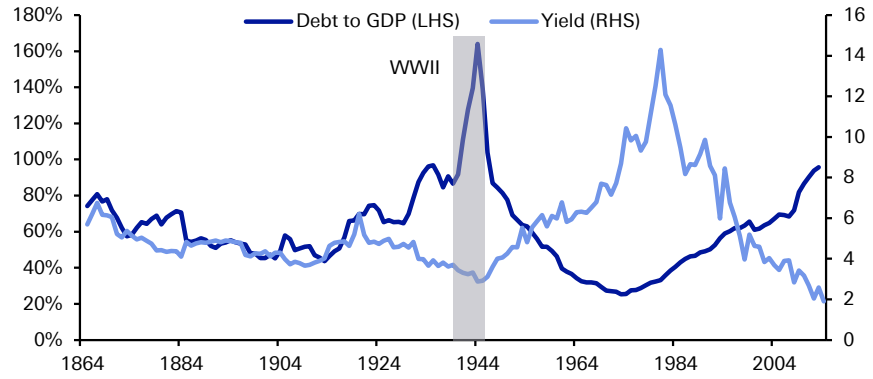
The point being that the longer-term investor has evidence that we live in a world with a positive inflation bias and as such must approach the current low levels of bond yields with extreme caution. The argument is more nuanced in Europe where individual countries have little control over their own money supply. However the ECB have been aggressive in the last 5 years even if many feel they could have done, and should still do more. For Europe to

survive it's not in the ECB's interest to see persistent deflation in major European economies. As such their policies are likely to ensure that deflation doesn't persist for long, even if there may be arguments for suggesting that they are behind the curve.

Our near-term outlook (1-2 years) has been and continues to be more sanguine on Government bonds as financial repression and a still weak nominal recovery will likely ensure nominal yields stay in a fairly low trading range. However the real adjusted value for the longer-term investor is non-existent if you believe central banks will continue to successfully repel deflation. Unless you assume growth and inflation are semi-permanently drifting towards zero there is strong evidence of a medium to longer term bubble in Government bonds

Another argument for suggesting a bubble is that DM debt levels are generally at/above/fast approaching levels where the arithmetic makes full repayment in real terms a challenging proposition. Indeed without zero interest rates, QE and other instruments of financial repression we may have already seen widescale sovereign defaults. Figure 13 looks at a chart of an un-weighted average of Debt to GDP and yields in the G7.

Figure 13: Average G7 Debt to GDP and 10yr Yield



Source: Deutsche Bank, GFD, Haver

Apart from the WWII years, Debt to GDP has never been higher than current levels and is now around levels seen during the Great Depression. However yields have never been lower. There's no evidence to suggest that this alone will be enough to reverse the bond rally. In fact as we've discussed earlier the fact that debt is so high may help keep yields lower for longer as central banks need to ensure they are artificially low enough to comfortably fund the debt in spite of ever rising debt levels. If yields were allowed to rise too much then there might be serious solvency questions asked.

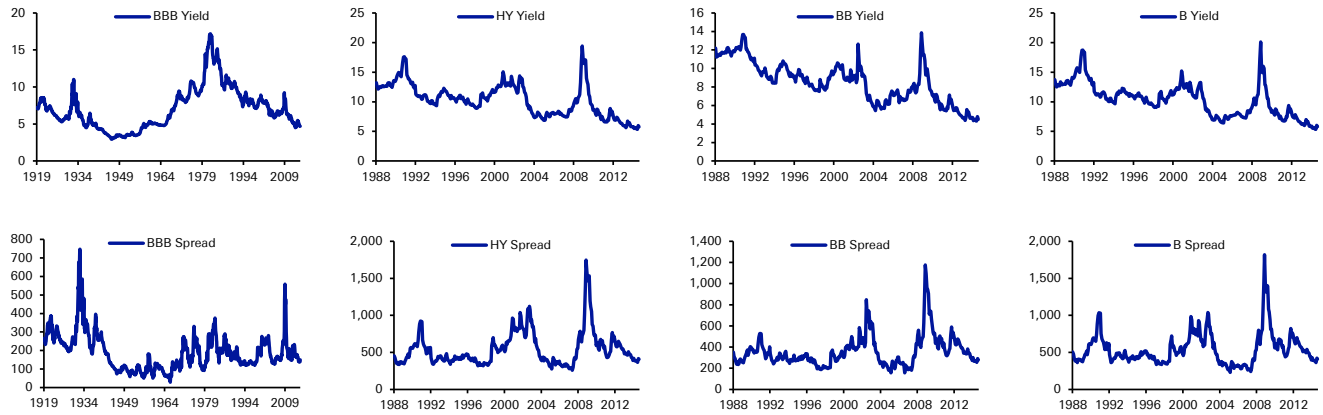
So there is no obvious end in sight to the bond bull market, but the risk/reward is becoming more asymmetric as investors are at risk from either inflation or in more extreme circumstances future restructuring if we're stuck with long periods of sub-standard growth.

Credit – All time yield lows but no spread bubble

So with some evidence suggesting a bubble in government bond markets where does this leave credit given that it is directly priced off sovereign risk. For credit we try to assess valuations on both a yield and a spread basis. Most benchmark credit indices unfortunately only have 15-30 years of data so we first look at Moody's long-dated BBB series for the longer-term context (back

to 1919), we then use a HY series dating back to 1988 (split also into BBs and Bs), and then finally drill down for more granularity into the Dollar, Euro and Sterling iBoxx indices for the last 15 years worth of data. Figure 14 shows the yield and spread histories for the longer-term series.

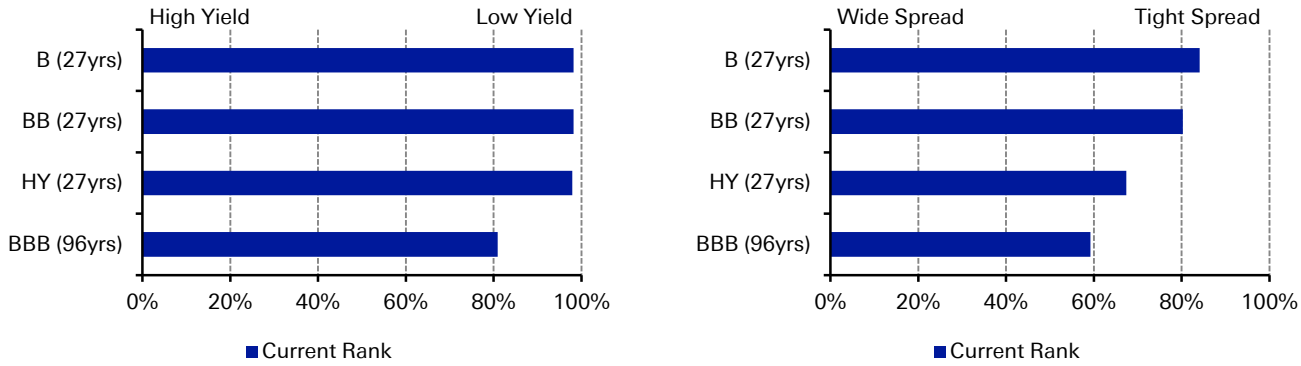
Figure 14: US IG and HY LT Yield (%) and Spread (bps) Series



Source: Deutsche Bank, Bloomberg Finance LP

We then show the current level relative to their respective history using the same percentile analysis.

Figure 15: Current Percentile of US IG and HY LT Yields (left) and Spreads (right)



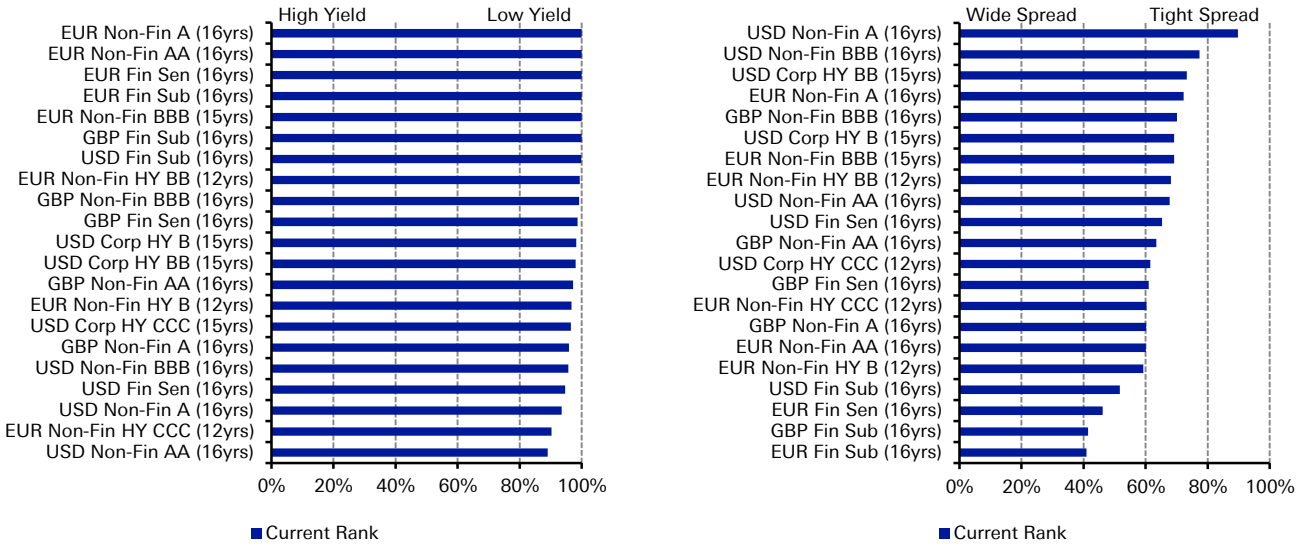
Source: Deutsche Bank, Bloomberg Finance LP

The results for BBB yields are slightly biased by the fact that Moody's long-term BBB series saw yields lower than current levels for the entire period between September 1940 and July 1957. This was a period of low Government yields similar to today's levels but also a period of even tighter spreads than today. So we're certainly above these levels currently. Indeed the spread chart on the right shows that this BBB spread series has actually been tighter in 41% of observations through history. So this doesn't reflect obvious signs of a spread bubble even if yields are in the lowest 20% relative to history.

With regards to the HY data back to 1988, yields have only been lower in 2% of observations through history. In June this year, before the summer sell-off, yields were actually at their all-time lows. This HY sell-off has also reset spreads back wider than their tightest quartile with BBs and single-Bs now seeing spreads tighter on 31% and 29% of observations over the last 27 years as opposed to the 20% and 16% they reached at the tights in June.

When we look at the iBoxx indices over the last decade and a half we see a similar picture of yields well into their tightest decile, with many indices in Europe at all-time lows. In spread terms we see most sub-sectors having been tighter on 30-40% of observations through history. The main exceptions are that USD single-As and BBBs are into their tightest quartile and most subordinated financial bonds are still wider than their median. Interestingly Euro HY non-financial single-B rated bonds have now been tighter 41% of the time which is just about the cheapest index outside of subordinated financials on this valuation measure. Back in June single-Bs were at the most expensive end of the same list of indices with spreads having been tighter only 13% of the time.

Figure 16: Current Percentile of iBoxx Index Yields (left) and Spreads (right)



Source: Deutsche Bank, Mark-it

In what has been a world of low defaults that has now lasted for over a decade, and where there remains a chase for yield, we are hard pressed to say that credit spreads appear bubble-like. Clearly the all-in yield makes the asset class expensive relative to history but future performance on this measure will largely be dictated by the Government bond market. Spreads can go tighter before we need to worry about a credit-specific bubble, once you strip out government bonds.

Equities – Slightly expensive with big regional variations

We now use this framework to look at other assets/financial variables, we next look at equities.

Equities are more complicated to value on a longer-term basis than bonds as i) valuation measures are highly subjective and plentiful allowing for wide variation/debate in the results, ii) the constituents of indices change over time thus creating difficulties in comparing data from one era to the next and iii) much of the valuation equation is a leveraged assessment of future growth, inflation, yield and earnings which are all highly uncertain, none more so than in the current era.

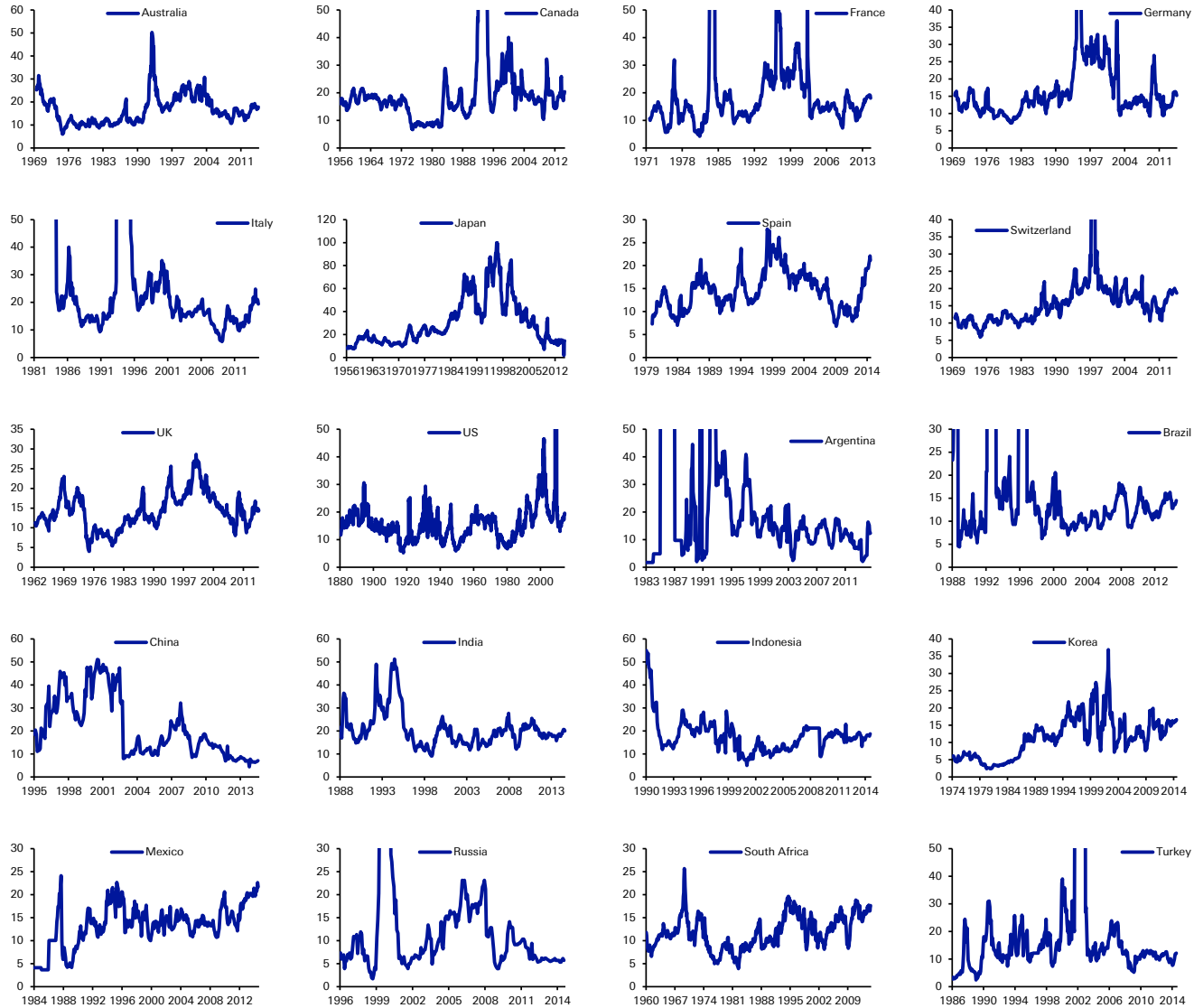
So in this section we're not going to make any definitive conclusions about the valuations of individual markets but instead make broader remarks about the

general valuation of the asset class relative to history. The four valuation methods we've decided to focus on are: current PE, CAPE (cyclically adjusted PE), Dividend Yield and Book Value. Where data is available we are using the same sub-set of G-20 countries plus Spain and Switzerland.

We're first going to look at data going back as far as we can for each country and see where each country ranks relative to its own history. This is based on data from a selection of large cap companies within each country and not an index. We then compile a separate analysis based on MSCI indices back to 1996. This data includes book value where the previous source did not and also allows us to compare markets on a consistent time basis.

In Figure 17 we show the full PE ratio histories for each of the countries in this analysis. The data for each country is generally based upon large cap stocks representing about 75% of the country's capitalization.

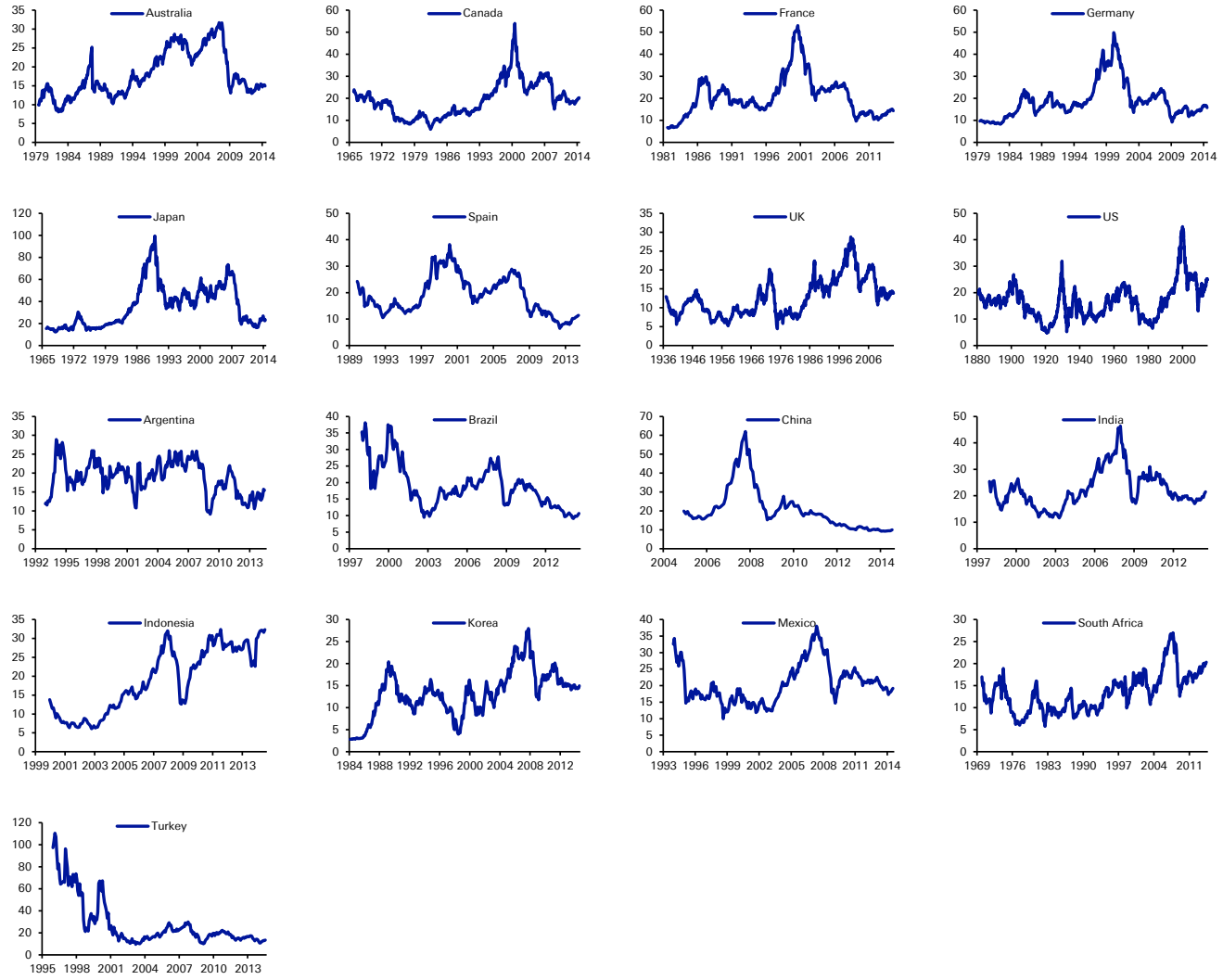
Figure 17: Spot PE Ratios by Country



Source: Deutsche Bank, GFD

In Figure 18 we show the full CAPE ratio histories for each of the countries in this analysis.

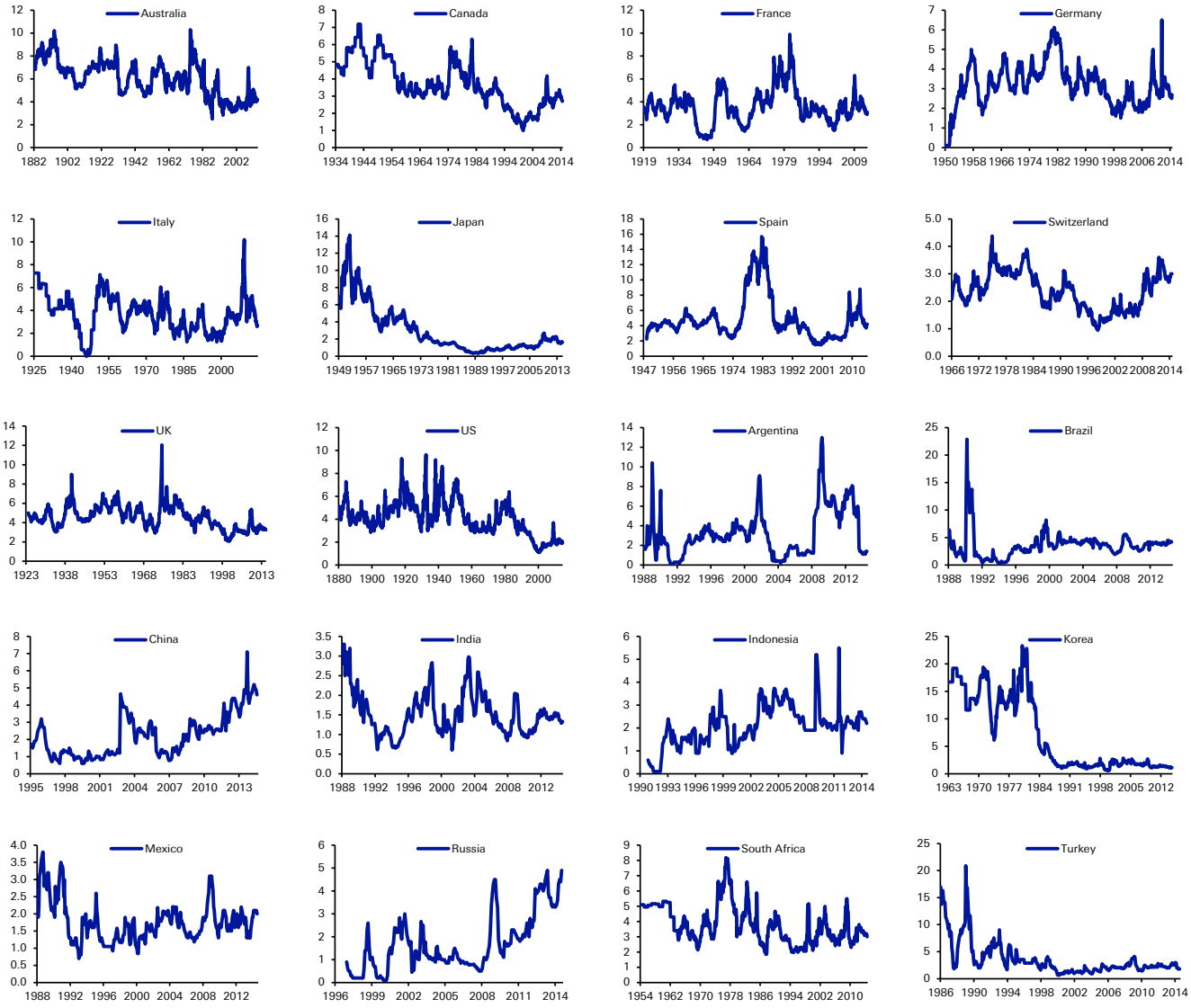
Figure 18: CAPE Ratios by Country



Source: Deutsche Bank, GFD

In Figure 19 we show the full dividend yield histories for each of the countries in this analysis.

Figure 19: Dividend Yield by Country



Source: Deutsche Bank, GFD

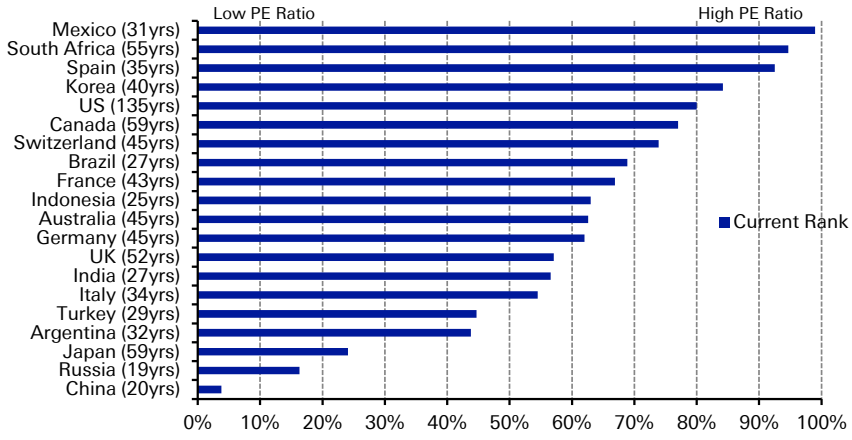
In Figure 20-Figure 22 we again show summary bar charts of the data highlighting where current levels sit relative to their histories for each country. Although different start dates make direct comparisons tough, it's clear that few markets are at extreme valuations relative to their own histories even if most are above average in terms of expensiveness. Whilst we want to be careful highlighting individual countries, given that anomalies across countries can directly impact comparisons, we can still make a few interesting observations.

The US market is consistently at the expensive end of historical valuations, with all three measures in their highest 20% of valuations relative to history. Other DM countries like the UK, Australia, Canada, Germany are also expensive but not at extreme levels across all measures. Interestingly the CAPE numbers are lower than the PE numbers for most countries with the US being

a notable exception. This is mostly because earnings have taken a big hit in most counties around the world since the financial crisis and therefore in cyclically adjusting earnings the analysis would assume earnings eventually mean revert higher. This wouldn't be the case in the US where earnings have been propelled higher since the crisis and therefore mean reversion would suggest lower earnings in the future. We examine this contrast in more detail later on in this section.

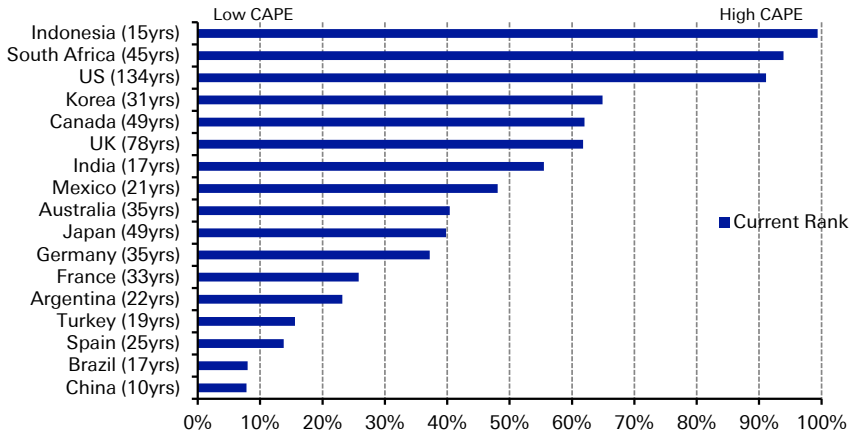
For EM, three of the four BRICs (China, Brazil and Russia) are 'cheap' relative to their own history and whilst all have their own fundamental issues it would be tough to argue that they were being artificially inflated by current global monetary policy. Other EM countries are scattered through the list with no generic trend relative to DM. In terms of Europe most of the countries are in the middle of the global pack which means that these markets are generally on the slightly expensive side relative to their own history but not at extreme levels. In CAPE terms countries like France and Spain look 'cheap' but this obviously relies on earnings eventually mean reverting back to their old trend.

Figure 20: Current Percentile of Spot PE Ratio Relative to History



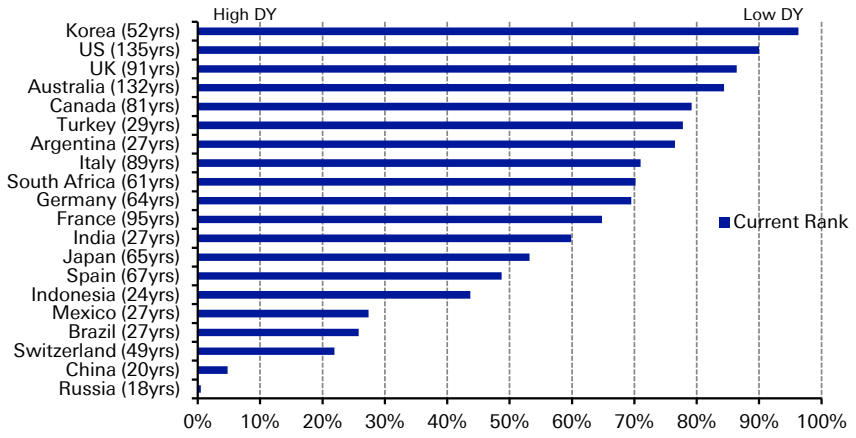
Source: Deutsche Bank, GFD

Figure 21: Current Percentile of CAPE Ratio Relative to History



Source: Deutsche Bank, GFD

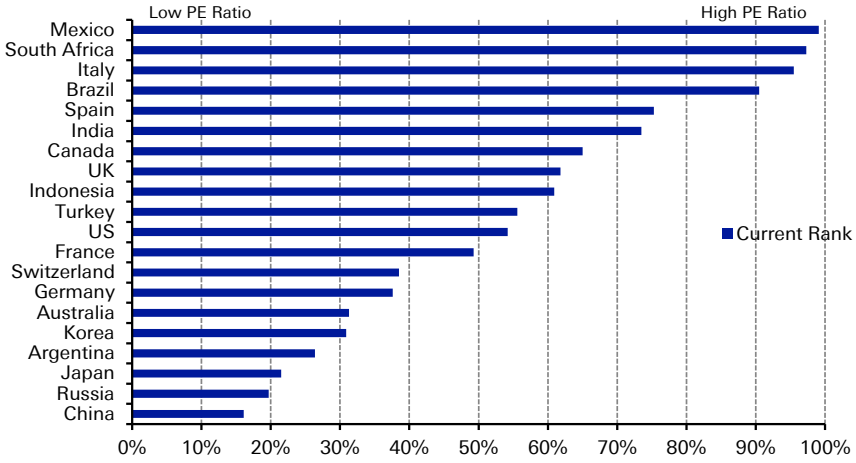
Figure 22: Current Percentile of Dividend Yield Relative to History



Source: Deutsche Bank, GFD

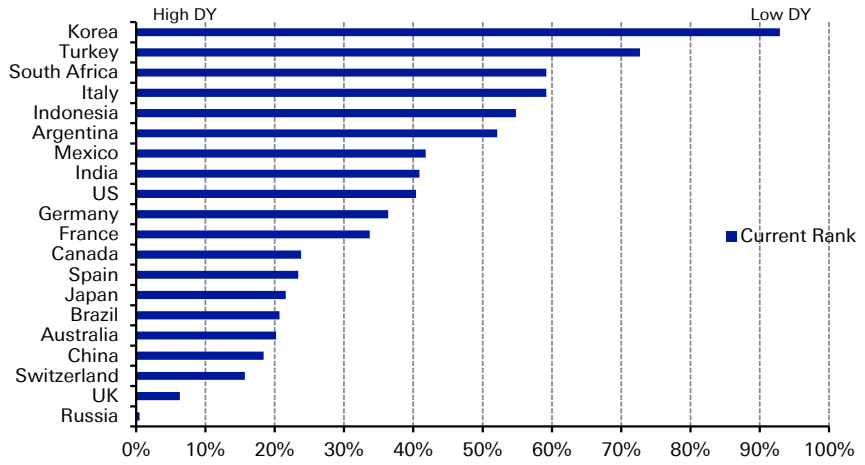
When we repeat the analysis for the MSCI suite of indices (individual country histories are included at the end of this section in Figure 26-Figure 28) back to 1996 and include price to book value but eliminate CAPE (where no data is available) we see the following results.

Figure 23: Current Percentile of Spot PE Ratio for MSCI Indices Relative to History



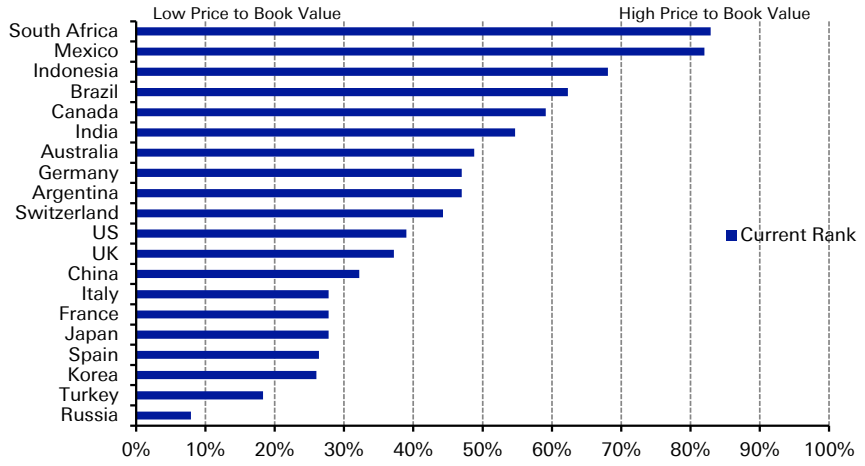
Source: Deutsche Bank, Bloomberg Finance LP, MSCI

Figure 24: Current Percentile of Dividend Yield for MSCI Indices Relative to History



Source: Deutsche Bank, Bloomberg Finance LP, MSCI

Figure 25: Current Percentile of Price to Book Value for MSCI Indices Relative to History



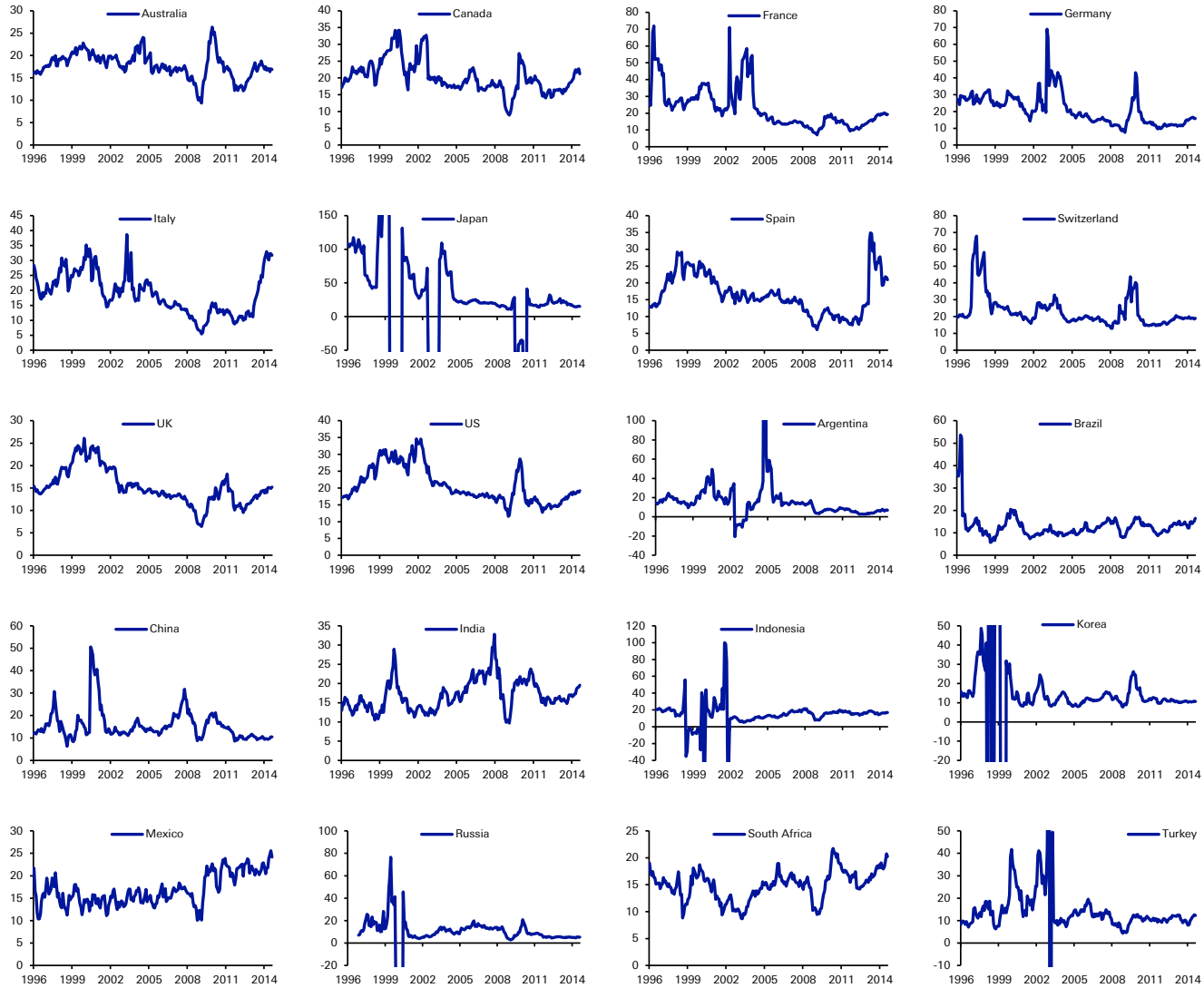
Source: Deutsche Bank, Bloomberg Finance LP, MSCI

Overall using this subset of data makes markets look less expensive than the previous analysis based on the longer history. This is largely because through most of the twentieth century PE ratios were lower and dividends were higher. Over the last 20 years PEs have tended to be higher and dividends lower. One such example of this is in the UK where over the last 20 years dividends now look 'cheap' but over our full data series going back 90 years they are expensive. Much of this at the global level could be attributed to lower Government/risk free rates and earnings yield type valuation metrics. It also could be to do with the structure of the market whereby firms retain earnings more and try to boost future earnings (M&A, share buybacks etc) as opposed to the high dividend payout ratio that certainly held sway for the first half of the twentieth century and slightly beyond. We think this modern practice is more risky for investors but can boost earnings in the short-term for many companies. Investors may be prepared therefore to pay more for this potentially higher (albeit more volatile and risky) future earnings stream.

Interestingly price to book numbers are currently generally on the cheaper side relative to each countries' histories with only a few being notably more expensive than history.

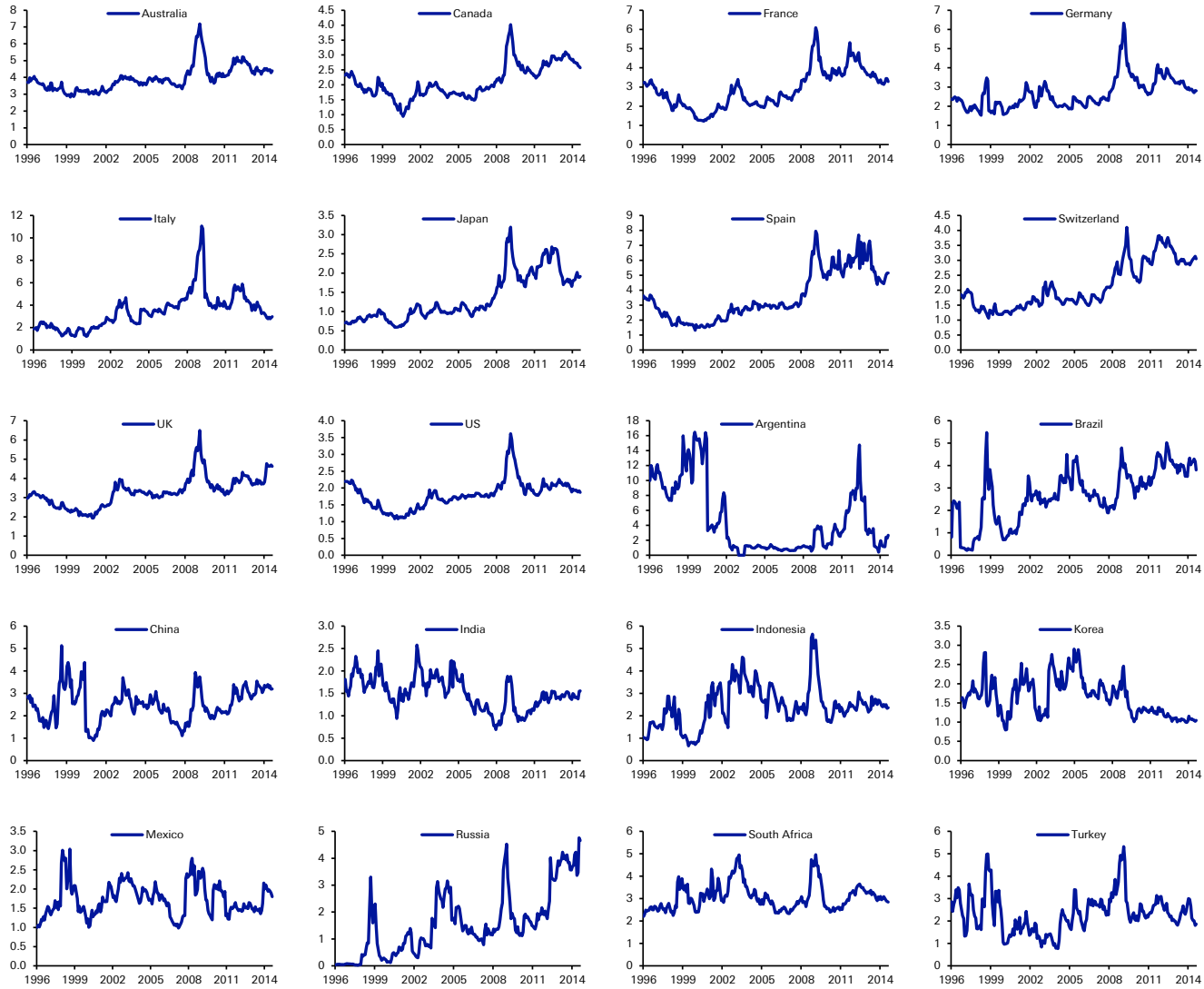
Overall while one has to tread carefully with regards to sweeping macro equity valuations, at face value one would be hard pressed to suggest that equities are anywhere near as extremely valued as bonds. This is important to the longer-term investor, especially if they assume a world going forward that vaguely mirrors the past.

Figure 26: PE Ratios for MSCI Indices by Country



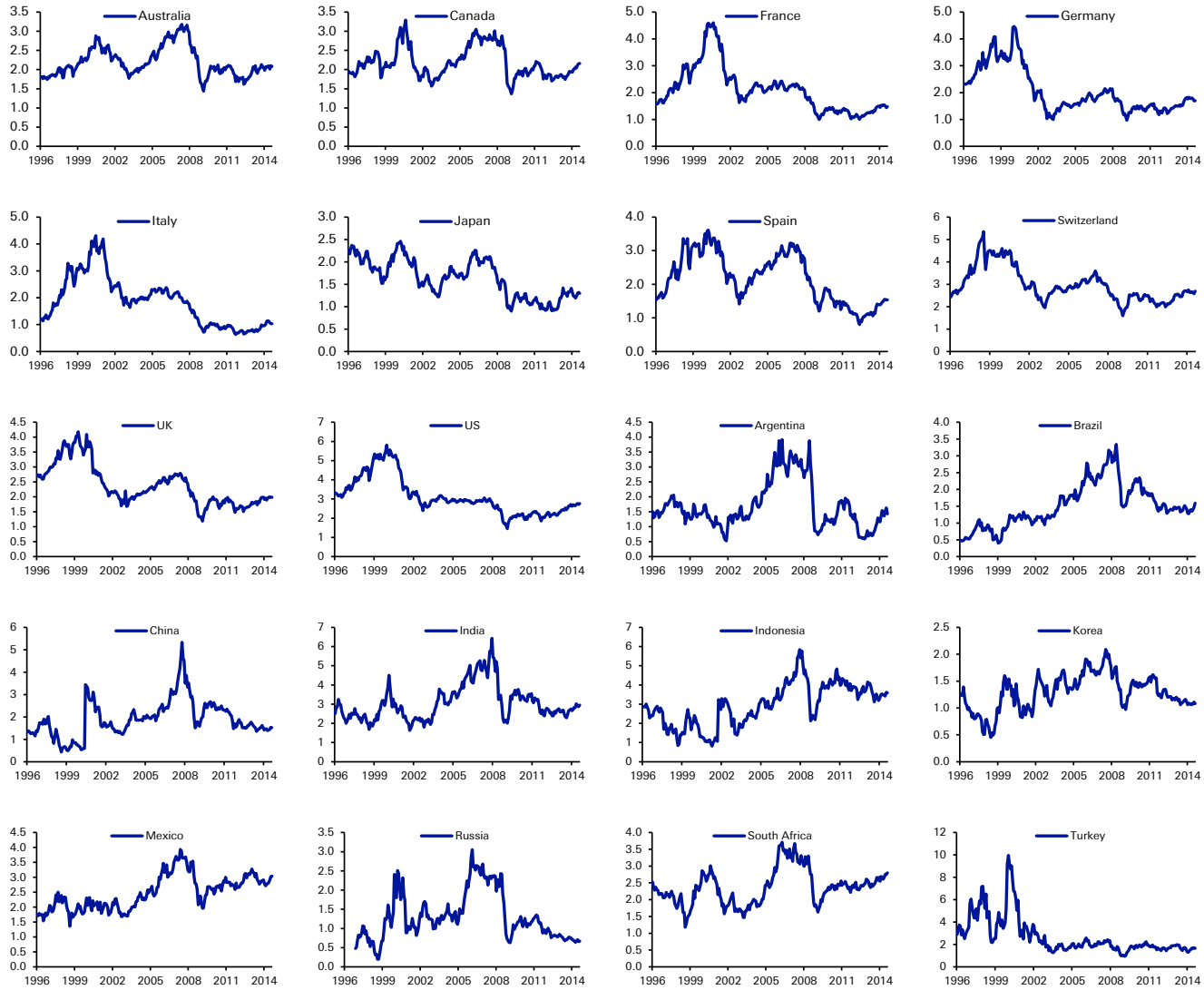
Source: Deutsche Bank, Bloomberg Finance LP, MSCI

Figure 27: Dividend Yield for MSCI Indices by Country



Source: Deutsche Bank, Bloomberg Finance LP, MSCI

Figure 28: Price to Book Value for MSCI Indices by Country



Source: Deutsche Bank, Bloomberg Finance LP, MSCI

However will the future mirror the past for earnings and GDP growth?

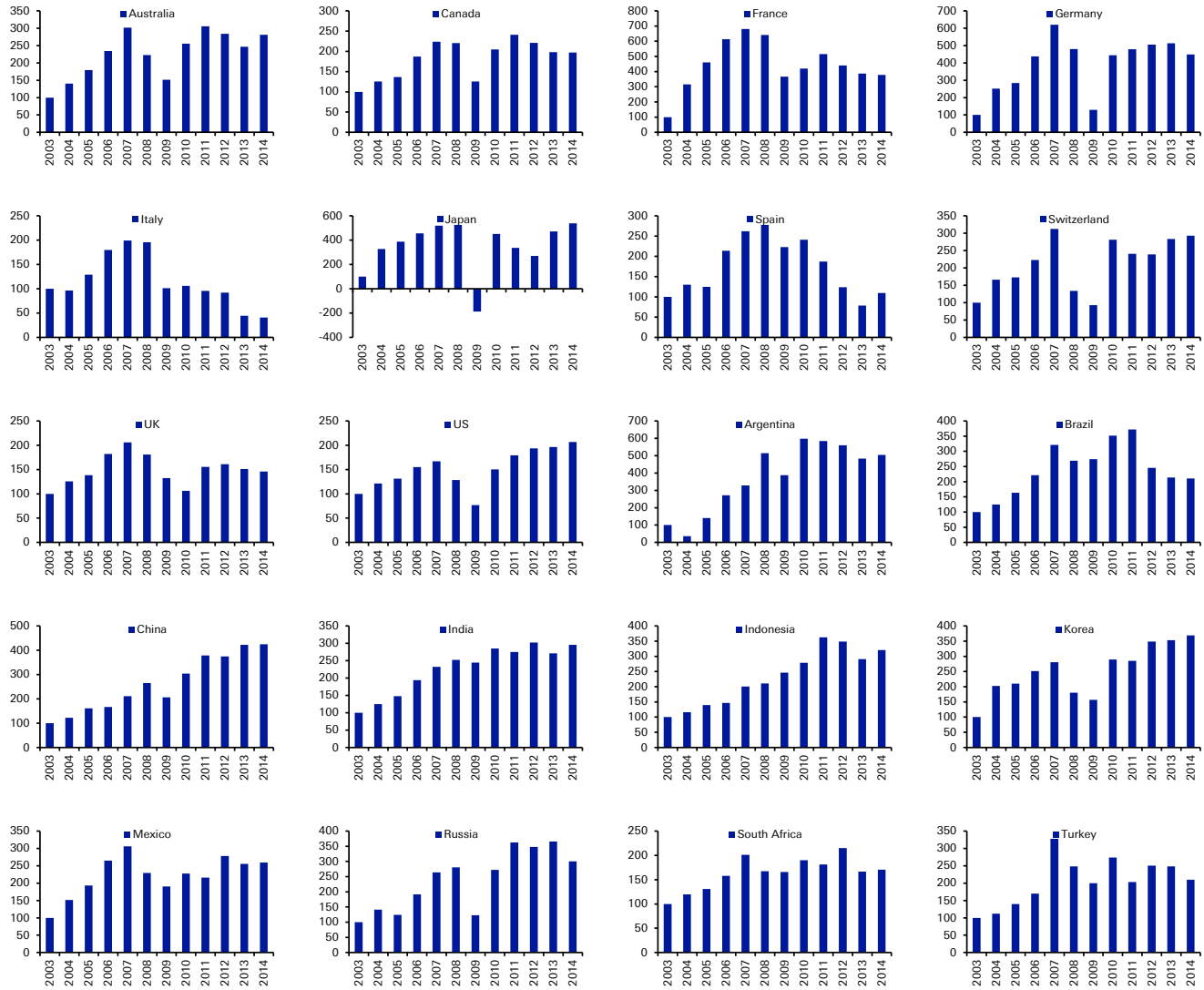
If we return to close to any kind of normality with regards to growth, inflation and earnings, it's clear that equities are cheap relative to bonds. However we're now in an extended period where growth and earnings have generally been below their long-term trend globally. As we'll see below US earnings are one of the few exceptions to this statement.

Figure 29 looks at the earnings growth since the end of 2003 of most of the countries we have studied in this report so far. We have rebased all earnings at 100 at this point to allow easy comparison across markets. As can be seen, one of the problems in valuing equities is that the trend in earnings has been quite volatile over the last decade and very divergent across the globe. The US and Japan are the only DM countries in our study to be currently at peak earnings. Japan has actually seen its earnings recover substantially in the last two years largely due to the sharp depreciation in its currency. However for all other DM countries earnings are below their peak (typically 2007) with France, Italy and Spain 44%, 79% and 61% below. So any assessment of earnings based on trend analysis and mean reversion is fraught with difficulty for many

countries, especially after the once in a lifetime structural shock over the course of the GFC. Also as we hinted above, CAPE analysis will likely make countries like the US look expensive as earnings have reverted back above their long-term trend, but will make markets like Italy and Spain look cheaper as earnings are significantly below their long-term trend. However the question has to be asked as to whether the pre-2007 trend was artificial for many countries.

For EM, many countries currently see earnings still below their peak but the decline is more measured than for many DM countries. China and India are currently at or very close to their peak level of earnings.

Figure 29: EPS for MSCI Indices by Country (Re-Based to 100 in 2003)

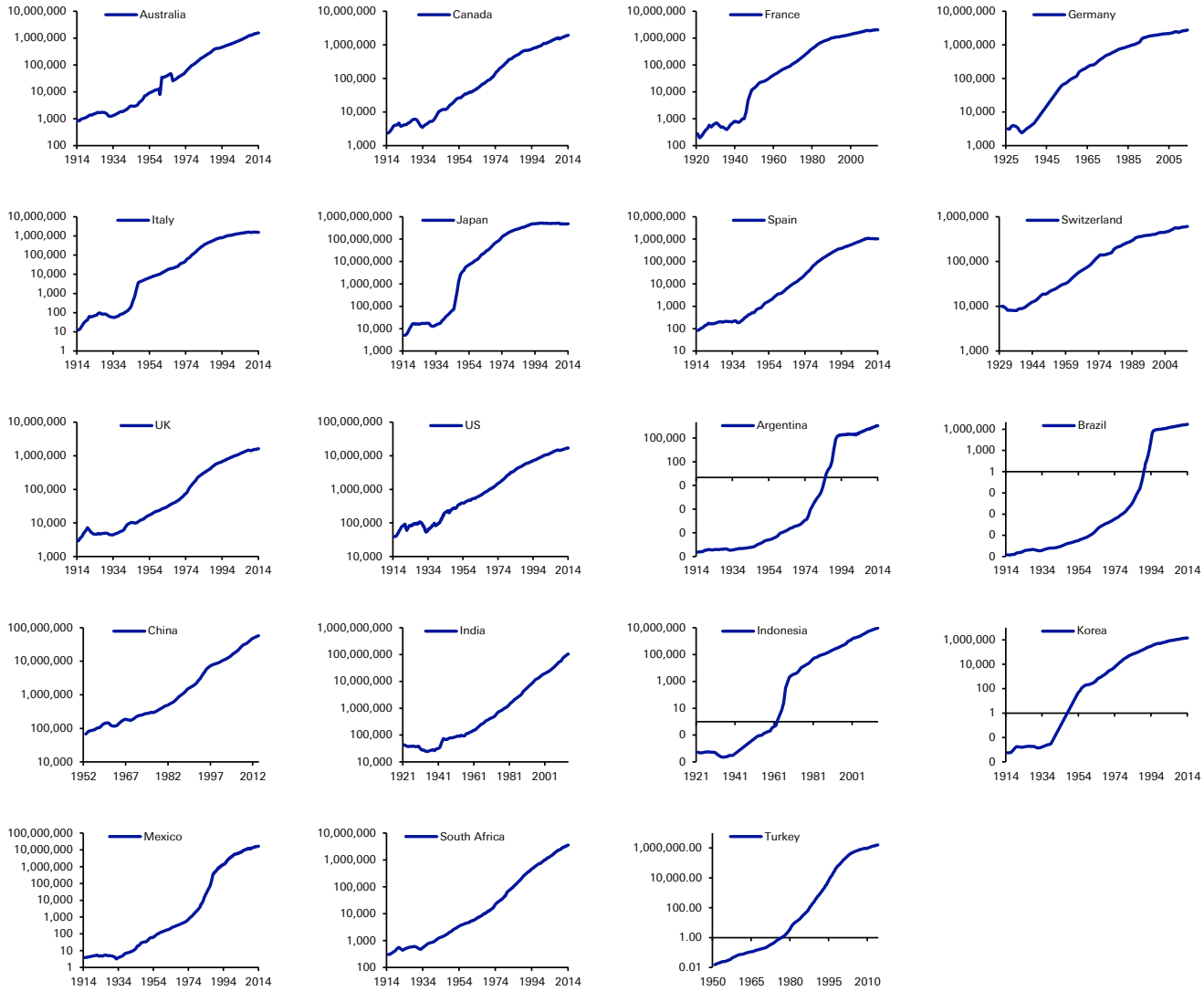


Note: 2014 based on LTM earnings.
Source: Deutsche Bank, Bloomberg Finance LP, MSCI

Given that equities require earnings growth to sustain valuations over time, the slowing down in trend nominal GDP growth (especially but not exclusively in the DM world) over the last 5-20 years (depending on the country) does pose question marks for future earnings. Figure 30 shows our sample countries' NGDP over the last 100 years where data is available. For valuations to be sustained and for equity returns to mirror those seen through history, at some

point we need nominal GDP growth to improve on recent trends. If you believe we will return to growth close to pre-GFC trends then it is hard to argue that equities are in bubble territory. It is certainly more difficult to make the case for equities then it is for bonds. The real problem for equity valuations will be if we continue in this low growth world for many years.

Figure 30: Nominal GDP Levels Over the Last 100 Years (since 1914 where available; Log Scale)



Source: Deutsche Bank, GFD

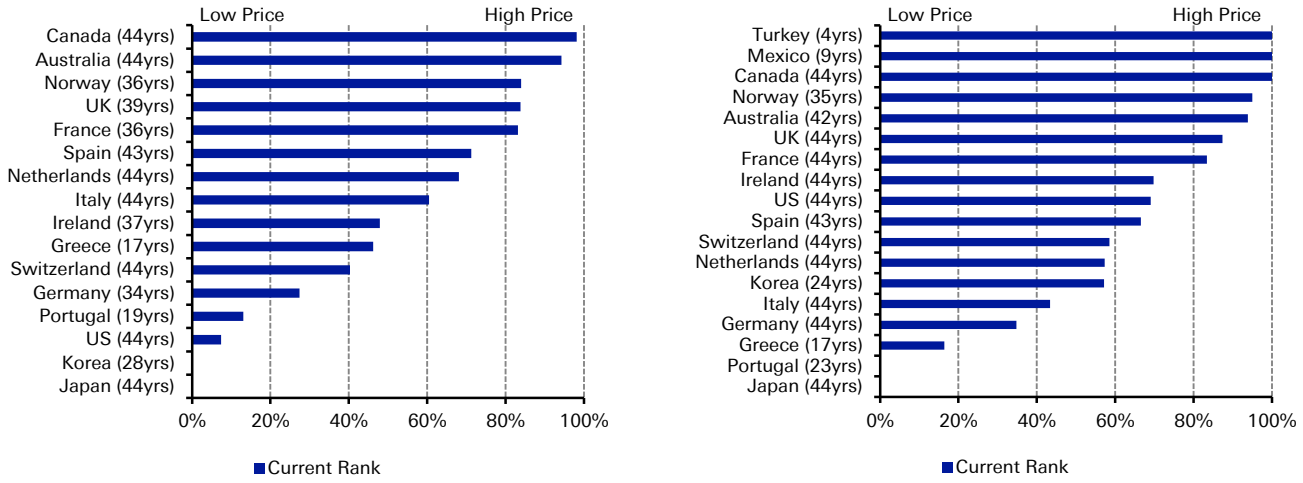
Global House Prices – Some countries cheap, some bubbly

It's always interesting to examine property markets when it comes to valuations and potential bubbles, partly because this probably has the most immediate impact on all of us from a personal finance point of view. Also given that it plays such a large part in consumer wealth across the globe it has big implications for economies and policy makers.

For this analysis we used OECD data on Global housing markets based on two valuation methods – firstly price to income and secondly price to rent. As we don't have data for the same list of countries as used so far in this chapter we

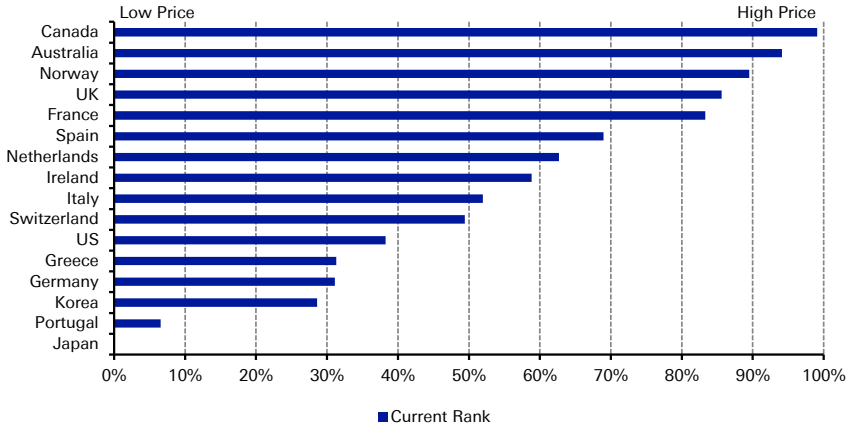
replace some of the G20 with other interesting housing markets from around the globe. EM countries aren't well populated due to difficulties in compiling histories for housing, incomes and rents.

Figure 31: Current Percentile of Global House Prices to Income (left) and to Rents (right) relative to history where data available



Note: We show in brackets how much data is available for each country.
Source: Deutsche Bank, OECD

Figure 32: Average of Price to Income and Price to Rent Analysis



Source: Deutsche Bank, OECD

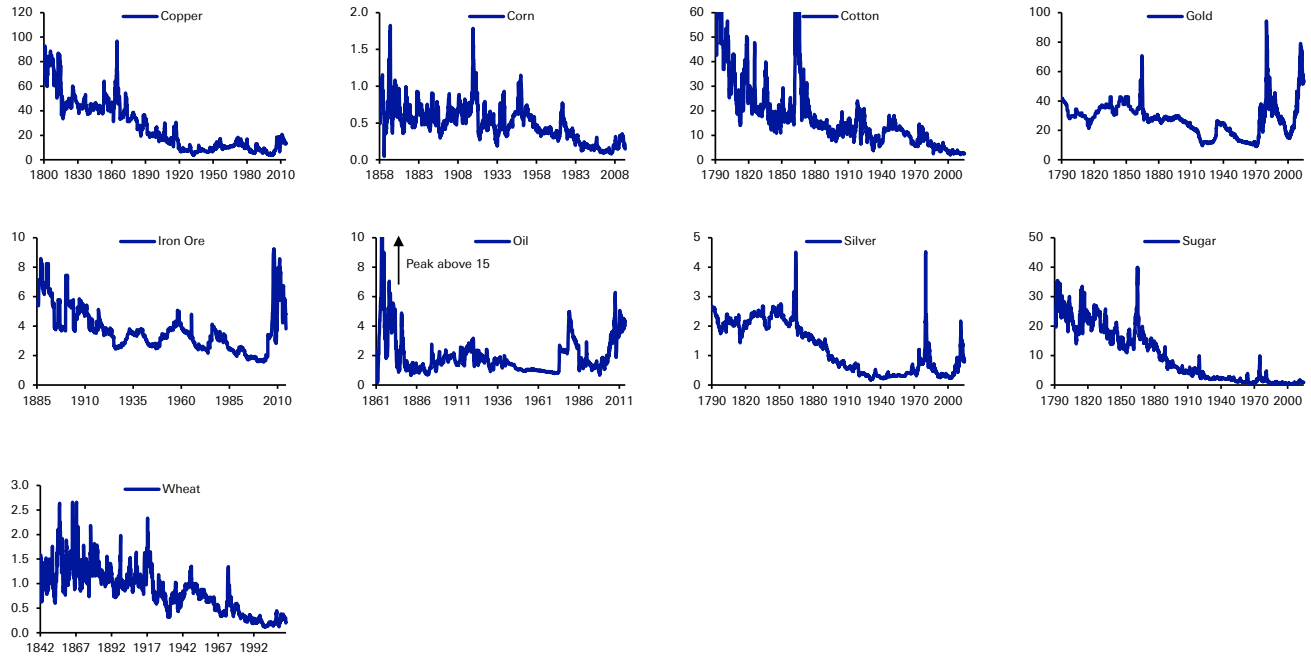
Each individual housing market has its own traits and nuances so one has to again interpret the results with some care but it's clear that Canada, Norway, Australia, UK and France are in their top 20% of expensiveness relative to their history. In countries where there has been a positive terms of trade shock like Norway (oil) and Australia (due to China), then there could be some justification for higher prices relative to the past. However this should have also been apparent in incomes so it should not influence the conclusions from this analysis as much as it would if you looked at a trend line of real house prices alone. So Canada, UK and more surprisingly France look expensive. Also surprising is that Spain is the next most expensive even with the correction from the crisis that has engulfed the economy. The bubble in Ireland property has now seemingly disappeared with property back closer to its long-term averages. Italy sees valuations slightly on the cheaper side of history with

Greece, US, Germany all having seen higher valuations on 60-70% of observation points through available history. Interestingly Portugal and Japan valuations have fallen enough for these markets to be close to or at their all time lows on the valuation methods used. So while we're careful not to jump to too many broad brushed conclusions it seems that there are signs of bubble like pricing across some parts of the globe but not a worldwide bubble. If we were able to examine regional markets in the same depth it's likely that evidence of bubbles could be found in many major global cities such as London, Sydney, Hong Kong and perhaps many in China.

Commodities – Hard expensive, soft cheap?

We now look at commodities which in many ways are more complex to analyse within the framework of this analysis. With all previous financial assets there has been a fairly obvious metric to value them on but for commodities that does not appear to be the case. For the sake of the analysis we have looked to assess current values relative to long-term real prices. We have used US CPI as our inflation series. In Figure 33 we provide the longest real price histories we have for each of the commodities included which all stretch back at least 100 years.

Figure 33: Commodity Real Price Series



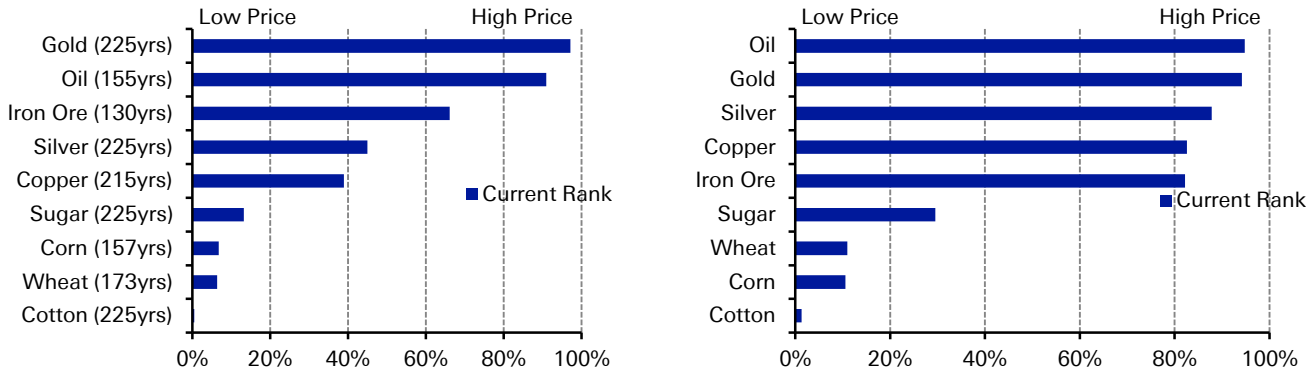
Source: Deutsche Bank, GFD

One observation worth highlighting is that many of the commodities seem to have had a consistently decreasing real price prior to the last 100 years therefore we include a rank analysis based on just the past 100 years of data as well as the full data set. We show the results for both in Figure 34.

The first point to note is that based on this analysis there seems to be a clear distinction: the commodities that look particularly cheap are generally agricultural ones while the more industrial based commodities seem to be at the more expensive end of history, in part fueled by significant demand from China over the past decade. This is particularly true when looking at data over the past 100 years. Precious metals also look expensive from a historical

stand-point, which probably reflects the post-1971 fiat currency regime we currently operate in. One of the problems with this analysis is that the importance of these commodities changes over time as does the cost of mining them. So this section should be seen as an interesting observation of where commodities are relative to their long-term trend rather than a definitive guide to relative value.

Figure 34: Current Percentile of Real Commodity Prices – All Data (left) and Last 100 Years of Data (right)



Source: Deutsche Bank, GFD

Conclusions: A Bond Bubble that could be around for a while yet

Anybody suggesting that the global economy is returning towards normality (or will return soon) would surely be of the opinion that Government bonds are firmly in bubble territory. Our view is slightly more nuanced because we think that the debt-heavy financial system likely needs low bond yields for it to survive. This means that central banks, governments and regulators are likely to continue to artificially support bond markets relative to where standard valuation metrics suggest is justified. This financial repression and heavy intervention will likely ensure low nominal yields relative to nominal activity and inflation over the medium-term (5-10 years). However whilst nominal yields may stay low they i) are becoming a big asymmetric investment on the negative side if any kind of economic and financial normality returns, ii) are increasingly likely to see their real value eroded by inflation in a fiat currency world and iii) could still be vulnerable to default/restructuring further down the line given the level of debt that many countries have accumulated. So Government bonds are surely increasingly being priced out of the portfolio of a return maximizing cross-asset class investor.

Staying with fixed income, credit spreads are not in extreme territory but are compromised in future total return terms by the level of government yields. For duration neutral investors credit is on the expensive side but not in bubble territory. Indeed some areas (e.g. financials) are 'cheap'. We suspect the overall asset class will trade closer to its all-time tights in 2015.

Housing was at the epicenter of the financial crisis but has subsequently been boosted by extraordinarily low borrowing costs. This leaves it mixed from a valuation basis with some countries cheap after the crisis but with a few obvious bubble candidates, especially in some major cities.

Commodities represent a mixed bag with industrial metals and Oil generally at historically expensive levels, with currency alternatives possibly continuing to look bubble like (e.g. Gold). On the other hand agricultural commodities look

very cheap. However as highlighted in the main body of the chapter doubts must remain as to whether individual commodities are as likely to mean revert as other financial assets so more caution is required here than for other asset classes.

Finally equities are where perhaps the most interesting conclusions arise. The US market is consistently at the expensive end of historical valuations with other DM countries like the UK, Australia, Canada, Germany also expensive but not at extreme levels. EM looks 'cheap' and it is hard to say that these countries' current valuations have been inflated by DM monetary policy. Interestingly across DM and EM the CAPE numbers are lower than the PE numbers for most countries with the US being a notable exception. This is mostly because earnings have taken a big hit in most countries around the world since the financial crisis and therefore in cyclically adjusting earnings the analysis would assume earnings eventually mean revert higher. This isn't the case in the US where earnings have been propelled higher since the crisis and therefore mean reversion would suggest lower earnings in the future.

For the longer-term investor, in a world of extreme fixed income valuations with limited future upside, equities look attractive even if only on a relative basis. Given our generally defensive views on the global economy and the likely long work-out period from the financial crisis we prefer more established and defensive companies. These companies generally have the added advantage of having a healthy dividend especially relative to fixed income. In fact the type of companies that issue IG bonds illustrate the point perfectly. These companies are generally in decent financial shape, have fairly mature, sustainable businesses and pay dividends well in excess of Government bond yields and indeed often their own company debt.

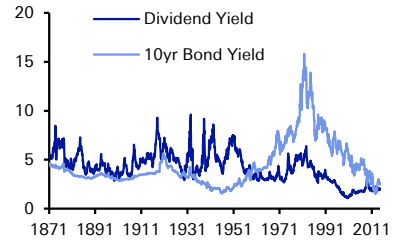
In the next section we want to further examine the relative value between credit and equities with particular attention to these higher quality IG companies.

Equity Dividends over Bond Yields?

Until the recent wobble in June and July of this year, credit has been consistently registering fresh yield lows for several quarters now. The subsequent government bond rally has left European Sovereign and credit yields at all time lows on the continent. In the US and UK we are above the all time lows but still very low relative to history. Across the globe, yields are aggressively lower post the GFC helped by the unconventional monetary policy subsequently implemented. Meanwhile the dividend yields on equities are broadly similar to the levels seen pre-GFC and are now near universally above yields seen not only on Government bonds but higher than those seen in IG credit and even above levels seen across much of the HY market.

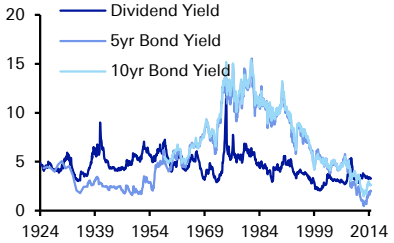
We've discussed the relationship between dividend yields and bond yields in some length in previous versions of our long-term study. Rather than being mean reverting over a cycle or over a few cycles, there does seem to have been a secular basis to how the two have traded relative to each other through history. Prior to the 1950s dividend yields tended to be higher than bond yields while the opposite then prevailed for the next 50+ years before flipping over again post GFC. We show this for the US and a number of key European markets in Figure 35-Figure 40.

Figure 35: US



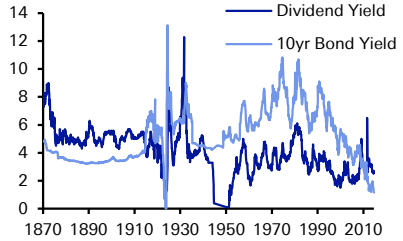
Source: Deutsche Bank, GFD

Figure 36: UK



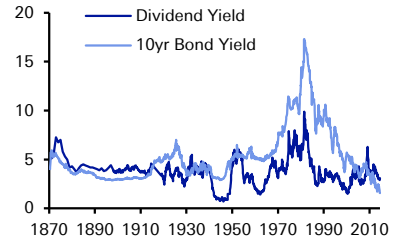
Source: Deutsche Bank, GFD

Figure 37: Germany



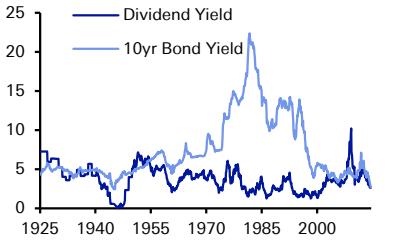
Source: Deutsche Bank, GFD

Figure 38: France



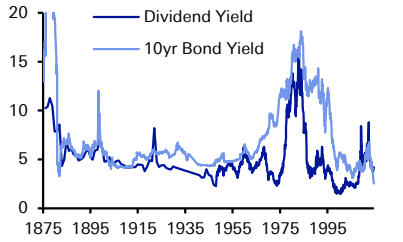
Source: Deutsche Bank, GFD

Figure 39: Italy



Source: Deutsche Bank, GFD

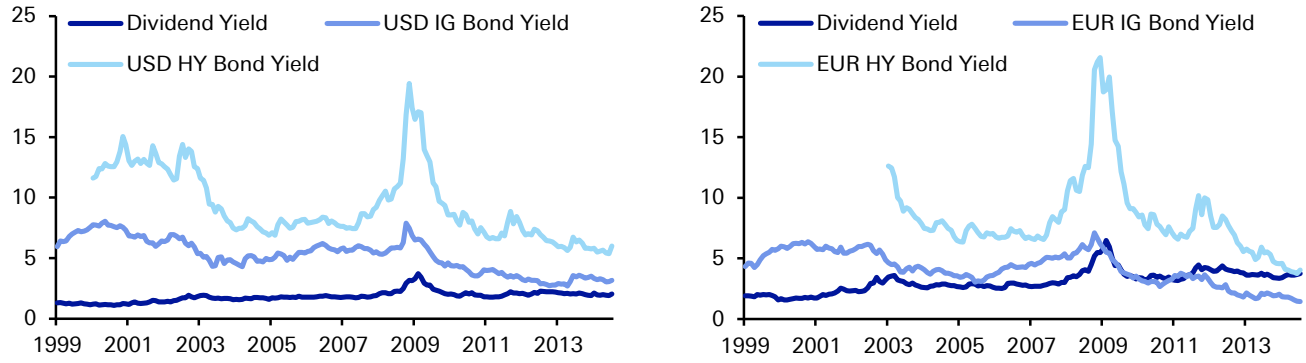
Figure 40: Spain



Source: Deutsche Bank, GFD

Our main focus here is to compare the dividend yields with the bond yields of actual corporates. In Figure 41 we initially look at index level data for both the US and Europe. We compare the bond yields of the IG and HY indices with a broad equity index aggregate dividend yield. We can see that in the USD market although IG bond yields came close when they hit their lows in 2013 we haven't actually seen corporate bond yields fall below dividend yields on an aggregate basis. The story in the EUR market is very different however. The fact that aggregate dividend yields generally seem to be higher coupled with generally lower corporate bond yields has meant that IG corporate bond yields are comfortably below dividend yields. In fact EUR HY average bond yields are now broadly in line with dividend yields and at their recent lows were actually briefly below dividend yields.

Figure 41: US (left) and Europe (right) Dividend Yields vs. Corporate Bond Yields



Source: Deutsche Bank, Bloomberg Finance LP

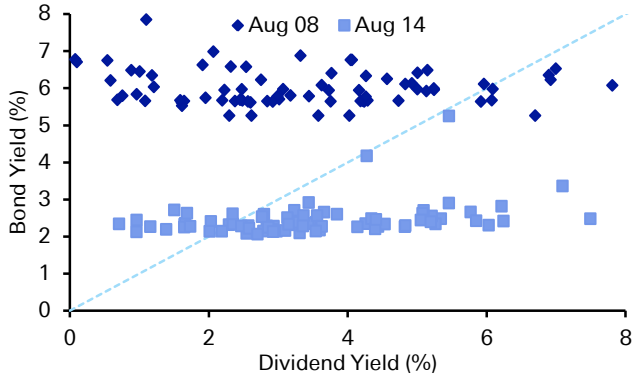
Our analysis will now concentrate on IG corporates as we want to focus our attention on companies with generally strong and stable balance sheets with more reliable dividend policy. Furthermore in Europe in particular a significant number of HY bonds are issued by private companies that are not listed and therefore it's not possible to make the comparison.

The largest corporate bond issuers – debt vs equity yields

In this sub-section we focus on the largest issuers of IG corporate bonds in the world. The reason we've focused on the largest issuers is simply that these will likely be the names that appear most prominently in the vast majority of credit portfolios given their importance to credit indices. For the purposes of our analysis we have focused on the iBoxx IG non-financial indices (USD, EUR and GBP). To provide us with a manageable sample of companies we have only considered those companies with at least $10bn of outstanding bonds within the iBoxx indices. In order to look at the data historically and avoiding the problems of multiple duration bonds and the fact that they roll down the curve, we have calculated a proxy bond yield by using 5 year CDS and adding the highest 5 year swap rate amongst the USD, EUR and GBP markets. Our analysis includes 79 such companies with index debt outstanding in excess of $1.5tn. We include the dividend yield vs. bond yield chart for each company back to 2007 in Figure 45-Figure 47 at the end of this section.

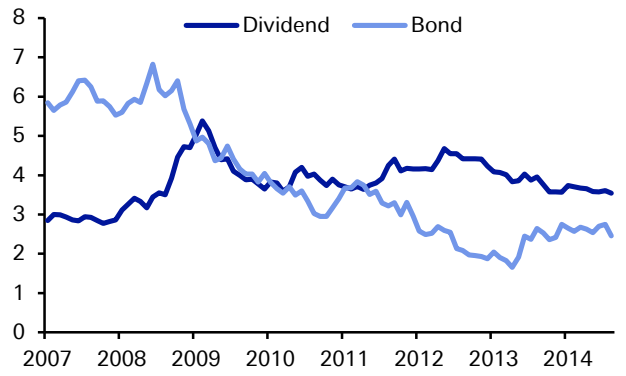
The broad conclusion when looking at the charts is that for most of the names in our sample bond yields tended to be higher than dividend yields immediately before the GFC but in the post-crisis world, with bond yields seemingly being on a consistently downward trajectory, the opposite is now generally true. We summarise this in Figure 42 and Figure 43. Starting with Figure 42 we've plotted the dividend yield against the bond yield for each company both now and before the Lehman Brothers default. The dashed line highlights where dividend yields equal bond yields, therefore points above the dashed line are those where the bond yield is higher and those below it are where the dividend yield is higher. As we can see prior to the GFC most of the companies in our sample had higher bond yields than dividend yields but now there are very few companies that have higher bond yields than dividend yields.

Figure 42: Company Dividend Yield vs. Bond Yields – Pre-Crisis and Now



Source: Deutsche Bank, Bloomberg Finance LP

Figure 43: Average Dividend Yield and Bond Yield of Largest Corporate Bond Issuers



Source: Deutsche Bank, Bloomberg Finance LP, Mark-it

In Figure 43 we look at the average dividend yield and bond yield of our sample companies through time. We can see that prior to 2009 bond yields were comfortably higher than dividend yields on average but since the middle of 2011 the opposite has become true.

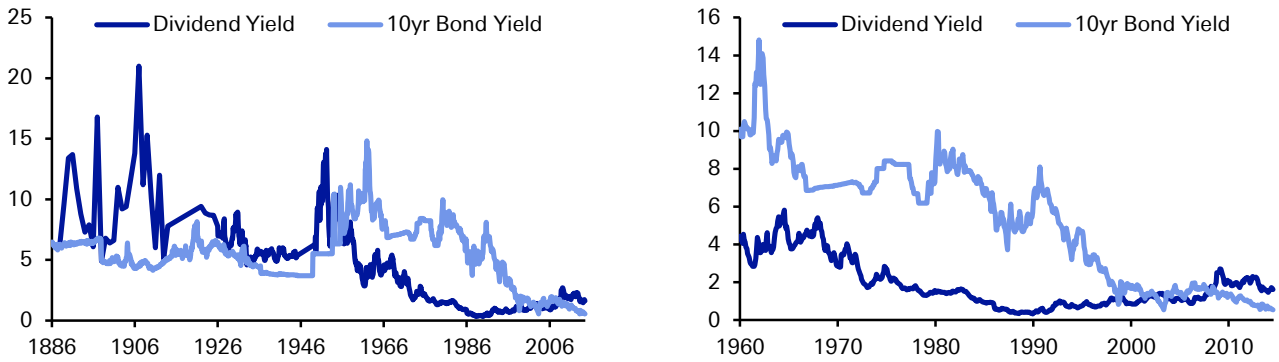
So it seems to be the case that the largest IG corporate bond issuers currently offer more attractive dividend yields than bond yields. Given this situation we would suggest that over the medium-term investors are likely to be better placed by investing in these companies' equity rather than their bonds.

There is clearly risk and perhaps the greatest concern would be just how stable these dividends are likely to be in adverse macro scenarios. There are clearly no guarantees and it's not impossible for dividends to be completely cut. Looking at our sample of 79 companies 18 of them have cut their dividend by more than 50% YoY since the crisis with 4 of the companies having not paid a dividend in a full year or more. This is clearly not an insignificant number but given that this has come in the aftermath of the worst financial crisis since the Great Depression and the associated negative headwinds that we've experienced since, the downward pressure on the dividends of the largest corporate bond issuers has probably not been as negative as we might have expected. In addition many of the corporates have seen an upward trend in cash dividends. Ultimately this probably aids the view that as a medium-term investment, a portfolio of IG stocks are highly likely to provide greater returns than the same company's bonds. In a world where yield is becoming increasingly sort after, a diverse portfolio of high quality equities offers an attractive risk/reward trade-off relative to corporate bonds, especially in light of the ultra low yields in the latter.

Perhaps the main counter-argument to the preference for dividends over bond yields is if we are correct about there being elements of secular stagnation in the global economy (discussed at length in a later chapter). In such a scenario bond yields will likely remain low and perhaps fall even further aided by low growth and the need for authorities to continue to intervene. This could curb macro tail-risks and with it keep defaults low, which should ultimately be good for corporate bonds. However with economic growth likely to remain sluggish under this scenario, this will probably weigh on corporate earnings creating a scenario where equities will face headwinds. Japan is arguably a good example of a country where bond yields have remained at very low levels for an extended period with equities declining.

Indeed it's easy to cite the example of the long bear market in Japanese equities post 1989 as reason to be wary of equities in the event of a future low growth world. While we would have these concerns given our view on global growth its worth highlighting that Japan in 1990 was very different to Europe and DM generally today. Figure 44 shows the long history of dividends and JGB yields (back to 1886) with the left hand chart concentrating on the last 55 years.

Figure 44: Japan Dividend Yield vs. 10yr Bond Yield – Since 1886 (left) and 1960 (right)



Source: Deutsche Bank, GFD

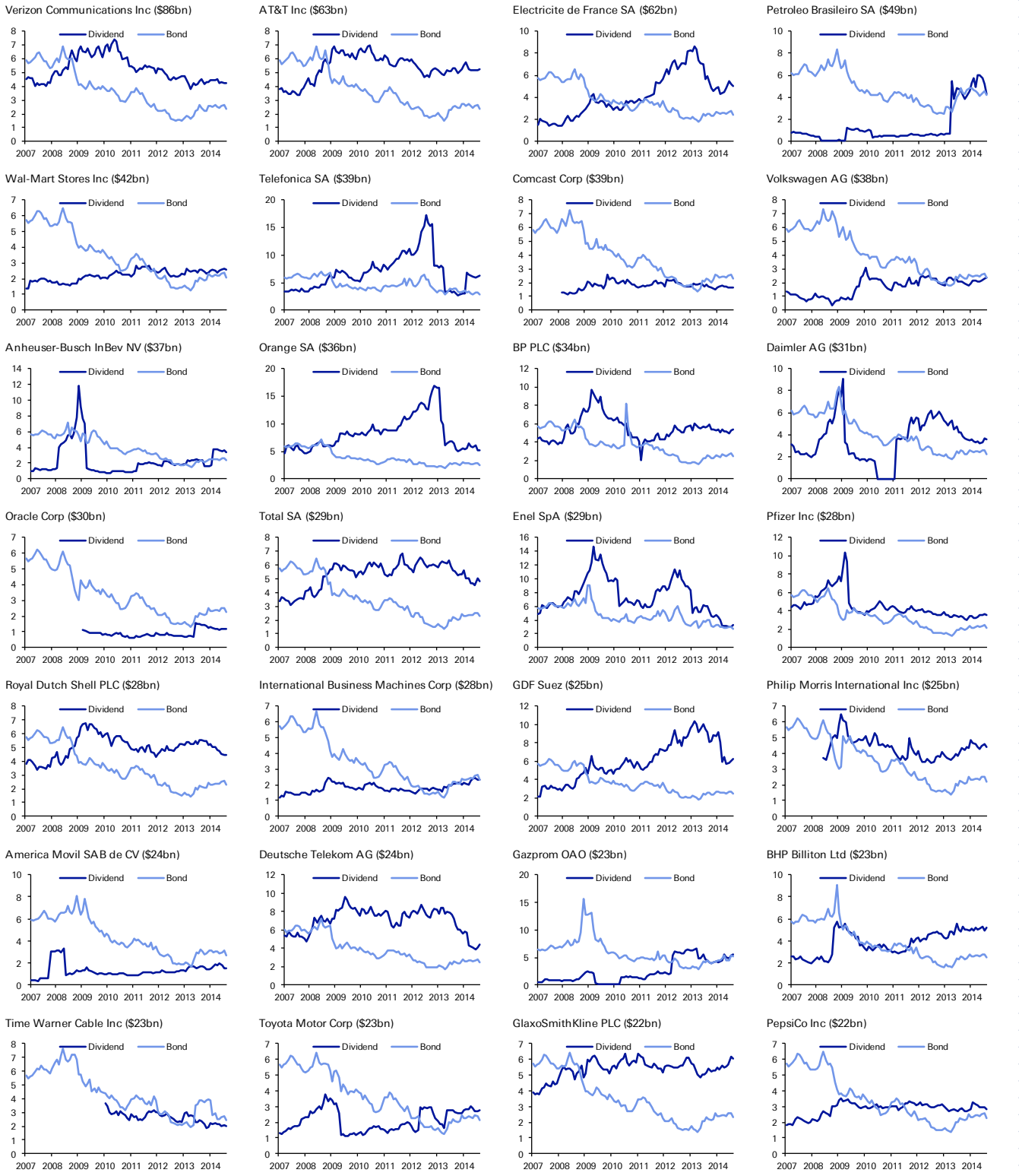
Like the other countries analysed at the start of this section, Japan also saw dividend yields higher than bond yields prior to the 1950s. This then reversed and reached a point in the late 1980s and early 1990s where dividend yields were close to zero (helped by the equity bubble) and bond yields were still above 5%. So although we would be one of the first to argue that the DM world today (especially Europe) shares some of the problems that have haunted Japan for the last 20-25 years, it's fair to say that from today's starting point much more of this is priced in than it was for Japan in say 1990. We also live in a world where more monetary stimulus is being used to stimulate nominal activity. Clearly there has been only limited success so far in Europe but it is likely that the ECB will continue to be forced into anti-deflation fighting measures far faster than Japan was.

Conclusion

Overall while the demand for fixed income and credit remains high, much of this demand is unable to move into alternative assets. As such valuation anomalies exist between individual companies' fixed income yields and their dividend yields. There is no obvious reason why the anomalies should immediately change but a diversified portfolio of IG stocks looks like a much better risk/reward investment for the medium to long term investor than the same IG company bonds.

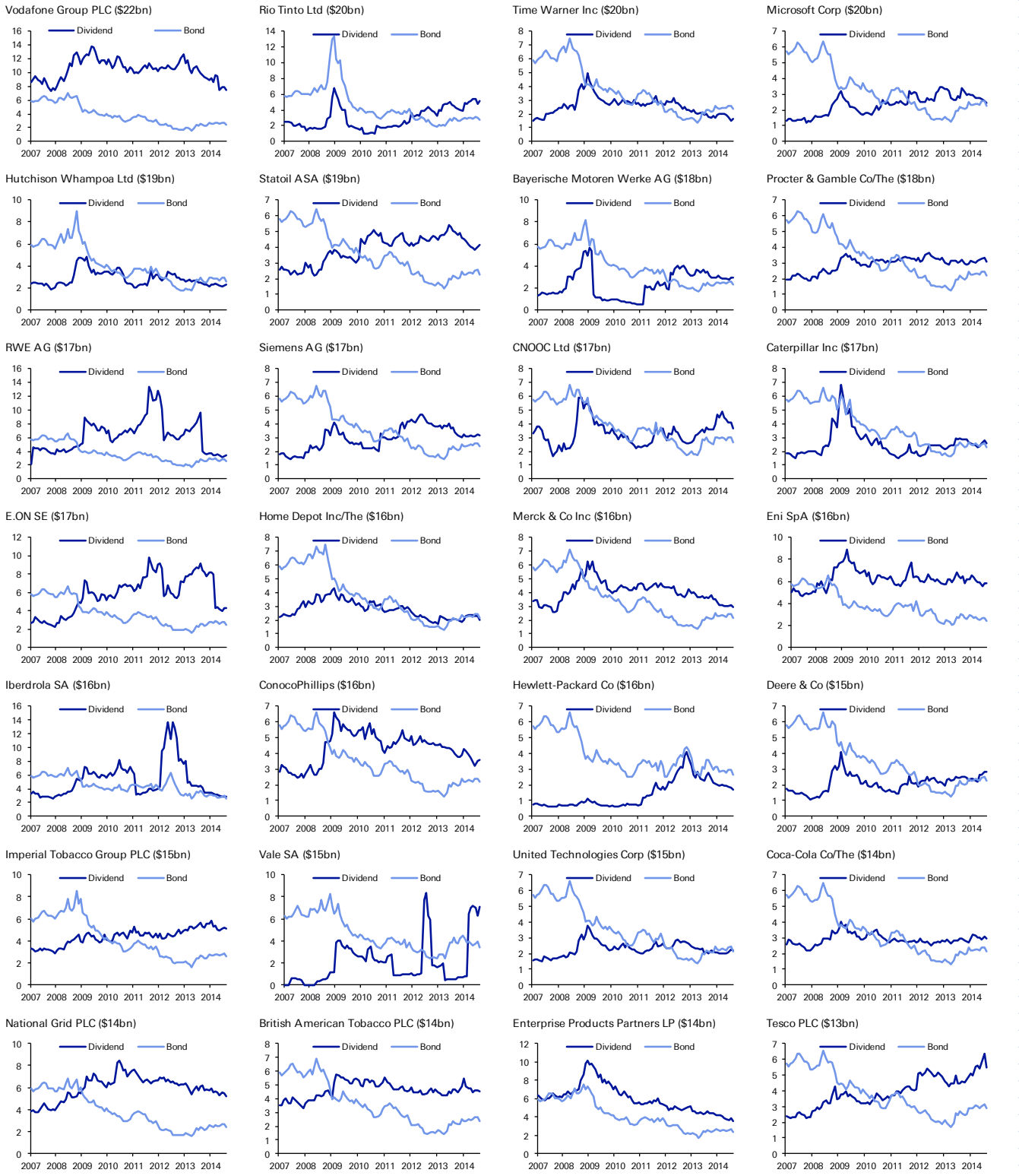
All the individual charts for the largest corporate bond issuers' dividend and bond yields are overleaf.

Figure 45: Company Dividend Yield vs. Bond Yield since 2007 (Part 1/3)



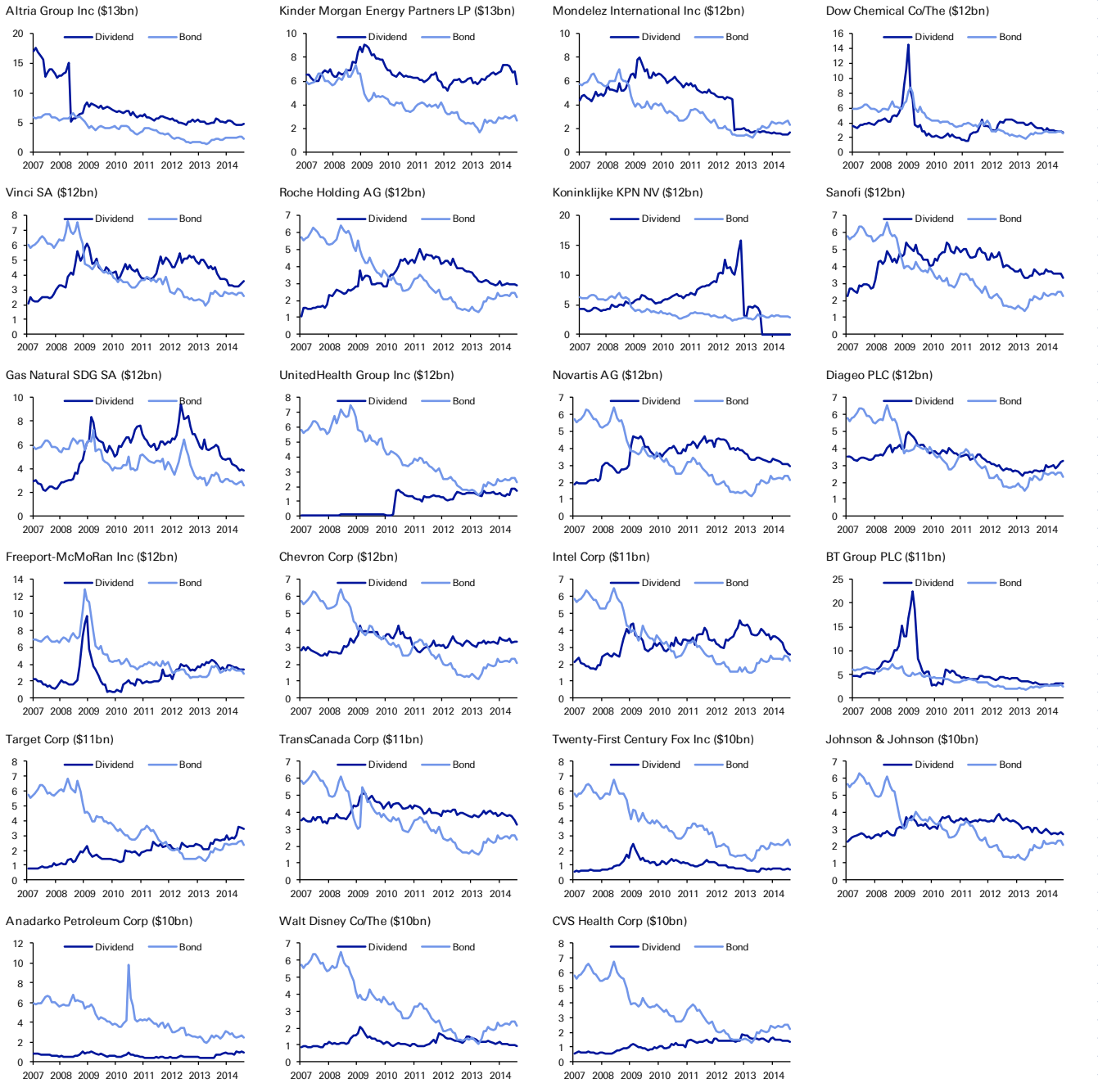
Source: Deutsche Bank, Bloomberg Finance LP, Mark-it

Figure 46: Company Dividend Yield vs. Bond Yield since 2007 (Part 2/3)



Source: Deutsche Bank, Bloomberg Finance LP, Mark-it

Figure 47: Company Dividend Yield vs. Bond Yield since 2007 (Part 3/3)



Source: Deutsche Bank, Bloomberg Finance LP, Mark-it

Developed World Secular Stagnation: A Counter to the Bond Bubble?

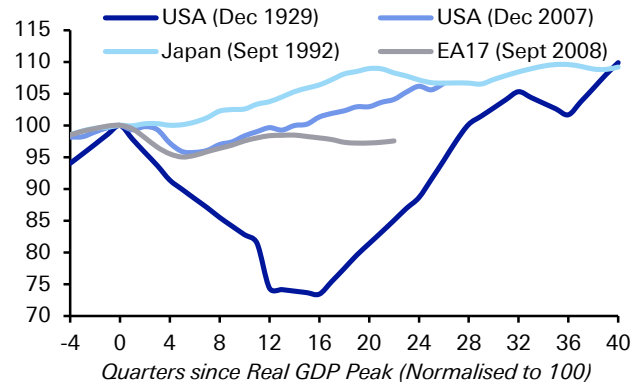
The biggest argument against a bond market bubble would be if the forces of secular stagnation have been running through major economies and continue to do so in the years ahead. If this were indeed to be the case then it could be argued that whilst current government bond valuations may be at historic highs, such valuations may in fact be sustainable. Whilst we have been believers in the secular stagnation argument we can't help thinking that bonds now price in a high probability of such a world being sustained over the long-term. This is clearly possible but the reality is that debt restructuring and inflation could be long-term consequences of secular stagnation and as such bonds could still be in a bubble even if we are in such an environment. Here we look into the theory in more detail and analyse possible policy prescriptions.

What if Japan wasn't stuck behind the rest but was rather leading the way?

A cold chill is running through the economic minds of the developed world. If you search hard enough you can read it in the words of the IMF, see it in the bond market and feel it in the past few year's relatively unloved bull markets. What if growth can never again sustain the levels that the developed world has become accustomed to? What if the brief periods where advanced economies have hit accustomed growth levels in the 21st century were bubble-driven mirages? What if Japan wasn't stuck behind the rest but was rather leading the way? As Fed Vice President Fischer said in a speech on August 11th, "even conditional on the depth and duration of the Great Recession and its association with a banking and financial crisis, the recoveries in the advanced economies have been well below average."

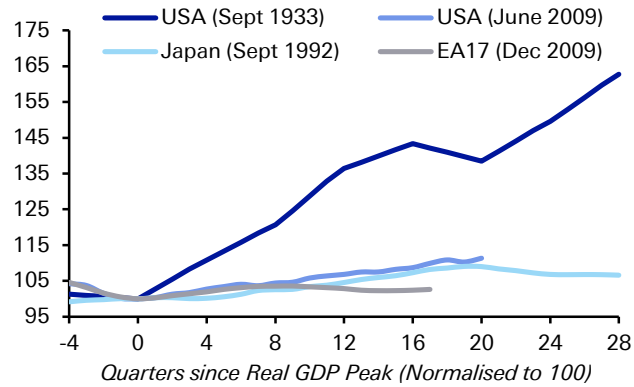
As Figure 48 and Figure 49 show, the US and eurozone recovery after the Global Financial Crisis give cause for such concerns - both have been historically weak. If we use the pre-crisis GDP peak as our start point for comparison then both the eurozone and US have performed far worse than Japan during the start of its 'Lost Decades' (Figure 48). If, as seems highly likely, the eurozone fails to achieve growth at a rate of around 2.5% p.a. over the next two years, then post-2008 eurozone growth will have been worse than that of the US through the Great Depression era measured over the same period. Even if we start our comparison at the post-crisis GDP trough (Figure 49) we see that the eurozone recovery remains well behind that of post-bubble Japan and the US is only just ahead with its lead built in the initial post-crisis rebound. The USA's recovery after the trough of the Great Depression leaves our current age of growth lagging well behind, in spite of its running into another recession in 1938.

Figure 48: Historically weak recovery I – Since Pre-Crisis GDP Peak



Source: Deutsche Bank, GFD

Figure 49: Historically weak recovery II –Since Post-Crisis GDP Trough



Source: Deutsche Bank, Federal Reserve

"Manifestly unsustainable bubbles and loosening of credit ... were sufficient to drive only moderate ... growth."

Some have begun to turn towards a very old idea to try to explain this moribund recovery – "Secular Stagnation". First formulated during the prolonged weak post-Depression US recovery in 1938 by the early American Keynesian Alvin Hansen and recently dragged back into public debate by Lawrence Summers, secular stagnation has come to refer to a view that (as Paul Krugman summarises) the US economy's, "normal condition is one of inadequate demand—of at least mild depression—and which only gets anywhere close to full employment when it is being buoyed by bubbles." To flesh this out a little, what secular stagnation theory argues is that the economy no longer generates enough demand to hit and surpass full employment because the equilibrium real interest rate in the economy at which full employment can be achieved is now so low that the Fed, stuck up against the zero lower bound on nominal rates and with its 2% inflation target, cannot lower rates further. At its most extreme, this secular stagnation view economy is one that is trapped in a state of semi-permanent depression which in the past 2 decades or so it has only escaped through the additional impetus of bubbles.

To date the secular stagnation debate has been largely US focused with 3 core observations advanced in support of it:

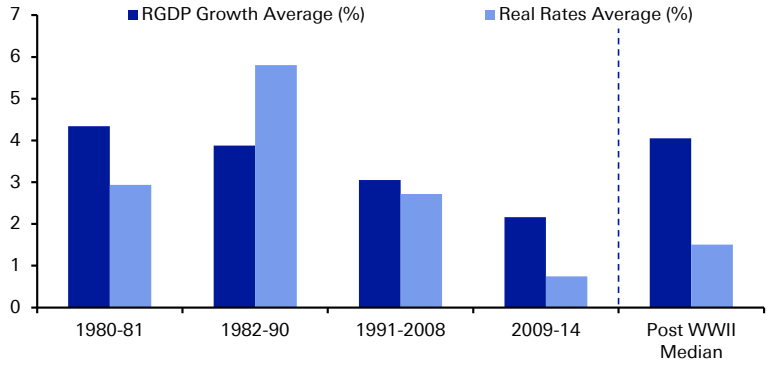
1. US growth rates over the past two decades have:
    i. Been declining and disappointing
    ii. Have only pushed the economy to "full employment[1]" levels during periods of major asset bubbles.
2. Real interest rates have declined significantly over this period and yet even so may still not be low enough to drive investment, growth and so the broader economy to full employment levels.
3. The inability of GDP to catch up with "potential" levels.

[1] Full Employment – the level of employment where everyone who wants to work and is willing to work at the market wage is in work. Such an employment level would imply that the economy is operating at potential. Employment levels higher then this would imply rising inflation and an economy operating beyond potential.

Weak Growth

On the first point on US growth, Figure 50 shows the trend in growth and real rates over the past 4 US expansion cycles (as we define them, see Figure 50) as well as in comparison to the post-WWII median. Here we look at just the periods of growth, so we start the cycle during the first quarter of positive growth and end it in the quarter before the first negative growth print to try and control for different recession depths. What's clear from this analysis is that US growth over the expansion cycle has been steadily declining, with the most recent cycle since 2009 by far the most disappointing. Growth has averaged just 2.2% despite the cyclical impetus the economy should have experienced given the depth of the prior recession and the tremendous stimulus provided.

Figure 50: US Expansion Cycles* - Falling Growth, Falling Real 10Y Rates

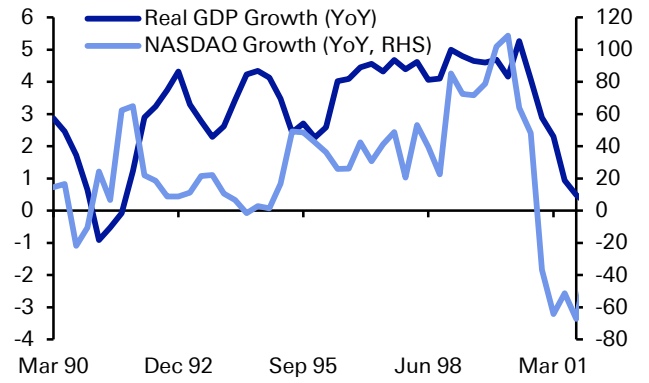


*Source: Deutsche Bank, GFD / *Note – Here we define a recession as two quarters of negative real GDP growth*

The secular stagnation argument goes further however and argues that growth would have been even weaker had it not been for asset bubbles. Specifically it argues that the rare times when the US economy has been operating near to what historically would have been seen as "full employment" levels have only been achieved thanks to bubbles. As Lawrence Summers put it, "It has been a long time since the American economy has grown rapidly in a financially sustainable way." Figure 51 and Figure 52 show two of the main anecdotes that have been put forward to support this argument. Figure 51 shows how despite an impressive start to the 1990's, growth slowed in 1995 and seems to have been propelled back to higher levels only in an environment of 40%+ returns on NASDAQ stocks. In fact the economy hit its cyclical peak growth rate of +5% growth around the time when the market peaked.

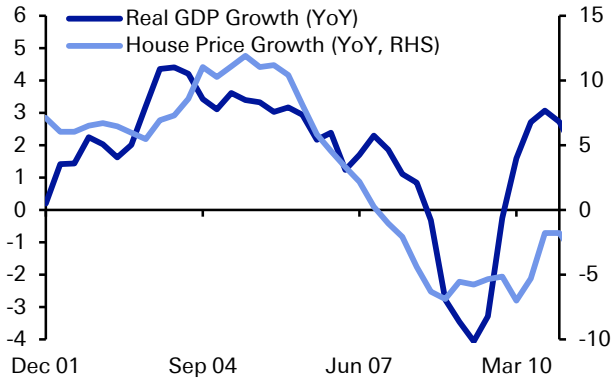
Figure 52 shows house price growth and GDP growth following the early 2000's slump and into the post-crisis world. Again here the argument is that after growth sharply fell in the early 2000's it was only buoyed back up to "strong" levels with the help of a housing boom with 5%+ YoY growth in house prices which rapidly built up a substantial housing bubble. Moreover looking beyond simple GDP numbers there was little evidence even before the crisis that the economy was performing at or much beyond full employment levels. The unemployment rate troughed at around 4.5% in 2006/7, higher than the 3.9% it managed in the early 2000's. Core PCE inflation peaked at a rather low 2.45% in 2006. Capacity utilisation peaked at around 81% in 2007 vs. previous peaks of 85% in 1997 and 1989. These figures, especially the peak inflation rate, don't suggest an economy operating at or at least much beyond "full employment" despite the economy being at its cyclical peak and being pushed along by a massive housing bubble. As Summers put it, "manifestly unsustainable bubbles and loosening of credit standards during the middle of the past decade, along with very easy money, were sufficient to drive only moderate economic growth."

Figure 51: US Bubbles and Growth I: Dotcom Bubble



Source: Deutsche Bank, GFD, Bloomberg Finance LP

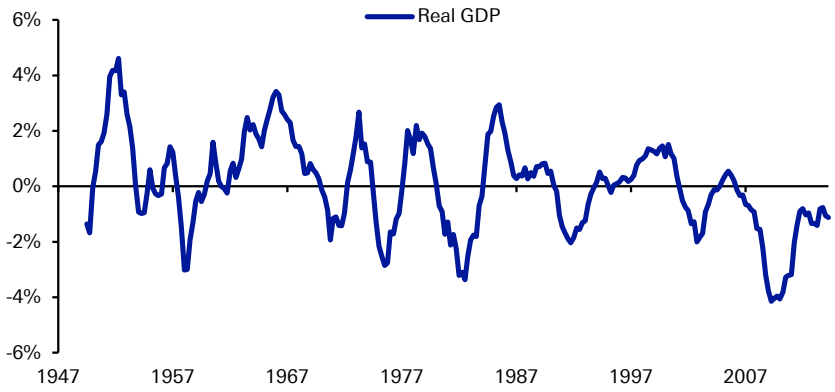
Figure 52: US Bubbles and Growth II: Housing Bubble



Source: Deutsche Bank, GFD, Bloomberg Finance LP

Figure 53 sums this up rather neatly. It shows 10 quarter rolling average US real GDP growth (annualized QoQ) minus its long term (here meaning 1947-present) average rate of 3.17%. What it shows is that the last time the US economy sustained substantial above long-term trend growth for at least 10 quarters was in the late 1990s (during the dotcom boom) and ever since it has performed below such long-term levels with the exception of very brief period in the mid-2000s (as the housing bubble was being inflated). On this measure since 2000 the US economy has underperformed 83% of the time (Figure 54). In this table we've also included a range of other "acceptable" growth levels and look at the results since 1990 and since 2000. The main result is that unless you take a real growth rate of a bit above 2% as the "acceptable" run rate of the US economy, it has gone through at least 15 years of sustained underperformance of its own history.

Figure 53: 10Q Rolling Average Real US GDP Growth minus LT* Average



*Source: Deutsche Bank, Haver/ *Note – LT average refers to 1947-2014*

Figure 54: % Time Underperformed "Acceptable" Growth Level (Rolling 10Q Average)

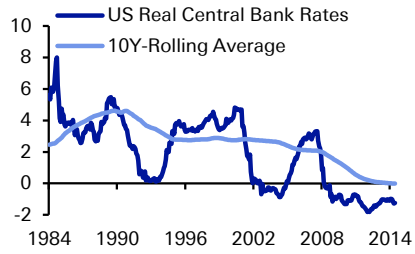
	"Acceptable" Growth Levels			
	2.0%	2.5%	3.0%	LT Trend
Post-1990	33%	48%	58%	64%
Post-2000	40%	64%	74%	83%

Source: Deutsche Bank

Low Real Rates

Furthermore, as the theory goes, despite these bubbles and the cyclical growth peaks they helped to achieve, real rates remained well below historic levels. Figure 55 shows how real central bank rates have been negative since 2008 and even looking at a 10 year rolling average this rate is now below zero. Expanding the analysis to look at longer-term 10 year rates (Figure 50) shows a similar downtrend for rates as well as a low current level. Figure 56 shows how real 10 year rates over the 2009-2014 expansion period have averaged just 0.7% compared to a 1950's onward average of 2.2%. The significance of this is that it implies that ever lower real rates have been needed to support the economic cycle and bring savings and investment into balance. Fundamentally it suggests some combination of increasing propensity to save and falling propensity to invest meaning that real rates have had to fall ever lower to match the two.

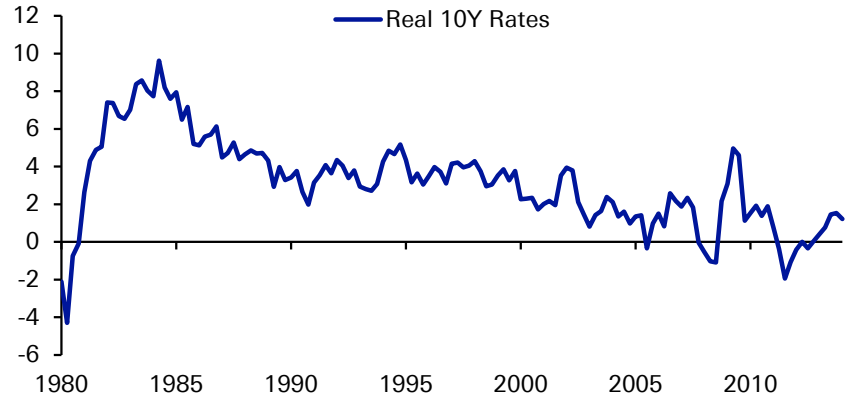
Figure 55: US Real Central Bank Rates



Source: Deutsche Bank, Bloomberg Finance LP

Additionally central banks attempts to meet the economy's need for low rates may have helped to drive asset bubbles. As Summers put it, "it may be very difficult for investment to absorb all saving. Or if that is made possible by the provision of extraordinary liquidity, it will come along with substantial risk of financial bubbles or financial instability." As our earlier analysis showed such concerns have not been without justification. Furthermore given that nominal rates are stuck against the zero lower bound it seems likely that real rates may not actually be low enough to restore full employment even now. And so again secular stagnation puts forward a view of an economy which in its "normal" (here read non-bubble) state suffers from inadequate demand and excess savings; and more importantly has been suffering from these symptoms for quite some time.

Figure 56: US real 10Y rates have been falling since the mid-1980's

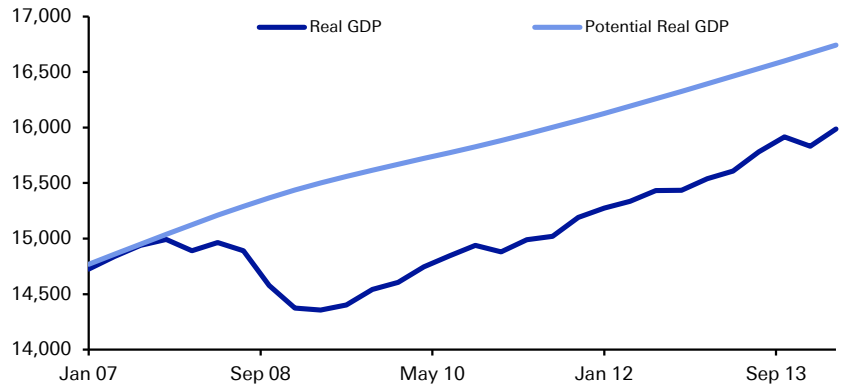


Source: Deutsche Bank, GFD

Lagging Potential

The third (and again interrelated) point put forward to support the secular stagnation view is that despite the US economy now being 5 years into its expansion phase, it has barely managed to catch up with its potential output levels (Figure 57). Indeed the catch up that has been achieved has been helped by falling estimates of what "potential" might be. The Fed estimates that the gap has fallen by around 2.9p.p since it peaked at 7.4% of GDP in the summer of 2009. To put these numbers into some context we had only seen potential gaps wider then the current gap of around -4.5% in 3% of quarters between 1949 and Q2 2008. That is despite the US now being into its 5th year of recovery.

Figure 57: US economy well below potential (Billions of Chained 2009 Dollars)



Source: Deutsche Bank, Federal Reserve

So to sum up the secular stagnation take on the US economy. It argues that the US is suffering from inadequate demand and has been for some time. To achieve "full employment" economic performance has required ever lower levels of rates which have helped to spur growth via the inflating of asset bubbles. During the pre-crisis cycle even the creation of a huge housing bubble seems not to have been enough to get the economy up to full employment. This state of perpetual demand deficiency has continued and has been exacerbated by the global financial crisis with the US economy continuing to operate well below capacity despite 5 years of recovery.

Why might the US economy be suffering from secular stagnation?

So far we have discussed the evidence put forward for secular stagnation. However all of this leaves a hanging question – why might the US economy be suffering from secular stagnation? What could have caused such a hypothesised fundamental development in the economy such that it can no longer adjust and move towards a full employment equilibrium? Following this thinking one step further down the line, why have equilibrium interest rates fallen so impossibly low so that actual rates cannot fall low enough to balance the economy?

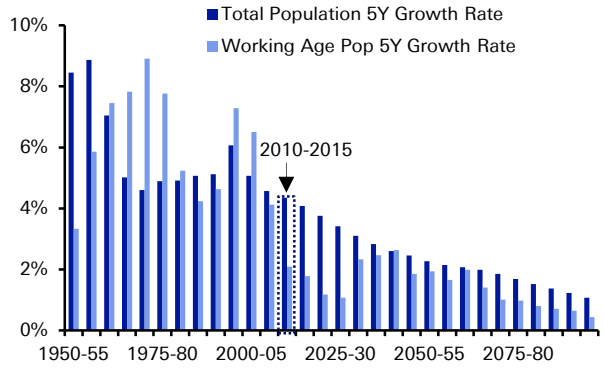
To our eye there have been 7 major hypothesized causes of secular stagnation "demand insufficiency" discussed:

1. Demographics
2. Inequality
3. Changing structure of the economy
4. Falling price of capital goods
5. Lower potential growth
6. Global savings glut
7. Household leveraging peaked (more recent)

Demographics

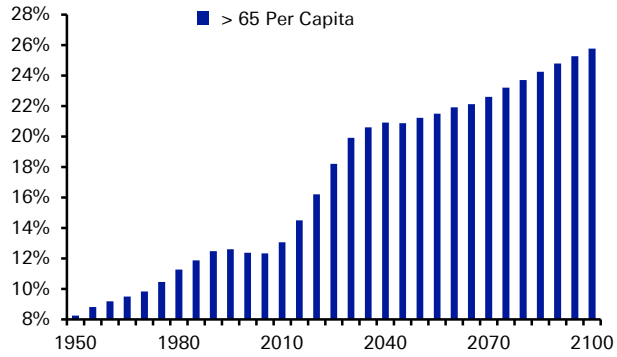
There are two main reasons discussed as to how demographic developments in the US might be holding back demand, creating excess savings and so reducing the equilibrium interest rate. These are slowing population growth and broad population ageing. A falling rate of population growth weighs on demand in a number of ways – it reduces the demand for all kinds of goods and services, from new houses to broader investment demand as firms need to equip fewer new workers with tools and factories (etc). Figure 58 shows US population growth rates since 1950 and uses the UN's projections of future population growth out to 2100. What this figure shows is that after hitting a post-1960s peak in the second half of the 1990's population growth has set out on a long-term downtrend. If we focus in on the growth rate of the working age population (defined as those aged 15-64) who would be at the forefront of housing demand and capital good demand the issue becomes even clearer (Figure 58). The growth rate of the working age population has collapsed from 7.3% in 1995-2000 to 2.1% today. With fewer workers to equip and house perhaps it is unsurprising that investment has contributed less to GDP growth since 2000 than it has historically.

Figure 58: Slowing Population Growth



Source: Deutsche Bank, UN Population Database

Figure 59: Ageing Population



Source: Deutsche Bank, UN Population Database

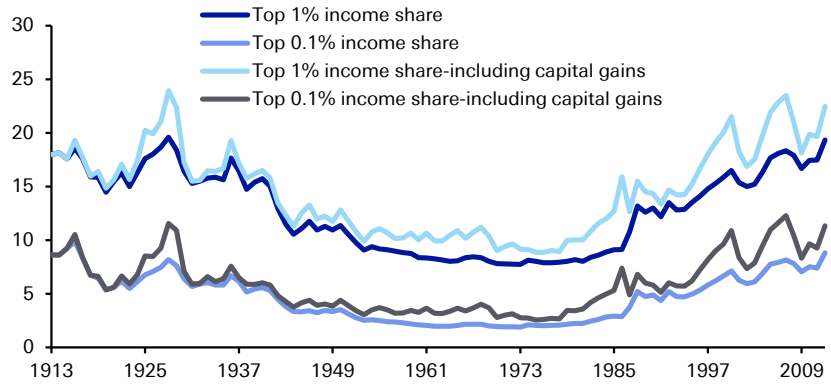
The second demographic reason put forward as to why demand may be insufficient is the general ageing of the population and the way this changes economic patterns at an aggregate level. In 2010 13% of the population was over 65. By 2030 that percentage will be 20% and still growing (Figure 59). With around one in five American's expecting to be retired in 15 years time this is likely to increase pension saving today placing consumption during retirement ahead of consumption today. In addition the decline in expected return on investment since the global financial crisis has likely only added to the desire to save for retirement. The net effect of such trends should be to reduce equilibrium interest rates, as savings swell on the one hand and real investment requirements fall on the other, and reduce aggregate demand. Secular stagnation argues that these two long-term population trends – of i) slowing growth in general and of those of working age in particular, and ii) a rapid growth in those of retirement age – have weighed on demand and growth over the past decade or so and will continue to do so for a long-time yet.

Inequality

The second factor widely discussed as a possible driver of secular stagnation is rising inequality. One of the basic tenants of economics is that those with higher incomes have a lower propensity to consume, that is they are less likely to spend each additional $1 they get. Combine this with the fact that income inequality in the US is hitting levels last seen in the 1920's (Figure 60) and you

have another case for sluggish demand growth, excess saving and so secular stagnation. It's also interesting to note that income inequality began its charge higher around the mid-1990's, around the time that the earliest signs of possible secular stagnation can feasibly be seen.

Figure 60: US Income Inequality Trends



Source: Deutsche Bank, World Top Income Database

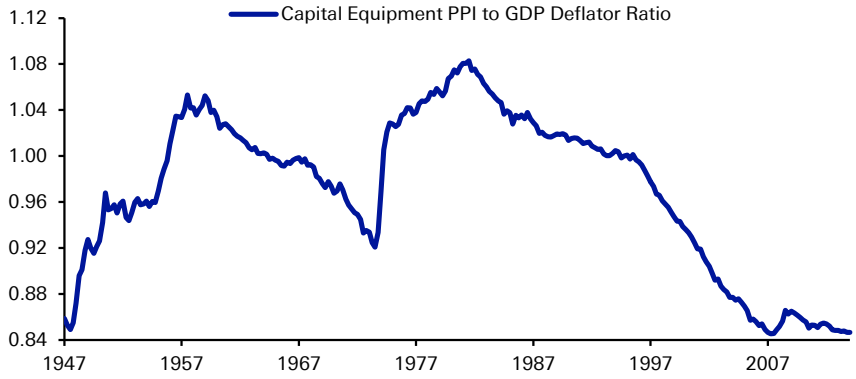
The changing structure of the economy

The third factor is the reduction in debt-financed investment demand - which has been in the making for a while but which has become more stark in the years after the GFC. This is one of the factors that Summers discussed, highlighting the drop as a result of a legacy period of historic leverage, more tightly regulated financial intermediation but also the changing nature of productive economic activity. He points to the leading technology companies of our age (for example Google and Apple) and highlights their huge cash piles and relatively low capital requirements. As of June 2014 Apple has around $165bn of cash on its balance sheet; Google about $64bn. Such huge cash piles are a very vivid example of excess saving and weak investment demand in even the most innovative of global companies. Indeed this issue looks set to become more significant over time if the most recent wave of breakthrough tech companies is anything to go by. For example earlier this year Facebook announced the acquisition of messaging app company WhatsApp for $19bn. To put this into context, at the time of acquisition this deal gave a higher market value to WhatsApp, a company whose growth required almost no capital investment, then to Japanese giant Sony. These kind of deals might also provide some insight into the growing levels of inequality – these kind of headline "new economy" companies generally employ few people and the riches of such deals are generally captured by a select few. At the time of its acquisition WhatsApp had around 50 employees – 2 of whom became billionaires once the deal went through.

Falling price of capital goods

The fourth factor, and another one raised by Summers, is the collapse in the relative price of capital equipment. Figure 61 shows the real-adjusted price of capital equipment. From this chart it can be seen that (again since the mid-1990's) the relative price of capital equipment has fallen dramatically. What this means is that the real amount of borrowing and spending required for any given quantity of investment goods has fallen, again weighing on investment spending and aggregate demand.

Figure 61: Collapse in the Price of Capital Equipment



Source: Deutsche Bank, Bloomberg Finance LP

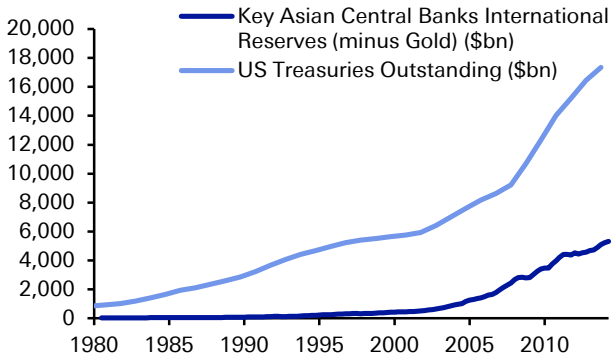
Lower potential growth

The fifth point raised is the effects of the fall in potential growth on current demand. Companies who expect the economy to grow at a slower rate in the future have less incentive to invest today in order to expand to meet the demands of future markets, which in turn weighs on current demand and growth. Even as recently as January 2009 the Fed's estimate of "longer run" US growth had been 2.5%-2.7%. By June 2014 the Fed's estimate of longer run growth has fallen to 2.1%-2.3%.

The global savings glut

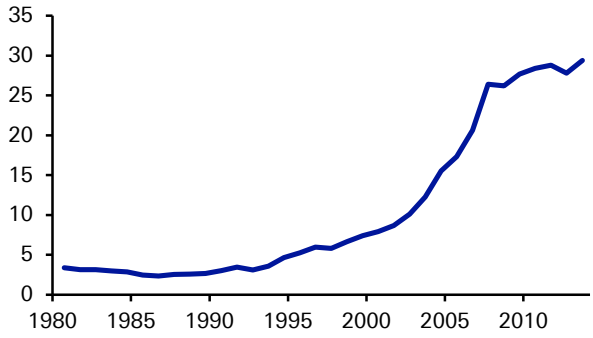
There has been discussion of a sixth, international driver, of secular stagnation related to Bernanke's 2005 discussion of a "global savings glut". As well as discussing a number of the issues we have already touched on he also talked about the rise of Asian central bank reserves in the aftermath of the 1997 Asian Financial Crisis, which was part of the initial set of post-crisis, rolling bubble creating policy responses we discussed earlier, which have added significantly to the level of global saving, significant portions of which have been diverted into safe developed world, and particularly US, assets. Figure 62 and Figure 63 show quite how meaningful these international reserves have become since the second half of the mid-1990s and especially post-2000. Looking at the total international reserves of China, India, South Korea, Malaysia, the Philippines, Singapore and Thailand as a percentage of total outstanding US Treasuries shows that these reserves have grown to around 30% of the outstanding US Treasury pool. Whilst not all of these reserves will have been invested in UST's, even if only a proportion of them have been it would suggest significant downward pressure on equilibrium rates. Furthermore even if these reserves haven't all been parked in UST's they will in large part have been parked in safe assets somewhere, most likely in the developed world creating broad-based downward pressure on DM yields.

Figure 62: Key Asian* International Reserves vs US Treasuries Outstanding



*Source: Deutsche Bank, Haver/ *Note – includes reserves of China, India, South Korea, Malaysia, the Philippines, Singapore and Thailand and looks at reserves excluding gold*

Figure 63: Key Asian Central Banks International Reserves as % of US Treasuries Outstanding

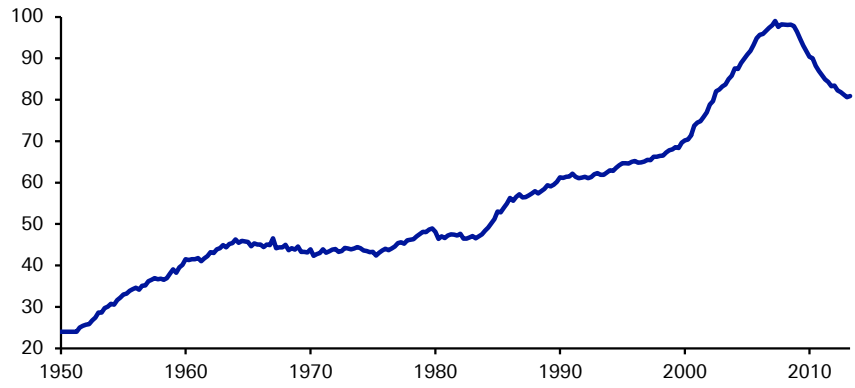


Source: Deutsche Bank, Haver

Household leverage

A seventh hypothesized explanation for more recent demand deficiency in the US is the end to the great leveraging of US households which began in the mid-1980's but really gathered steam in the early 2000's. The huge leveraging of US households from 2001-2007 was a major boon for growth which seems unlikely to be repeated this cycle, implying a further demand impairment from the already weak 2000's cycle.

Figure 64: US Households Liabilities as a % of GDP



Source: Deutsche Bank, Federal Reserve

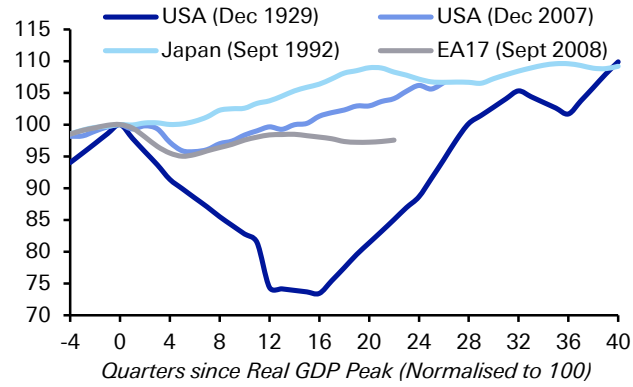
These seven factors, the first six of which appear to be both structural and long-term in nature, have been put forward as possible causes for secular stagnation, as plausible roots of the USA's inadequate demand and excess saving problem that secular stagnation's adherents believe is keeping equilibrium rates impossibly low and holding back growth. Whilst the impact of each alone can be debated, taken together they represent a challenge to those who assume the US will see a "regular" cycle with demand growth pushing the economy back to potential, driving up inflation and rates. Indeed they argue that this isn't just a problem of the present but of the past and future too.

The case for secular stagnation in the euro area…

So far we have focused on the US economy as this is where much of the academic debate to-date has been focused. However when you look at the post-crisis world it seems strange to concentrate solely on the US economy's travails when, even given its weak performance, it has still easily outperformed most other developed world economies. In 2013 the US economy grew by 2.2% whilst Japan grew by 1.5% and the euro area shrank -0.4%. Japan's economic travails have been well documented and as we mentioned at the start, there is a case to be made that Japan is very much at the tip of the secular stagnation world. Now we take a closer look at the case for secular stagnation in the euro area where growth has been incredibly weak and the outlook remains bleak. As we have highlighted already, the outlook for euro area secular stagnation could be important in deciding whether euro area government bonds really are in unsustainable bubble territory.

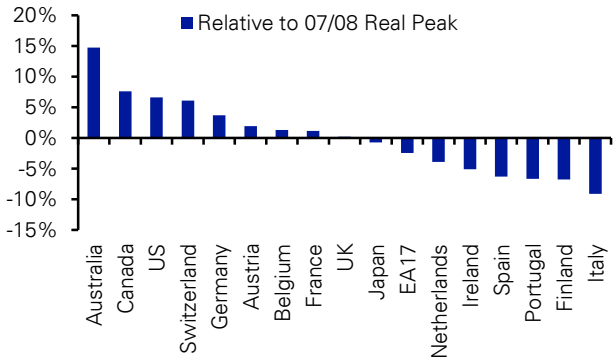
The European recovery is weak against almost all historic standards (Figure 65). It is lagging behind the US and is yet to get back to its 2007/8 peak (Figure 66). Indeed if you look at advanced economies of the world that are still below their 2007/8 peak GDP, all except Japan are euro area countries.

Figure 65: Historically weak recovery – Since Pre-Crisis GDP Peak



Source: Deutsche Bank, Source: Deutsche Bank, GFD

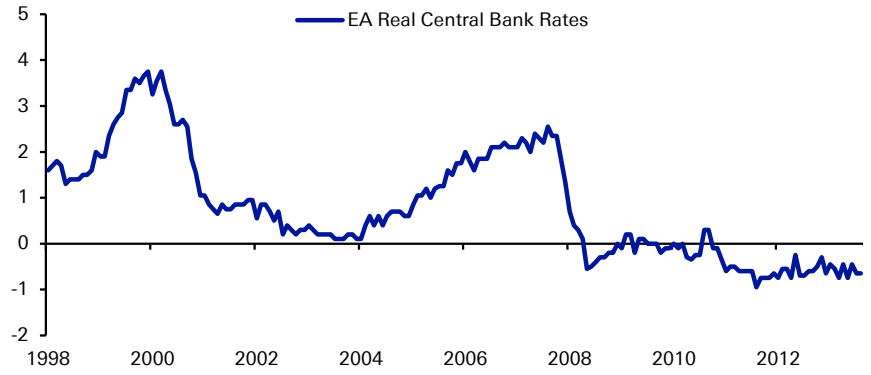
Figure 66: Developed Countries GDP vs Peak



Source: Deutsche Bank, Haver

Q2's growth numbers offer few reasons for optimism as Italian and German growth slipped into negative territory and France stagnated. Even with German 10 year rates recently trading below 1% and other euro area economies 10 year rates having hit record lows it is clear that the equilibrium interest rate which could restore full employment in the economy remains far lower than has so far been able to be achieved.

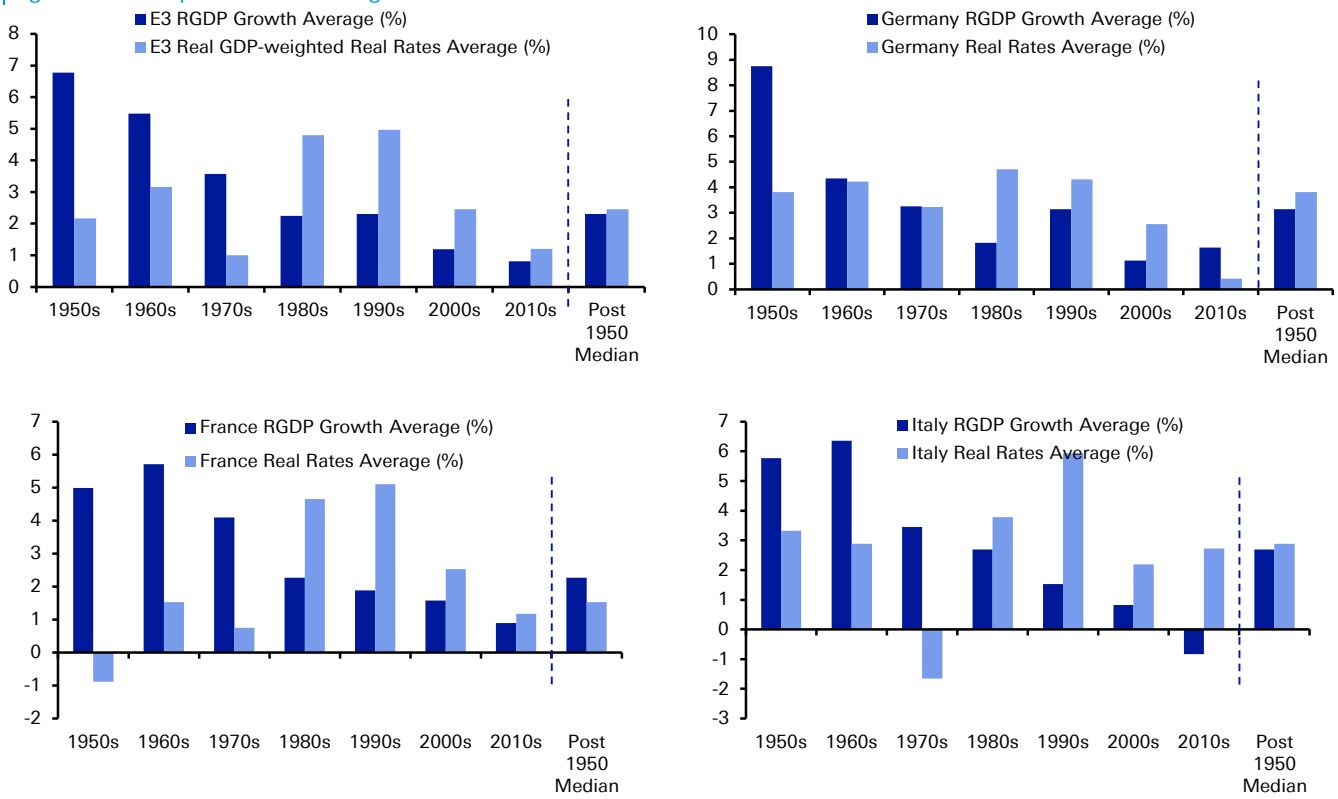
Figure 67: EA Real Central Bank Rates



Source: Deutsche Bank, Bloomberg Finance LP

Indeed when we look at the euro area economy and the big 3 European economies (Germany, France and Italy) growth rates and real interest rates we can see the exact kind of trends you would expect in a secular stagnation world. Figure 68 shows how real GDP growth has been trending downward in each of these countries since at least the 1990's, whilst at the same time we've had a significant downward trend in real 10 year interest rates. Figure 67 shows how the European real central bank rate has been falling since even the early days of the Euro and how the real central bank rate has been largely negative since 2009.

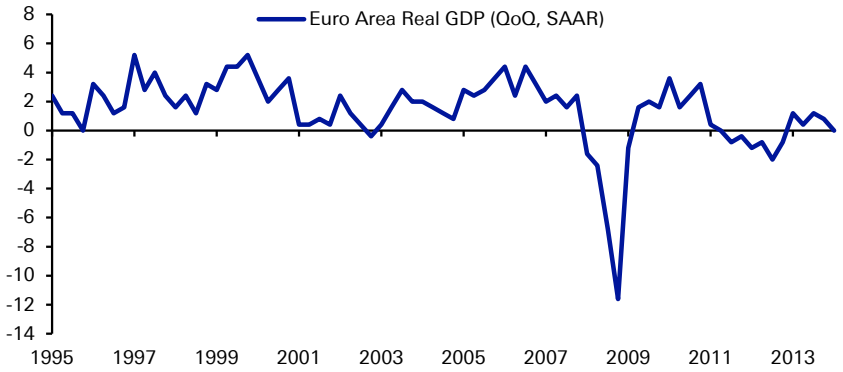
Figure 68: European Secular Stagnation



Source: Deutsche Bank, GFD

Much as in the US, the euro area its member countries have experienced periods of stronger growth close to or above historic rates over the past 20 years (Figure 69). Such periods have seen the economy operating around full employment levels. But much as in the US, there is a case to be made that these periods have been possible only with the additional impetus of bubbles.

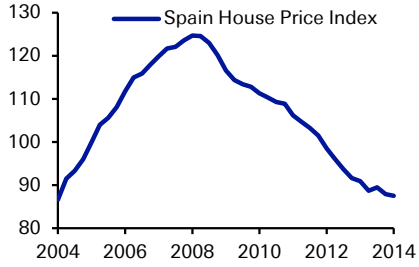
Figure 69: Euro Area Growth



Source: Deutsche Bank, Haver

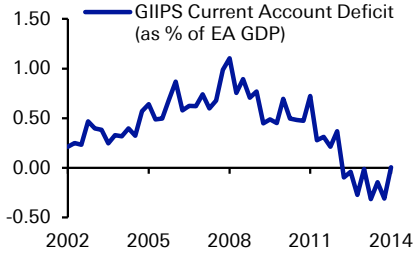
Three plausible euro area bubbles come to mind. First is the housing bubbles across much of peripheral Europe in the mid-2000's (Figure 70). Second, and on an interrelated note, there was a bubble in capital flows to the European periphery (Figure 71) which supported housing and other investments which later proved bad. A third plausible bubble is the chronic undervaluation of Germany's currency since the introduction of the euro in 1999 which has helped to propel it to become one of the world's largest exporters. In the 186 months before Germany joined the euro, its currency appreciated almost 60%. In the 186 months after joining the euro that rate of appreciation has been cut by 2/3rds to about 20% (Figure 72). Clearly many factors go in to determining FX fair values and a lot happened to Germany between 1983 and 2014 however it seems an uncontroversial statement to say that if Germany had had its own currency since 1999, it would have appreciated more than the euro did.

Figure 70: I) Housing Boom's



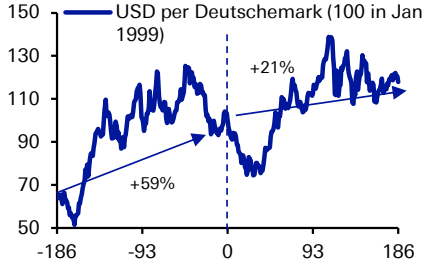
Source: Deutsche Bank, Bloomberg Finance LP

Figure 71: II) Peripheral Capital Flow Bubble



Source: Deutsche Bank, Haver,

Figure 72: III) Deutschemark* Negative Bubble?

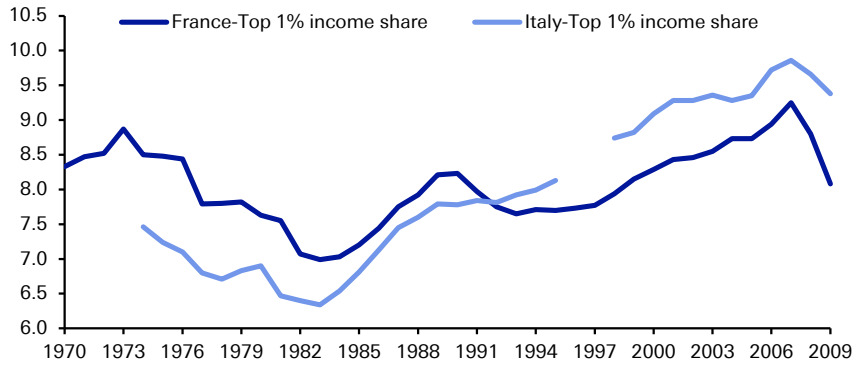


*Source: Deutsche Bank, GFD/ *Note - EUR after 1999*

So whilst the underlying requirements are there to say that Europe looks like a possible case of secular stagnation, is there evidence for the kind of possible root causes of secular stagnation that we discussed for the US. In reality each of the 7 possible roots of secular stagnation we looked at earlier are either global or at least broadly Developed World in nature and so apply to Europe as much as they do to the US. The euro area economy has experienced a shift in the structure of the economy with a fall in debt-financed investment demand, it has also seen a fall in the relative price of capital goods (which are

internationally traded) and those Asian central banks which couldn't park their reserves in US Treasuries probably saw the large pool of EUR-denominated euro area government debt as a viable alternative. On the inequality issue Europe has not been exempt from the rise seen in the US, as the top percentile earners have accrued growing proportions of the national income share since the early-1980's as can be seen in Figure 73 (although the data on Europe is generally less up to date). Europe also saw a major rise in household leverage which has now come to an end.

Figure 73: European Inequality

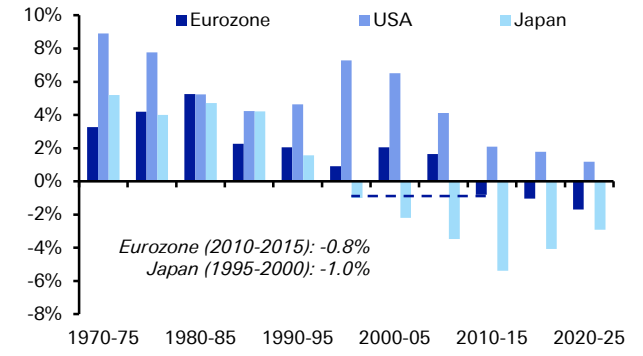


Source: Deutsche Bank, World Top incomes Database

Given the developed world/global aspects of the above five trends we won't touch on them again. However it is worth looking into the two others – demographics and falling potential growth – where the situation in Europe appears much more worrying then in the US.

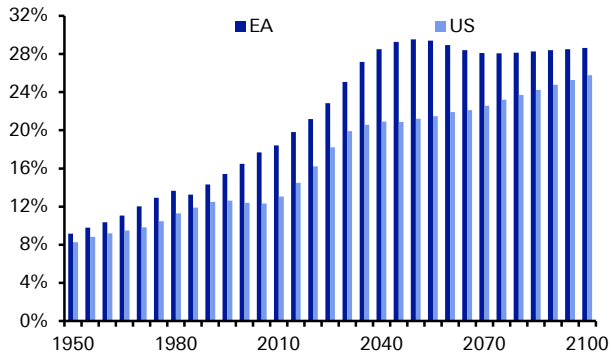
Euro area demographics are indeed much worse than in the US. They've been worsening since the mid-1990's and indeed are now worryingly similar to Japan's situation in the late 1990's. From 1995-2000 Japan's working age population shrank 1%; from 2010-2015 Europe's is set to contract -0.8%. In comparison the US working age population is set to expand 2.1% over the same 5 year period (Figure 74). Europe is also well ahead of the US in terms of the ageing of its population – those aged 65 and over in 2015 in the euro area will be around 20% compared to 15% in the US (Figure 75).

Figure 74: Negative Working Age* Population Growth



*Source: Deutsche Bank, UN Population Database/ *Note – working age is defined as those aged 15-64*

Figure 75: Ageing Population (>65's as % of Population)



Source: Deutsche Bank, UN Population Database

In terms of the fall in potential growth estimates the euro area is also in a worse place than the US in both absolute and relative terms. According to estimates by the European Commission, potential growth declined to 0.9% for the period 2008-2012 from 2.2% from 2000-2007, a drop of -1.3% points.

Given these factors it seems reasonable to argue that the euro area is a more likely candidate for an economy in the grip of secular stagnation than the US. As such the argument against there being a bubble in European government bonds is stronger. However if we are in a secular stagnation world with no growth and ever higher debt levels, how long can European governments appear solvent?

Secular stagnation: counter arguments

So far we've focused on what the broad arguments for secular stagnation are and whether they fit the facts on the ground in the US and Europe today and over the past 20 or so years. To our eye they do, but that isn't to say yet that secular stagnation is a reality. There is a case to be made that other more transitory factors have been the root of the developed world's travails over the past couple of decades, and particularly in the post-crisis world and so all of this talk of secular stagnation is actually an over-reaction and an over-prediction of our current state of post-slump slow recovery.

Indeed research, most prominently Reinhart and Rogoff's 2009 piece, does suggest that recoveries from financial crises are generally weaker than usual. Whilst this has almost certainly been a factor in the aftermath of the global financial crisis it is now almost 6 years since Lehman's collapse and 5 years since the US economy returned to growth. There remain few signs of the stress in the global financial system we saw during the GFC and new regulations have been brought in to restructure the system. So whilst some of the weakness of the post-crisis recovery is related to the financial crisis, it seems a stretch to still blame the crisis for the continued tepid recovery. Furthermore, as we have argued throughout this piece, the US economy has underperformed for the best part of 2 decades and not all of this can be explained by the late 2000's financial crisis.

Another issue raised about secular stagnation theory is that it has been wrong before. When Alvin Hansen first wrote about the issue in the late 1930's he was proved incredibly wrong as the US went on to experience very rapid growth. If it was wrong then, why won't it be proven wrong today? Maybe it will, however it is hard to see how we get a repeat of the unique circumstances which helped drag the US economy out of its Great Depression rut. The huge increase in WWII defence-related budget deficit spending that the US saw from 1939 onwards which helped boost US aggregate demand won't be repeated. Furthermore a repeat of the baby boom which lifted population growth rates after WWII also appears unlikely. Finally much of the world opened up to the US and US business during and after WWII as the US helped to arm the Allied nations during the war and then shaped the liberal post-war order which was to benefit it so enormously. Such gains from liberalisation were clear and significant after almost 20 years of protectionism and/or war. They are less easy to see today. Secular stagnation was wrong in 1938. That doesn't mean it is irrelevant today.

Reinhart and Rogoff's 'growth is slow after financial crises' and Summers 'secular stagnation' have not been the only hypothesises put forward to explain the weak post-GFC recovery. There is also Robert Gordon's "Is US economic growth over?". In this theory, which we covered in last year's long-term study, Gordon argues that the easy growth era might be over as innovation has faltered as the effects of the third industrial revolution (IT and

computing) dissipate and nothing of similar importance has yet come along to replace this technology advancement led-growth which has been key to long-run growth. He also discusses headwinds to growth coming from demographics, education and inequality among others which may in fact be more important to disappointing growth today than his technological development argument, two of which also form part of the possible roots of secular stagnation. Where such a theory differs from secular stagnation is that it argues that today's problems are on the supply rather than the demand-side and slow growth is the result of slow growth in potential output itself. Thus in Gordon's view the US economy actually isn't operating below potential. As he wrote earlier this year, "my analysis suggests that the gap of actual performance below potential that concerns Summers is currently quite narrow and that the slow growth he observes is more a problem of slow potential growth than a remaining gap." To our eye the data from the US and euro area economies is more supportive of secular stagnation then Gordon's End-Of-Growth theory. In Gordon's view the US economy is currently operating near potential whilst secular stagnation argues it is far below. Whilst potential is hard to measure, the implications of being at/ below potential are less so. If the US economy was at potential then we should be at least beginning to see an overheating labour market and rising inflation. This is ostensibly not the case. Whilst there are those who argue that the US labour market is near capacity; with the participation rate at 3-and-a half decade lows and wage growth subdued we struggle to be fully convinced by this. Furthermore with core inflation in June coming in at 1.49% it is hard to see how the US economy could be operating near potential. This is even more the case for the euro area economy.

Next, when looking at the case for euro area secular stagnation and highlighting the regions incredibly weak growth story post-2008 we have to account for the fact that Europe actually went through another crisis (the eurozone crisis) after the GFC and that the area operates a single currency with one monetary policy. Europe's double crisis certainly explains some of why the euro area recovery after 2009 has been so weak. The fact that each of the euro area's economies has a fixed rate against the rest of the member's and that the currency's valuation is a weighted average of each nation's circumstances has led some members to have too-high an exchange rate and so weighed further on growth. The same can be said for ECB policy, which has been too tight for many members. Given that it has only been around 2 years since the euro area crisis had a floor put under it by Draghi's "whatever it takes" comments maybe it is too soon to judge whether the continued weak growth environment is really beyond Reinhart and Rogoff's weak post-crisis recovery period. However such a view ignores the fact that European growth, as with US growth, has disappointed for the best part of two decades outside of bubble periods. On top of this the fact that US growth has continued to disappoint long after the GFC has gone and so even if the euro area economy is being held back by its more recent crisis and the euro area system itself that is not to say it isn't also suffering from secular stagnation.

So whilst we accept that there are a number of reasonable and opposing theories as to why growth might have disappointed over the past two decades and particularly in the post-crisis world, we would argue that secular stagnation probably has the best claim to explain all of the facts.

What are the economic, policy and market implications of a secular stagnation world?

If secular stagnation is indeed reality then this means that both policy-makers and investors need to assess the current economic outlook very differently. So what are the economic, policy and market implications of a secular stagnation world?

Economic implications

There are 3 main economic implications: lower growth, lower inflation and lower rates. Lower growth and inflation due to continued constrained demand which means that the economy struggles to grow beyond potential and so doesn't create inflationary pressures. Lower rates due to less inflationary pressure and also due to the excessive saving as we have already discussed. Whilst it is hard to put exact numbers around these implications a forecast of continuing secular stagnation is a prediction that the experience of the past decade has not been a one-off. Over the past decade US growth has averaged 1.55% a year, core inflation 1.74% a year and the central bank rate 1.75%. This ten year period has included both boom, recession and recovery. The euro area and Japan have performed significantly worse (Figure 76) possibly showing them being further down the secular stagnation path. Averaging across all three, which together represent the three largest advanced economic areas in the world, we can see that real growth and inflation have averaged a little less than 1% and central bank rates a little above 1%. Such numbers add up to a secular stagnation world.

Figure 76: Secular Stagnation Underlying Rates Using the Last Decade

Past 10Y Moving Average	Real GDP Growth (QoQ, SAAR)	Core Inflation (YoY)	Central Bank Rate
US	1.55	1.74	1.75
Euro Area	0.71	1.45	1.84
Japan	0.68	-0.41	0.10
Average	0.98	0.93	1.23

Source: Deutsche Bank, Fed, Bloomberg Finance LP

Policy implications

Such predictions of course assume a continuing secular stagnation world where policy does not come to terms and adapt to the secular stagnation threat. However as Summers wrote, "today secular stagnation should be viewed as a contingency to be insured against – not a fate to which we ought to be resigned." Economist Barry Eichengreen added that secular stagnation represents, "concrete policy problems with concrete policy solutions. It is important not to accept secular stagnation, but instead to take steps to avoid it."

There have been three broad areas of policy prescription put forward to help overcome secular stagnation: supply side reforms, aggressive monetary policy, active currency depreciation and much greater use of fiscal policy.

Whilst in general we have argued that secular stagnation is about demand-side rather than supply-side deficiencies, some supply side reforms could still help. As we argued before, a fall in the potential future growth rate can actually weigh on demand and growth today and increase the excess saving problem by reducing investment demand. Turning this around, if supply side reforms could boost potential growth then over time this could lead to improvements in current demand. Such reforms could include raising the retirement age which should help boost labour force growth, education and training programmes to

improve labour force skills and tax reform to increase company's incentive to invest. However as Summers points out there are two problems with supply side reforms ability to deal with secular stagnation. First "it takes time for education to operate, for example" and second (as we've already suggested) the, "economy is held back by lack of demand rather than lack of supply. Increasing our capacity to produce will not translate into increased output unless there is more demand for goods and services."Therefore supply side reforms should at best be viewed as an indirect support to demand-deficient secular stagnation economies.

The second policy prescription for overcoming secular stagnation is continued aggressive monetary policy easing. As we have highlighted throughout, the main reason for demand deficiencies in a secular stagnation world is that (a) due to the zero lower bound, policy rates cannot fall low enough and (b) inflation has been too low for real actual rates to equal the equilibrium full employment real rate. We discussed earlier in the note how real rates unlike nominal rates are not at such extreme lows. Aggressive monetary policy has been the main weapon of choice so far to deal with the weak post-crisis recovery, most notably QE and forward commitment to low rates. With nominal rates still stuck at the zero lower bound the only realistic path left for monetary policy to help is for it to raise the inflation rate. To our eye there are two strategies which might be able to achieve such an increase.

First is raising the target inflation rate to 4% which was argued for in an IMF working paper in June. That piece concluded that, "A four percent target would ease the constraints on monetary policy arising from the zero bound on interest rates, with the result that economic downturns would be less severe." Inflation has remained low in the aftermath of the GFC and part of the reason for that is that households have not lost faith in central banks commitment to hit their 2% inflation targets. This has anchored inflation even in the midst of QE and huge increases in the monetary base. Raising the target to 4% would remove this constraint and help to reduce real rates by another 2%, helping them get deeper into the negative territory where the equilibrium real rate likely lies. As we discuss elsewhere in the piece, even this may struggle to boost real GDP but it could make a big difference to NGDP which in turn might erode some of the debt burden that may be holding back growth.

The second way in which we see monetary policies ability to escape a secular stagnation type outcome is for economies to embark upon meaningful currency devaluation. The main route by which Abenomics (and indeed expectation of Abenomics) has helped increase Japanese inflation has been via a the major devaluation of the currency. The Yen has now depreciated over 30% versus the US dollar since late 2012. There is no reason to expect that such a policy wouldn't help other moribund developed economies. Such a depreciation could be achieved either through direct intervention in the FX market (which is both politically and legally difficult), through the announcement of another major QE program or through raising the inflation target as we discussed above.

The main problem with using aggressive monetary policy of the type we have discussed here to avoid a secular stagnation outcome is the risk that such policies might lead to financial instability. This note began with a discussion of the role incredibly interventionist monetary policy has played in creating a rolling asset bubble since at least the late 1990's and this chapter began with a discussion of the secular stagnation view that it was only through the creation of asset bubbles that economies were able to get near full employment in the past few business cycles and as Summers writes, "a strategy that relies on interest rates significantly below growth rates for long periods of time virtually guarantees the emergence of substantial bubbles and dangerous build-ups in leverage."

So what else is there? The third approach is for a major and sustained program of fiscal deficit spending and investment, ideally supported by continued monetary support. This has been Summers' (among others) prescription of choice for the US economy. The basic diagnosis of the secular stagnation economy is that it has insufficient demand at the actual real interest rate in the economy. Fiscal deficit spending raises the level of demand at each interest rate and helps to reduce excess savings as the government steps in to absorb the private sectors saving gap. With longer-term government bond rates across the developed world at or near historic lows and in some cases in negative real territory a program of deficit spending and investment should be incredibly cheap. Combined with the fact that most estimates of fiscal multipliers in the developed world are high at the moment, this implies that government spending should spur additional private demand. This suggests that developed world governments should be able to get a lot of bang for their buck from such a policy. And with the developed world still stuck in a liquidity trap and with central banks still very supportive (and with an option to be more supportive if needed) such fiscal policy shouldn't lead to a damaging spike in rates, at least not in the near-term.

Whilst a combination of fiscal spending and investment, supported with continued monetary stimulus and combined with an increase in the inflation target to 4% seems to us the best policy prescription to avoid sustained secular stagnation, both are politically very difficult and perhaps impossible in the near-term. Whilst recent history in the euro area and Japan suggests policy can react and indeed react aggressively and unorthodoxly to struggling economies, given that these two changes required policymakers to be faced in the first case with a major existential crisis and in the second with two decades of stagnation warns that such change may only come after much economic pain and damage.

Conclusion

In our view the predictions that secular stagnation theory makes about the developed world's economies and financial markets fit the past twenty or so years data well. Whilst we accept that this doesn't mean secular stagnation will continue to fit the facts going forward and indeed other factors can help to explain today's and the past few decades economic history, in our view no other theory out there better explains the current state of the US, euro area and many other DM economies. If policy doesn't react to the implications of secular stagnation we could well be in for a sustained period of low growth, low inflation and low rates.

Real Yields, the Economy and Asset Prices

In the previous chapter on secular stagnation one of the policy prescriptions was pushing yields down even further and perhaps helping to push real yields down closer to the extremes relative to history seen in the nominal world. We saw in the first chapter that real yields have been notably lower before through history in most countries in our study. In this section we wanted to assess what impact the level of real yields have had on financial markets and economies through history thus providing us with clues as to how successful such a policy would be.

In this study we examined how various economic and asset prices responded to the level of real 10 year yields and also to real base rates through history and in most cases going back several decades or even centuries. In our analysis we studied the results over a 1, 2, 3, 4, 5 and 10 year horizon. However we generally found that any correlation tended to be at its strongest (or close to it) after 1 year and we've therefore concentrated on the performance over the next 12 months from each annual real 10 yield and real base rate reading.

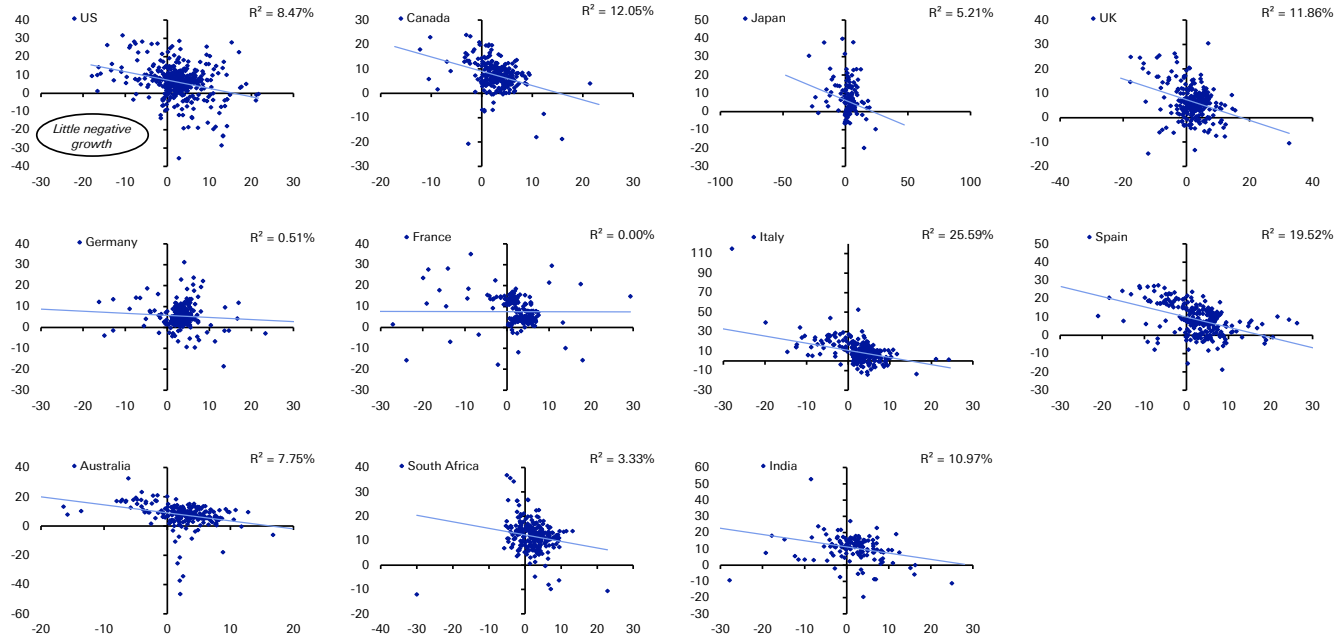
Our sample set is the same G20 (plus Spain) universe we used in the first chapter. 11 countries have an extensive history of data across all the variables we're tracking. The other countries only have patchy data and we've therefore concentrated on the 11 with full data to simplify the analysis.

Results from real yield analysis

Impact on Nominal GDP

When we look at real 10 year yields there is evidence that on a 1 year forward basis, the level is negatively correlated with Nominal GDP growth (NGDP) - low real yields invariably bring higher NGDP and vice-versa. One interesting point is that there are very few observations in the bottom left quadrant suggesting that it's rare to have negative real 10 year yields and negative NGDP growth a year later.

Figure 77: Real 10Y Yields (x) vs Next Year's YoY NGDP Growth

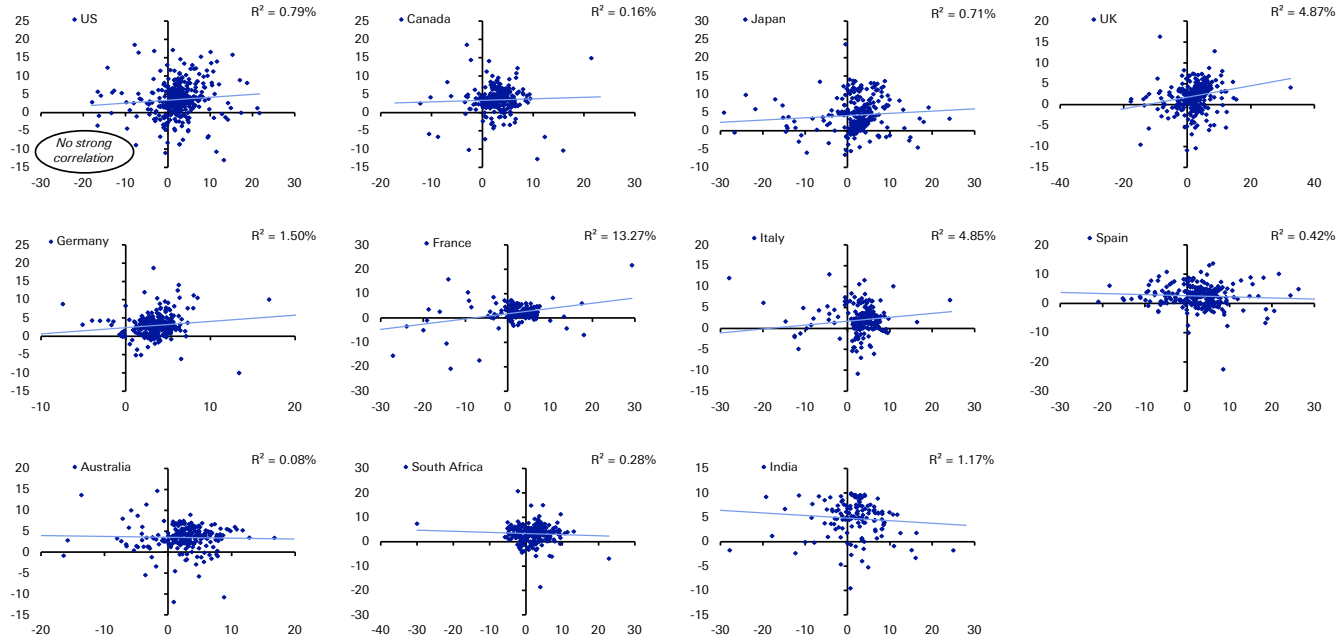


Source: Deutsche Bank, GFD

Impact on Real GDP

Interestingly for Real GDP growth, the relationship is not particularly strong but there is actually a bias for some countries to have a positive correlation meaning that low real yields might encourage or coincide with low real growth over the subsequent 12 months. Such a finding might suggest that a pursuit of low real yields may not be an effective policy tool in encouraging real growth. Perhaps real growth is driven more by structural or fiscal factors? Indeed we discussed in the secular stagnation section how many of the policy prescriptions put forward have focused on the need for fiscal stimulus and structural reforms, helped out by continued monetary easing.

Figure 78: Real 10Y Yields (x) vs Next Year's YoY RGDP Growth



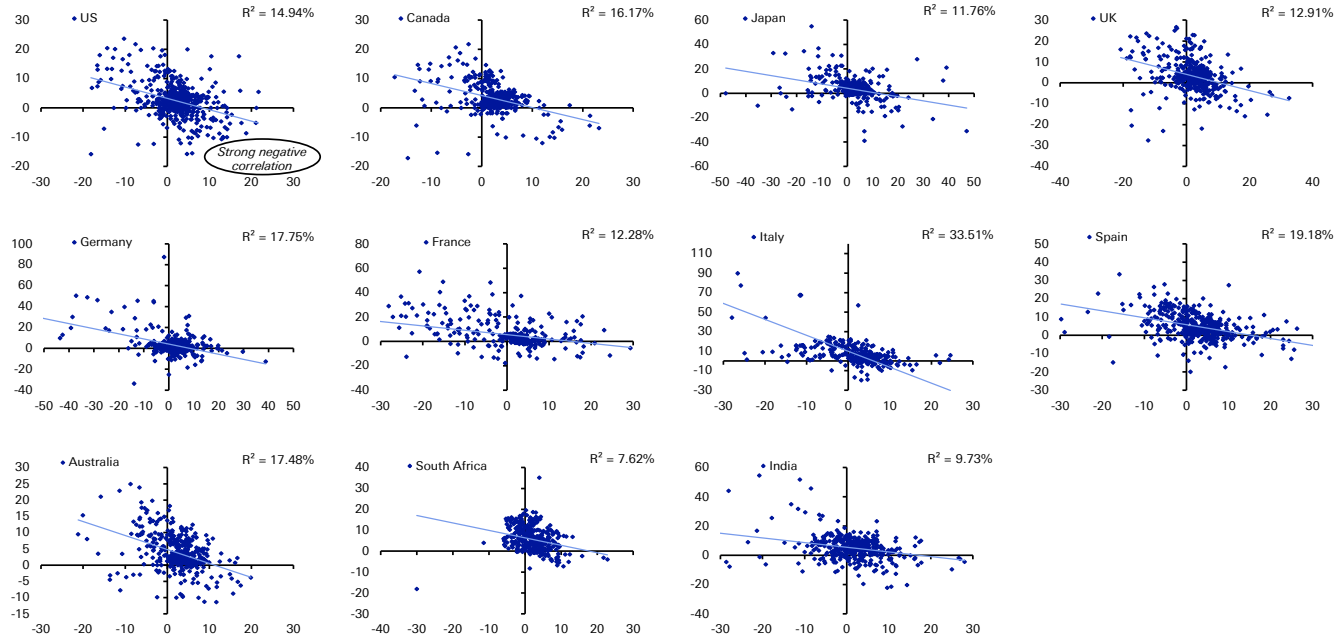
Source: Deutsche Bank, GFD

However in the absence of structural reforms and a fiscal consensus across large parts of the globe there is some evidence that low real yields can help elevate NGDP. Given that large debt loads might be one of the structural reasons holding back real GDP then in the absence of structural reform higher NGDP for a period of time could help rebalance the economy. However it would primarily be achieved via higher inflation. This is confirmed by the analysis on inflation below.

Impact on inflation

As implied by the results above for NGDP and RGDP, the correlation between real 10 year yields and 1-year forward inflation is notably negative. So this perhaps helps explain the impact of ZIRP and QE on growth so far in this post crisis cycle. Real GDP has been consistently disappointing even in countries that have managed to achieve low or negative real yields. However these countries have tended to see higher inflation and with it higher NGDP.

Figure 79: Real 10Y Yields (x) vs Next Year's YoY Inflation Rate

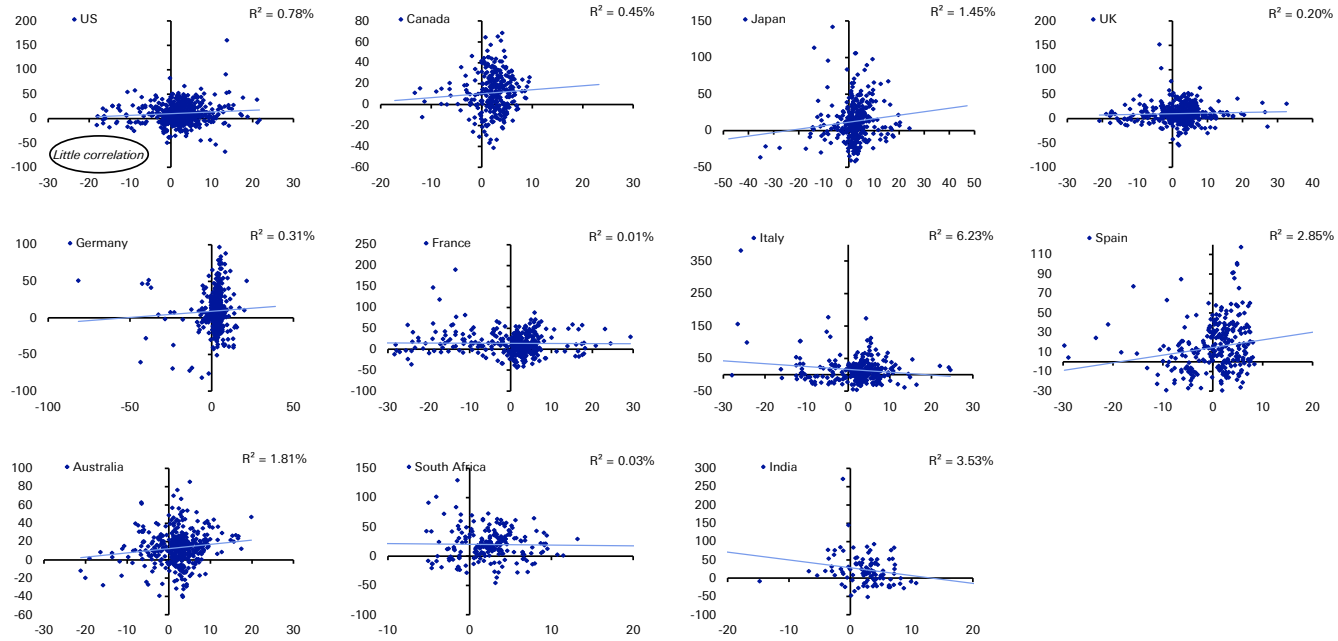


Source: Deutsche Bank, GFD

Impact on equities and bonds

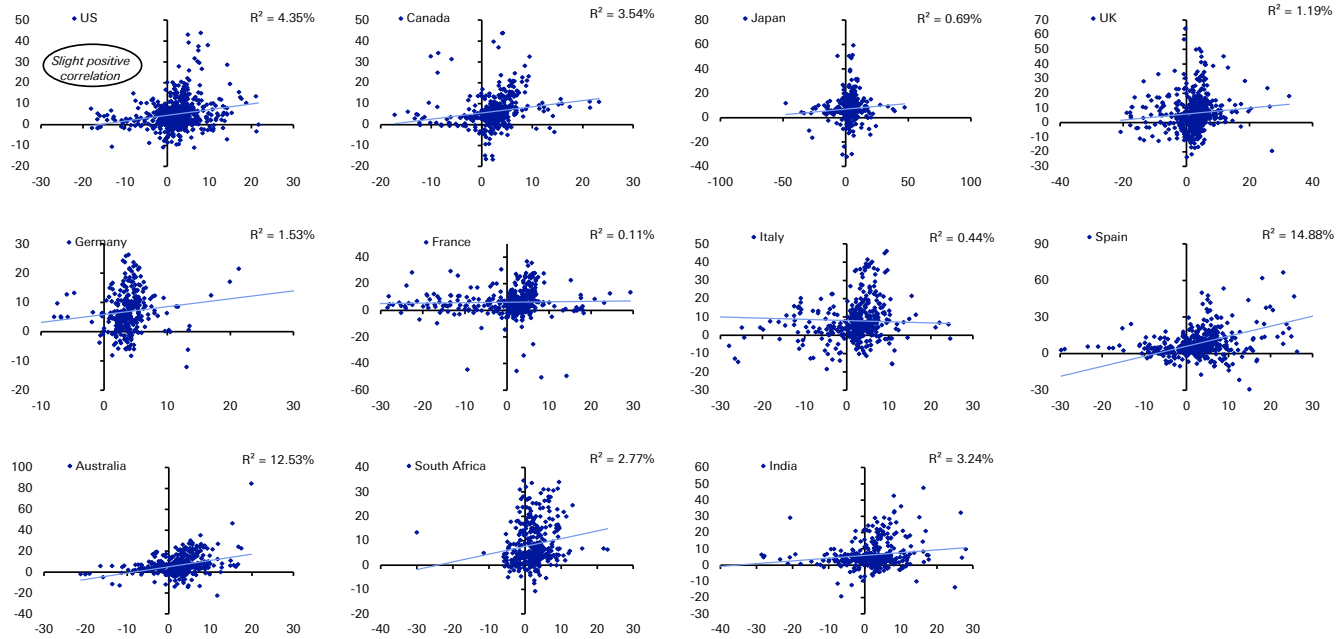
Where the results are most surprising is in the equity world where they show little correlation historically between real 10 year yields and subsequent 1-year returns. The same is true for bonds but there is a slight bias to suggest a positive correlation, i.e. positive real 10 year yields tend to lead to positive 10 year bond nominal returns 12 months later. Given the earlier results on inflation the positive correlation with bonds should be no surprise.

Figure 80: Real 10Y Yields (x) vs Next Year's YoY Equity Total Return



Source: Deutsche Bank, GFD

Figure 81: Real 10Y Yields (x) vs Next Year's YoY Bond Total Return



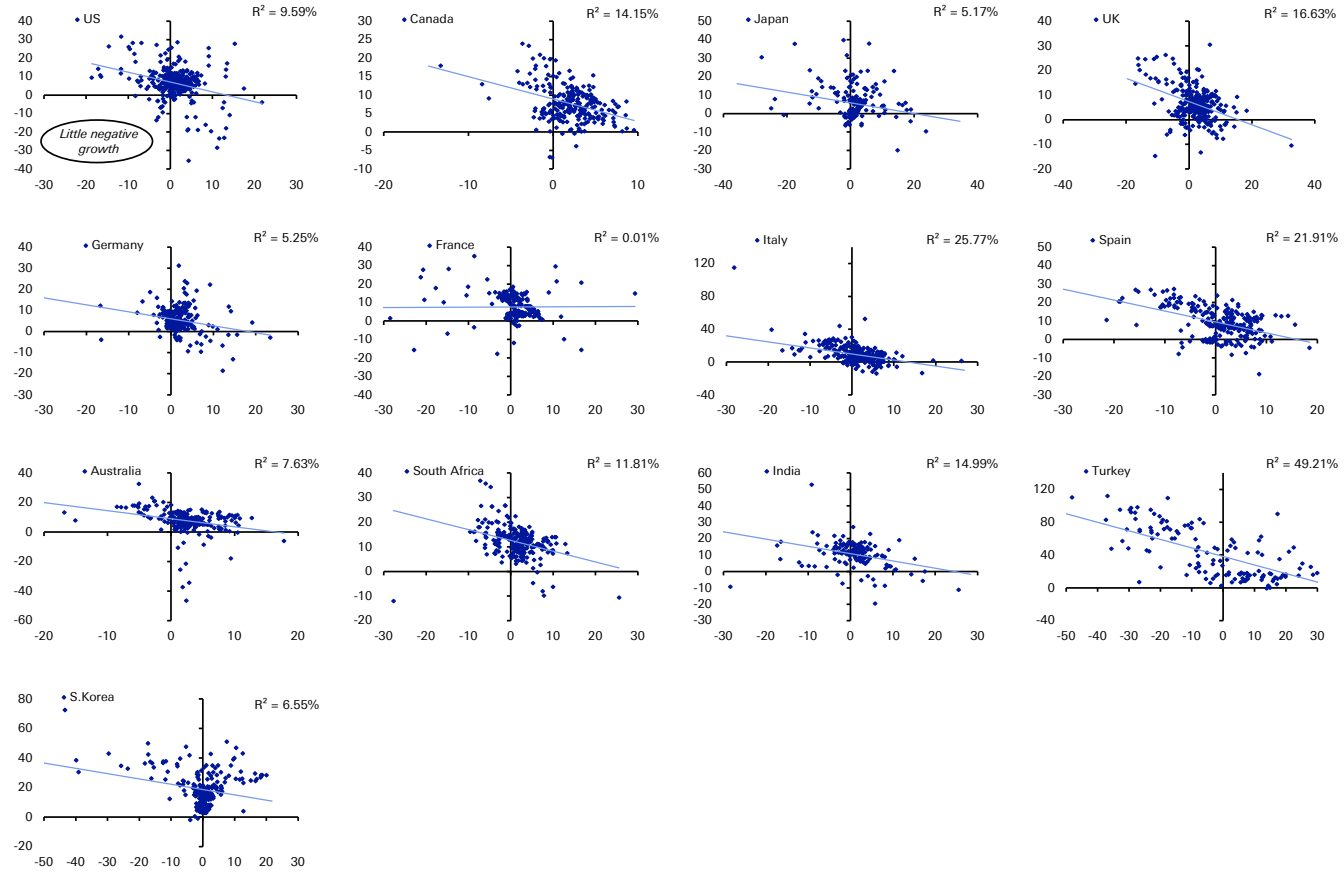
Source: Deutsche Bank, GFD

The weak correlation between real yields and subsequent 1-year performance of equities is surprising in the context of the widely recognized impact of QE since the GFC on equities. Perhaps this is due to the fact that we're basing the above analysis on real interest rates not QE which is unique to this cycle. There is no comparable example of QE historically to the one seen across the globe since 2008/09. Maybe QE has had a major impact on equities that low real yields on their own might not have achieved. This is possibly due to QE indirectly building flows into the asset class but as seen above, real rates have had little impact on real growth historically and so not on real earnings. We should note though that low real rates may help push up inflation which over the long-run will push up earnings and the value of equities. However over the short-term it may not help earnings as inflation initially compresses margins or perhaps cuts PEs. There has been evidence published in this report in the past that higher inflation leads to lower PEs in the short-term.

Results from real base rate analysis

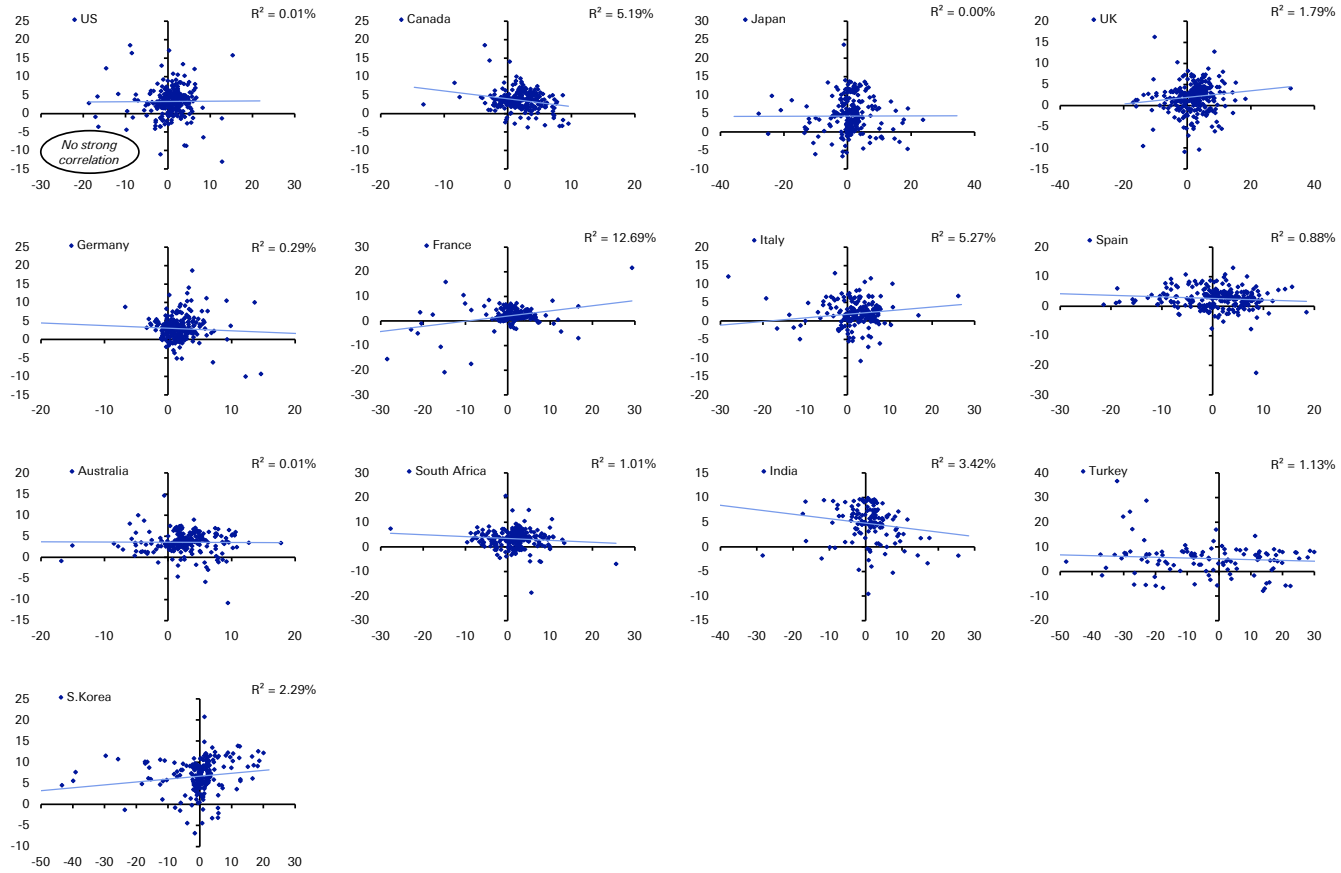
Repeating the exercise for real base rates, the results are fairly similar with perhaps the thing to highlight being that the inflation correlation seems even stronger here. So there is evidence that negative real rates have a positive impact on inflation but not much impact on real growth. The inflation link makes sense intuitively but perhaps this exercise is showing the limitations of monetary policy. It can impact inflation and with it NGDP but there is no evidence it can influence real GDP and equities. Maybe it's QE and its equivalents across the globe that explain the substantial performance of all assets since its inception. Maybe more structural/fiscal policies need to be implemented for growth to prosper.

Figure 82: Real Base Rates (x) vs Next Year's YoY NGDP Growth



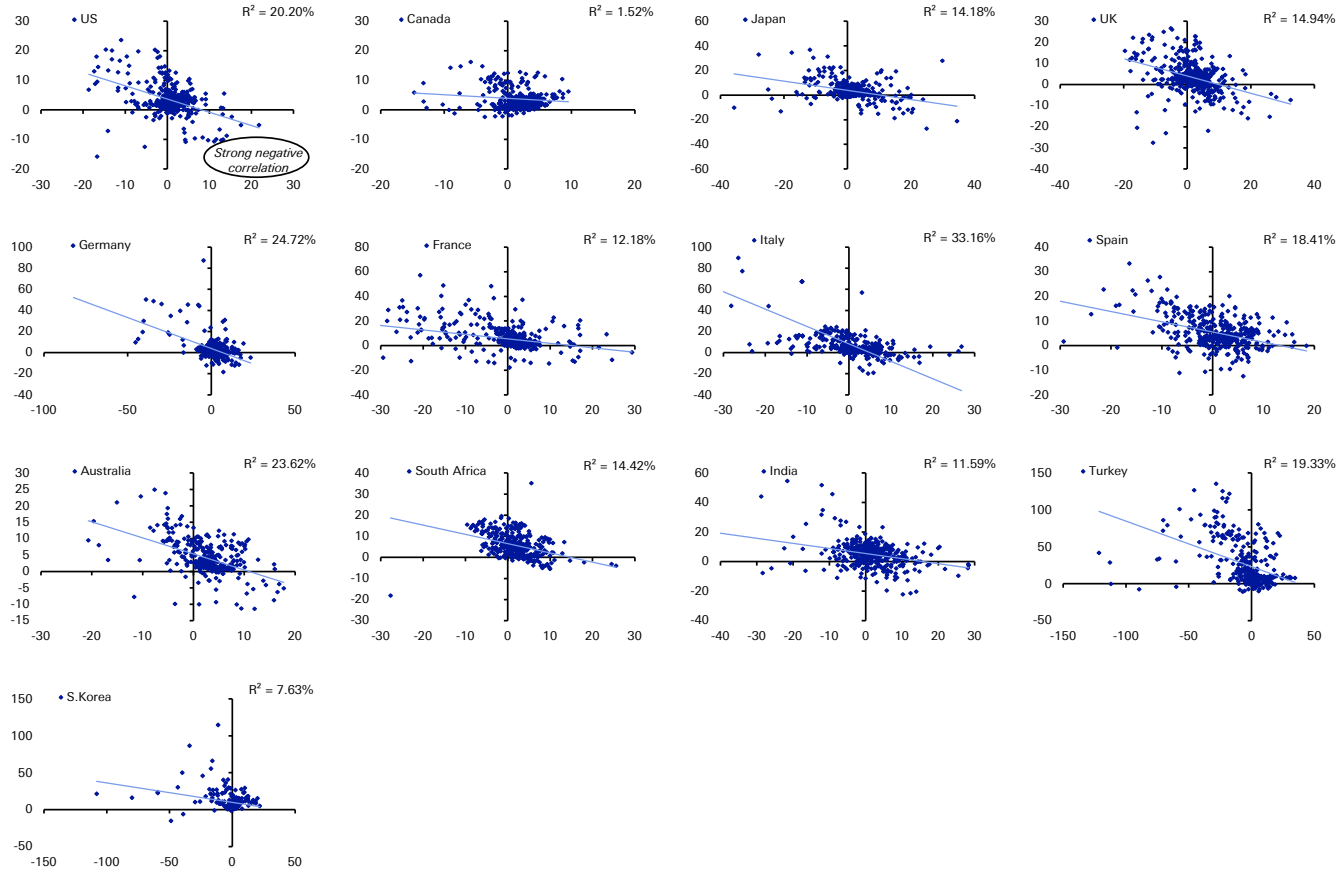
Source: Deutsche Bank, GFD

Figure 83: Real Base Rates (x) vs Next Year's YoY RGDP Growth



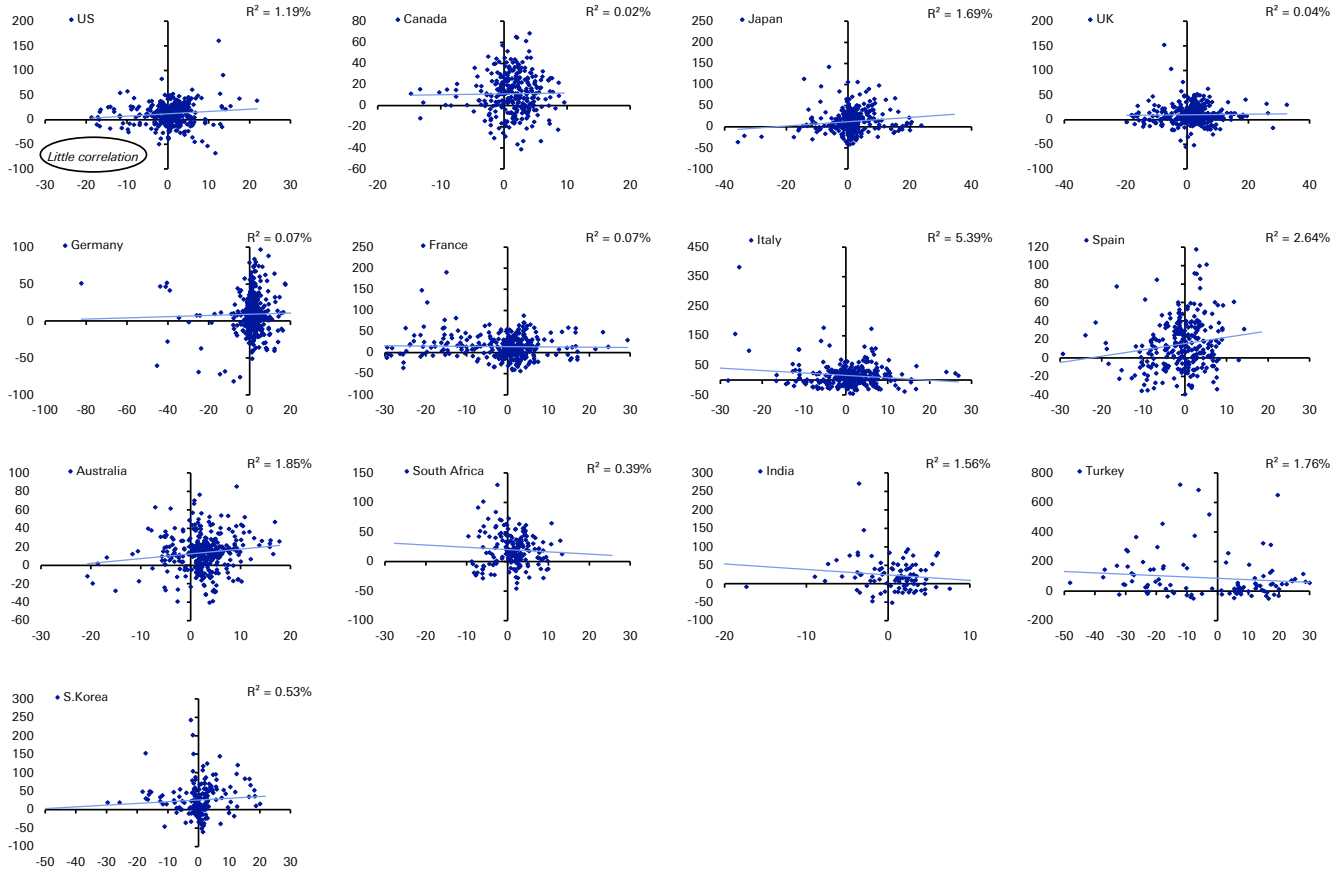
Source: Deutsche Bank, GFD

Figure 84: Real Base Rates (x) vs Next Year's YoY Inflation Rate



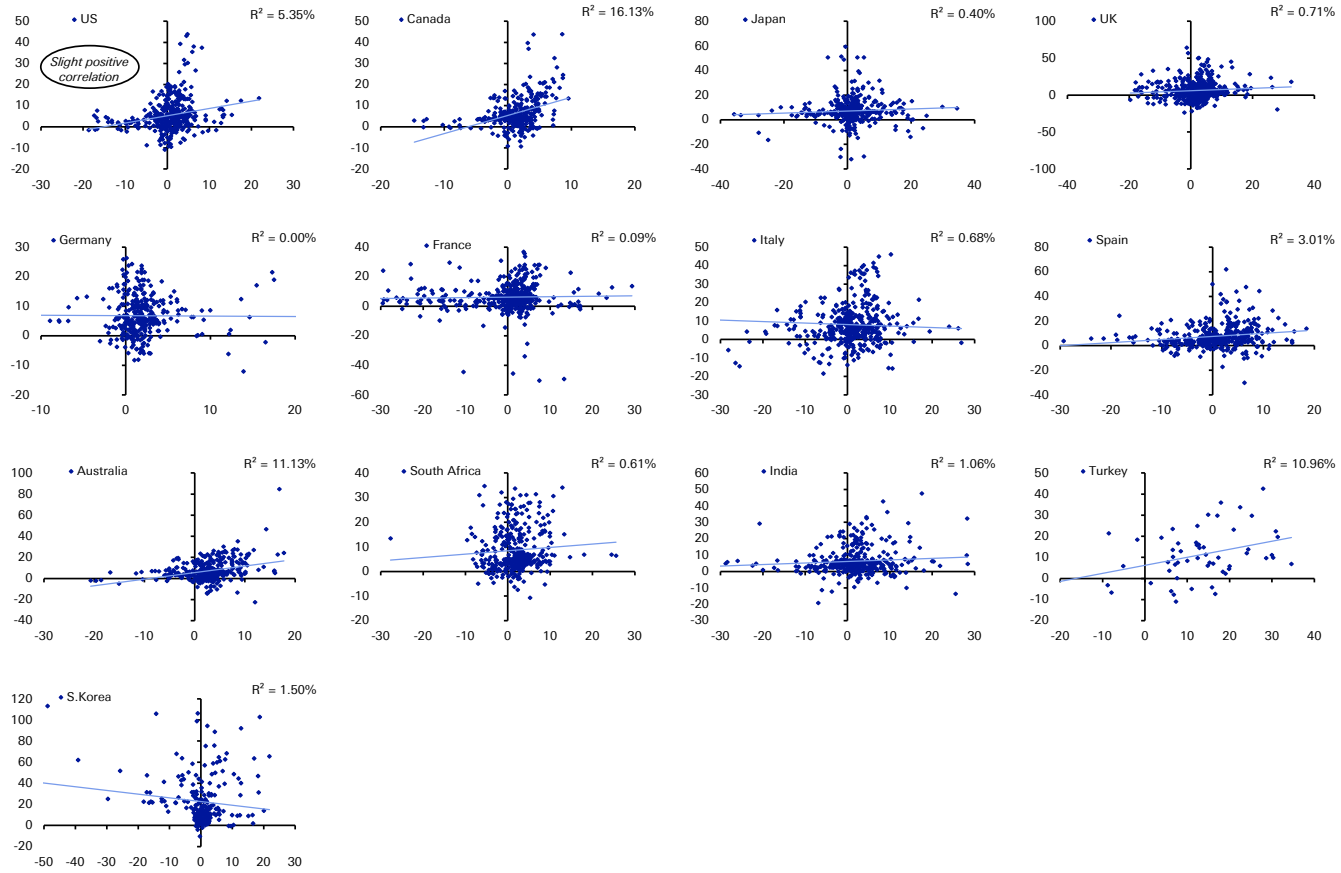
Source: Deutsche Bank, GFD

Figure 85: Real Base Rates (x) vs Next Year's YoY Equity Total Return



Source: Deutsche Bank, GFD

Figure 86: Real Base Rates (x) vs Next Year's YoY Bond Total Return



Source: Deutsche Bank, GFD

Geopolitics: The Rise and Fall of Superpowers

Structural change in global geopolitics

In the years following the global financial crisis the world has seen a rise in the frequency and magnitude of geopolitical tensions. Looking at the world today and the number of geopolitical problems that have flared up in recent years there is a case to be made that taken together these issues are as significant a period of geopolitical turmoil as the world has faced since the fall of the Berlin Wall. Important geopolitical questions have grown and multiplied, questions which have gone unanswered by the US and the West as a whole. Whilst geopolitical issues have hardly been absent from the agendas of western politicians and global markets in the past two decades, at few times have quite so many genuinely critical issues come together at the same time. Four ongoing geopolitical issues stand out.

First the Arab Spring which swept across North Africa and the Middle East and began with much optimism has left the region more unstable than ever. The most populous country in the region, Egypt, has come full circle military control through democratic elections and now back to military control. It is hard to see that many of the issues which led to the overthrow of the old military government have been resolved. Whilst the Arab Spring brought violent confrontation to many nations in the region, the most brutal has been in Syria where the nation has fallen into a civil war which has torn the nation apart and seen almost 200,000 people die. The Syrian Civil War in particular is a sore at the heart of the Middle East which continues to export instability across the region.

The clearest sign of this is in the second major issue which has dominated recent geopolitical headlines - the rise in local influence of extremist Islamist militants. From Nigeria to Iraq militant groups have been exerting increasing local influence. At the forefront of these groups has been the Islamic State group which has taken control of around a third of the land in Syria and Iraq respectively, and which continues to wage an aggressive war of expansion in the region having declared an Islamic Caliphate.

The third issue has been Russia's rejection of Western geopolitical norms with its annexation of the Crimean peninsula and questions over its role in events in Ukraine, where NATO has accused it of supporting the pro-Russian rebels (BBC). These events have rocked markets and show few signs of being solved.

The final major issue that has been posed to the West in the post-crisis era has been the flexing of China's muscles in the East China and South China Seas. China has continued to push claims on various islands and sea-beds in these seas, many of which are already owned or claimed by other nations in the region. The ongoing rise of China means that these issues aren't going to go away.

As we flagged at the start, the post cold war world has hardly been a time of geopolitical serenity. However it is hard to see too many events in the post Cold war – pre-GFC era which can match these post-crisis four in terms of sustained global significance. Whilst these four issues have been largely regional in terms of their direct impact they have left the current Western world order exposed. Taken together these four issues suggest a world which is as unstable geopolitically as it has ever been in post Cold War history and

plausibly even before. If we accept that, in terms of global magnitude, geopolitical concerns are at decade highs and are still on the rise then the next question is whether this rise in tensions is temporary or structural in nature? If today's heightened geopolitical concerns are structural in nature, and so are unlikely to dissipate, then it is likely that the market is today fundamentally under-pricing geopolitical risk.

Through history has there been a consistent major driver of structural geopolitical change?

If we want to understand whether the post-crisis rise in geopolitical tensions is structural rather than simply temporary we need to understand what drives structural change in the level of global geopolitical tension. The roots of different geopolitical tensions around the world are complex and myriad and ascribing a single clear cause to any geopolitical issue is likely to at best be a gross simplification. However, much as economics is better able to forecast the actions of whole economies than of individual economic actors, understanding the drivers of the global level of geopolitical tension is perhaps easier than understanding each individual geopolitical strain and stress on the global system. In this effort we can try to bring the experiences of history to bear.

When we look at the broad timeline of world history to our eye the main contender as a consistent major driver of significant structural change in global levels of geopolitical tension is the rise and fall of the world's leading power. In general we would argue that periods of single superpower world dominance have been times of relative structural geopolitical stability, whilst times of equal and competing Great Powers have been times of structurally high geopolitical instability. If this is indeed the case then questions of whether the post-GFC rise in geopolitical tensions is temporary or structural in nature rests upon whether the current world superpower, the USA, is in fact losing its relative dominance in the world. First we will look at the arguments for and against this "superpower dynamics" model of world geopolitical tension and then we will discuss whether the US is indeed losing its dominant position in world affairs.

Before we begin we have to cede that world history is a huge, complex and incomplete subject. Given the sheer length of the period we have attempted to analyse we have to apologise for an occasional lack of detail around specific events as well as a bias in our subjects of discussion when we look at the ancient world towards ancient "western" world history, most notably the lack of discussion of one of the major superpowers of the ancient world – Imperial China. What we have attempted to do is try to pull out just one of the broad underlying drivers of world history. Whilst we think it is an important one we are happy to be debated on this view and look forward to discussions on the subject!

A History of Superpowers and Geopolitical Stability/Instability: 323 BC – 1991 AD

So what is the historical case for and against this view? Here we look at the history of geopolitical tensions through the lens of the rise and fall of the world's great empires.

"Heaven cannot brook two suns, nor earth two masters." Alexander the Great

Perhaps one of the earliest historical episodes in favor of the view that it is the fall of a great power which leads to a structural rise in geopolitical tensions is the fate of the Ancient World[2] following the death of Alexander the Great in 323 BC. Upon his death his Empire, which covered most of the known powers of the world and had enjoyed relative internal peace under this single rule, went through 40 years of internal fighting as none of those who fought to be his successor was strong enough to dominate the rest. Eventually four relatively stable successor states were carved out from his empire although geopolitical tensions continued to run high in the region and wars between the successors continued to flare up. This period of high geopolitical tension was only ended by the conquest of the entire region by the Ancient world's next superpower, Rome. Thus here in the fall of an Ancient superpower we can see the raw mechanics of how a dynamic superpower model of "world" geopolitical tensions would work. The fall of the dominant world force, replaced by a number of relatively equal powers results in a structural heightening of geopolitical tensions which lasts on-and-off for a sustained period of time and is only ended with the rise of the next truly dominant force.

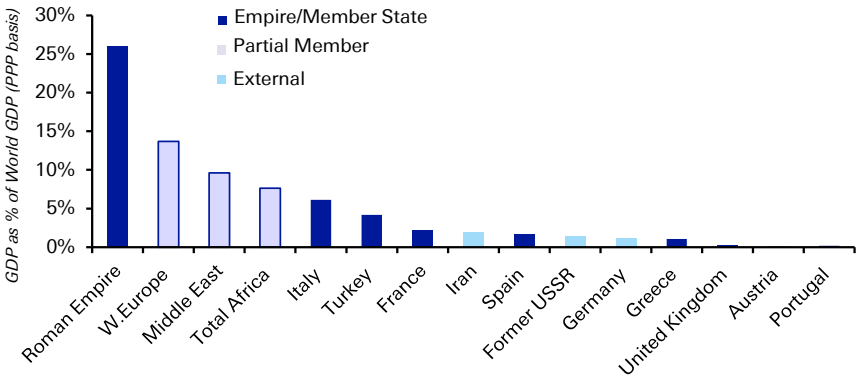
"Pax Romana"

Whilst the rise of Rome was undoubtedly a period of high geopolitical tension as it fought and overcame various competitor powers of greater, equal or lesser stature, once it had ascended to the pinnacle of world[3] power and its internal politics was set in order the "world" as it was then known experienced an incredible two centuries of peace known as the Pax Romana, marking a dramatic structural reduction in geopolitical tensions. In Figure 87 we show the extent of Rome's power, measured in terms of its economic output, compared to total world output (that is the whole world rather than the contemporary "known" world) and to its near abroad competitors output. What is clear is the absolute economic dominance of Rome during this period. Roughly speaking, the Roman Empire controlled a little over 25% of total world output on a PPP basis. By comparison its largest competitors, Parthia (whose territory in modern terms is chiefly Iran) and Germany, controlled around 2% and 1% of world output respectively. Whilst economic output is not the only important variable in understanding the ability of a nation or empire to exert global power, it is probably the most important basic element as it determines the total pool of resources that can be devoted to war. Of course the ability of the nation to transform its raw economic potential into "genuine" geopolitical power is also important, we will discuss this later as the "geopolitical multiplier."

[2] Here the "world" is defined as the empire's contemporaries would have thought of it – as Macedonia, Greece, the Middle East and Egypt

[3] Here the "world" is defined as the empire's contemporaries would have thought of it – as Western Europe, North Africa and the Middle East

Figure 87: The World in 1AD: Pax Romana



Source: Deutsche Bank, 'The World Economy, a millenial perspective (2001). Paris: OECD.

Just as the fall of Alexander's empire clearly illustrates how geopolitical tensions can structurally rise as the dominant power is replaced by a number of equal competitors, so the rise of Rome illustrates how geopolitical tensions can structurally fall as various competing powers are replaced by a single dominating power.

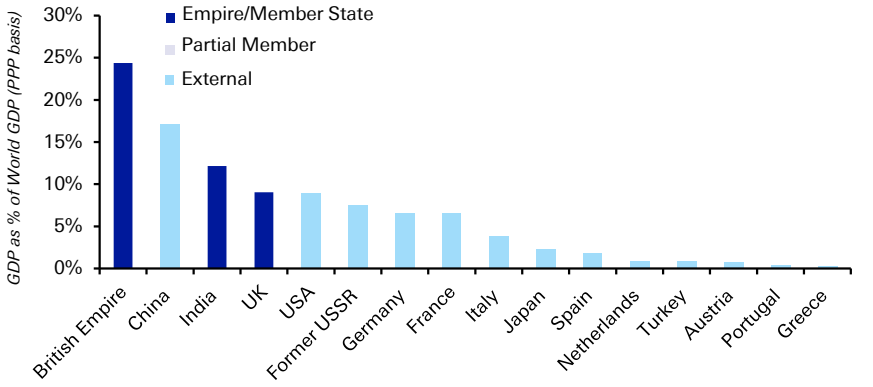
Rome also provides an important counter argument to the view that having a single dominant power ensures "peace". Whilst the Pax Romana was a period of peace for the Roman world it was preceded and succeeded by periods of violent internal strife even as the Roman empire maintained a similar level of control as during its two centuries of peace. Therefore we need to attach an important caveat to the broader thesis – having a single dominant power helps create geopolitical stability so long as it is itself internally stable.

"We are not interested in the possibilities of defeat; they do not exist." Queen Victoria

Various powers came and went in the centuries after the fall of Rome – from the Franco-German empire of Charlemagne, through the Middle Eastern and North African Islamic worlds entwined kingdoms to the Pan Asian Mongolian Empire and the vast cross-Atlantic Empire of Spain. However none achieved quite the same level of internally stable, externally dominant sustained power required to achieve a structural reduction in the heightened level of global geopolitical tensions that the fall of Rome and the onset of the "Dark Ages" had brought on.

The next power to be internally stable, with no rivals of equal strength and in control of 20%+ of world output as Rome had, was the British Empire through its apex from the fall of Napoleon in 1815 through to the start of WWI in 1914 (Figure 88). Here we no longer need to qualify what we mean by "world" power as communication and transportation technology had developed to such an extent that powers were no longer confined to their geographic near abroad and could exert power and influence across the globe. The British Empire was a truly global empire and as such can be seen to have structurally reduced geopolitical tensions on a global scale.

Figure 88: The World in 1870: "Pax Brittanica"



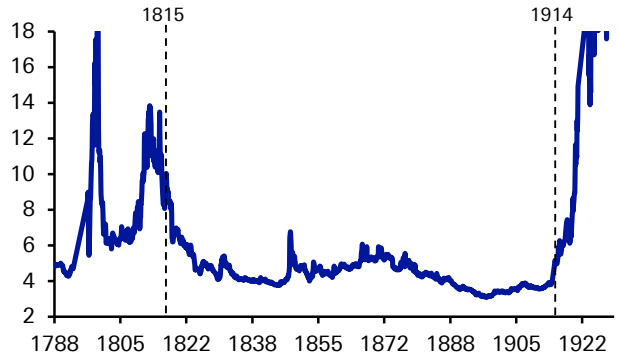
Source: Deutsche Bank, 'The World Economy, a millenial perspective (2001). Paris: OECD.

Much as Rome's two centuries of peaceful domination became known as the Pax Romana, some historians have referred to this 1815-1914 period as the Pax Brittanica, although comparisons to Rome come loaded not just with that ancient Empire's rise and apex but also its fall. The rise and fall of the British Empire again provides evidence for both sides of our superpower model for geopolitical tension – both that it is the lack of a clear dominant power that can structurally heighten geopolitical tensions and that with the existence of such a power tensions can be structurally lower.

Before Britain's victory in the Napoleonic Wars, the balance of world power had been relatively equally divided between the British, French, Austrian and Russian Empires, and Europe had been in a state of near perpetual war for over two decades. The trigger for this series of wars had been the French Revolution and France's subsequent expansion which put France into a strong enough position to challenge industrialising Britain and her vast empire for global supremacy. Thus here we see how it is not necessarily only the fall of a dominant power that can change the global balance of power and so structurally shift the level of geopolitical tension, but also possibly the rise and rapid expansion of a genuine competitor.

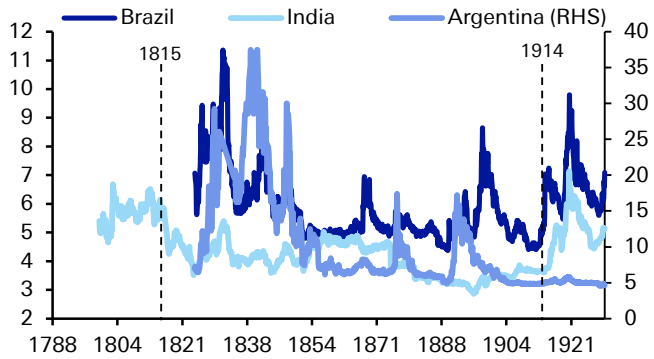
After Britain and her allies success in the war, the global balance of power shifted firmly in favour of Britain and the wider world entered a period of prolonged relative geopolitical stability, which was reflected in the remarkably low level of government bond yields around the world through this period, most notably in the world's "Great Powers" of the UK, France, Austria and Russia (Figure 89-Figure 90).

Figure 89: Great Power* Long Gov Bond Yields (Average)



Source: Deutsche Bank, GFD / *Note – "Great Power" refers to the UK, France, Austria and Russia

Figure 90: Rest of World Yields



Source: Deutsche Bank, GFD

There were however notable if short-lived exceptions to this century of geopolitical stability. The powers of continental Europe continued to fight one another for continental land and influence and the USA suffered a brutal civil war. Thus it is clear that the rise of a dominant world superpower does not ensure world peace. Perhaps here it is important to separate out "temporary" geopolitical tension escalations and the kind of structural rise in geopolitical tensions we are chiefly seeking to understand. Of the four major European wars during this 1815-1914 period, the average length was less than one year. In general during this time European wars were shorter, less frequent and on a smaller scale to the periods before and after. And as we can see from the government bond yield charts above, it is hard to see any sustained rise in yields during this period to a level seen on either side of this century of British dominance. Perhaps the important take-away from this British century is that the dominance of a single internally stable superpower does structurally lower geopolitical tensions, however this does not mean there won't be periodic spikes in tensions particularly in regions where the superpower struggles to bring its full power to bare. Whilst the British Empire was undoubtedly economically dominant which enabled it to maintain unrivalled naval strength, it wasn't able to project the same level of military power on land which perhaps allowed for temporary surges in geopolitical tensions.

Even so, this argument shouldn't be over-emphasised. Whilst the British Empire's "hard power" on land may not have been over-awing, we should not underestimate the ability Britain had to influence events thanks on the one hand to Britain's commercial networks and financial strength, and on the other Britain's "soft power". Soft power is a concept which refers to the ability of a nation to attract and co-opt others into supporting and following the course desired by that nation. Examples of the sources of soft power are a nation's cultural reach, the attractiveness of its core values, institutions and policies, and indeed its long standing diplomatic ties to nations. The British Empire excelled in this attraction and co-option of other nations and (perhaps more so) their political elites. Such economic, financial and "soft" power allowed Britain to project influence across Europe and the globe well beyond the reach of its armies.

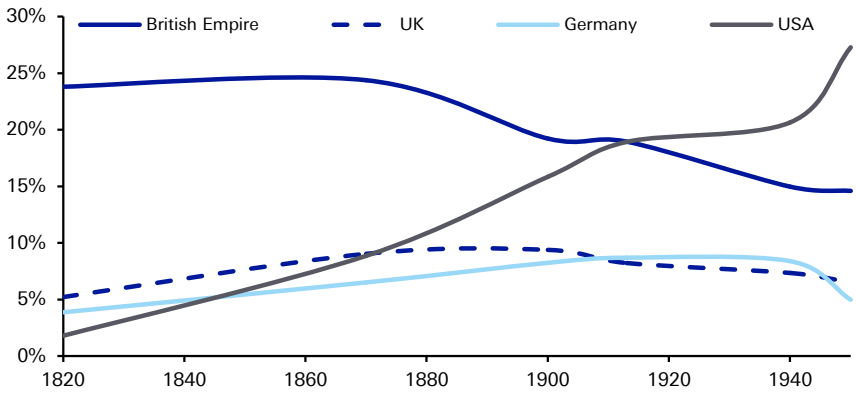
"Not by speeches and votes of the majority, are the great questions of the time decided … but by iron and blood" Otto von Bismarck

The example of the relative decline of British superpower dominance in the later part of the 19th and first half of the 20th centuries perhaps provides the strongest historical evidence yet that the decline of a dominant single power

and the rise of rival near-equal powers has historically led to a structural rise in geopolitical tensions.

The rapid industrialisation and rise of the US and Germany (and to a lesser extent Japan) saw the British Empire's dominant position begin to be eroded in the last quarter of the 19th century (Figure 91).

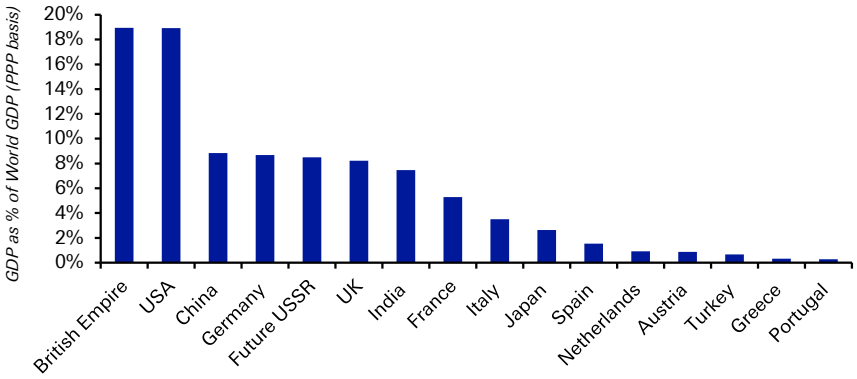
Figure 91: The Rise of Competitors



Source: Deutsche Bank, 'The World Economy, a millenial perspective (2001). Paris: OECD.

By 1913 the global balance of power had become finely poised. The British Empire had slipped below the 20% of world GDP level that from our analysis has been the historic sign of a true superpower but, perhaps more importantly, the British Empire and the UK now had viable rivals. On a global scale the US was now as economically large as the British Empire, whilst in the "Old World" of Europe Germany, the Russian empire and France had all caught up with the UK to such an extent that they considered themselves viable rivals (Figure 92).

Figure 92: The World on the Brink of War (1913)

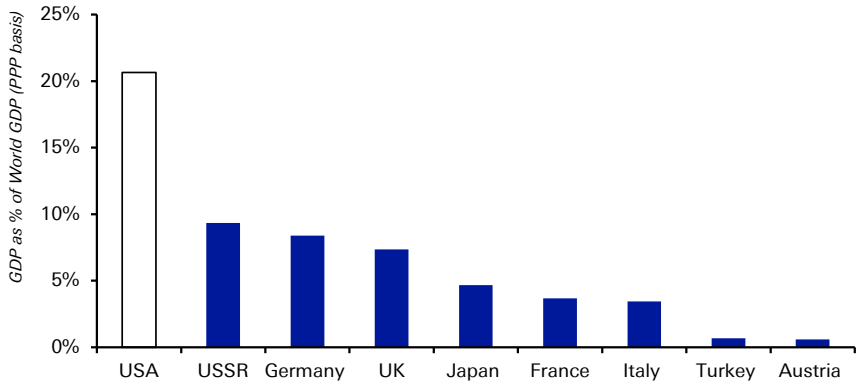


Source: Deutsche Bank, 'The World Economy, a millenial perspective (2001). Paris: OECD.

Thus began the greatest period of global geopolitical instability in world history. Between 1914 and 1945 the world as it had been known in 1913 tore itself apart through two global wars and a global economic depression. Whilst the momentous events of the first half of the twentieth century had many underlying long-term and short-term causes, a major factor was the erosion of Britain's previously unchallenged position as the global superpower, most notably by Germany. This "world without a leader" situation continued even after WWI was won by the Allies even though by the interwar period the US had become the undoubted global economic power and had the resources and

networks available to it to claim the mantle of global hegemon (Figure 93). The US did not take on this responsibility until it was forced upon it in the depths of WW2. In this we find the next caveat to our dominant superpower drives structurally lower geopolitical risk view – it does not work if the superpower follows a policy of isolation as the US largely did before 1941.

Figure 93: The Interwar World (1940): The Absent Hegemon



Source: Deutsche Bank, 'The World Economy, a millenial perspective (2001). Paris: OECD.

Once the US committed to be an active member of the world system, it became the world power its economy enabled it to be. This fact was clear to contemporaries. After the US entered WWII in 1941, Winston Churchill wrote that:

"To have the United States at our side was to me the greatest joy. Now at this very moment I knew the United States was in the war, up to the neck and in to the death. So we had won after all!…Hitler's fate was sealed. Mussolini's fate was sealed. As for the Japanese, they would be ground to powder."

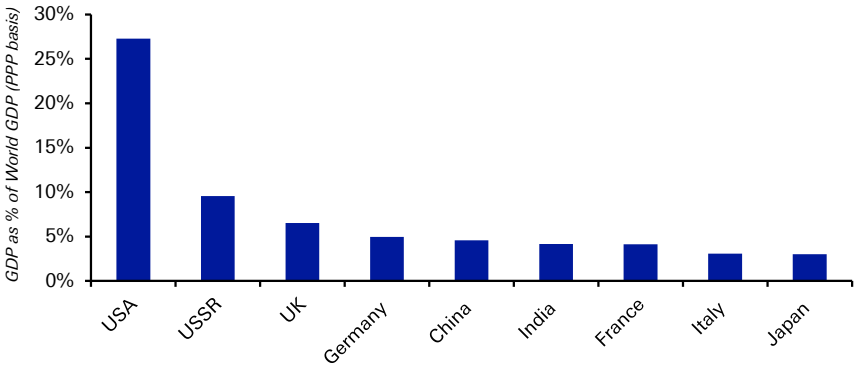
The US became the, "Arsenal of Democracy", the Allies went on to win the war and geopolitical tensions structurally declined from their wartime highs. However here it is important to note that they did not fall to the kind of lows our model of superpower geopolitical tension determination might on the face of it suggest given the size of the US economy (Figure 94).

The reason is that whilst the world had a single economic superpower in the US, it had two committed geopolitical superpowers. On the geopolitical scene the USSR outperformed its economy. As we have already discussed, a superpower is not only determined by its relative economic power but also by its ability to bring that power to bear. The totalitarian nature of the Soviet government meant that it was better able to harness its economy to support the global projection of its power (for example it was by most estimates able to match and even exceed US defence spending levels by the late 1960's and through the 1970s and 1980s despite the fact its economy was much smaller than America's, at the expense of consumers) and also had the magnetic "soft power" that its Communist ideology gave it, which helped draw other nations to its cause in much the same way that the US gained support through its championing of liberal democracy.

So whilst the US hit the kinds of +20% share of world GDP levels seen by previous dominant superpowers, it had a rival geopolitical superpower. This helps explain why even though geopolitical tensions fell from the highs they hit in 1914-1945 era of multiple competing "great" (rather than "super") powers, they did not fall to the lows seen at the peak of British (or Roman) absolute

dominance. The world experienced a number of "indirect" wars fuelled by US-USSR competition (from the Greek Civil war, through the Korea and Vietnam Wars and on to Soviet invasion of Afghanistan) as well as heightened tensions brought on by the threat of all-consuming nuclear war, most pointedly felt during the Cuban Missile Crisis.

Figure 94: Cold War Geopolitics: 1950



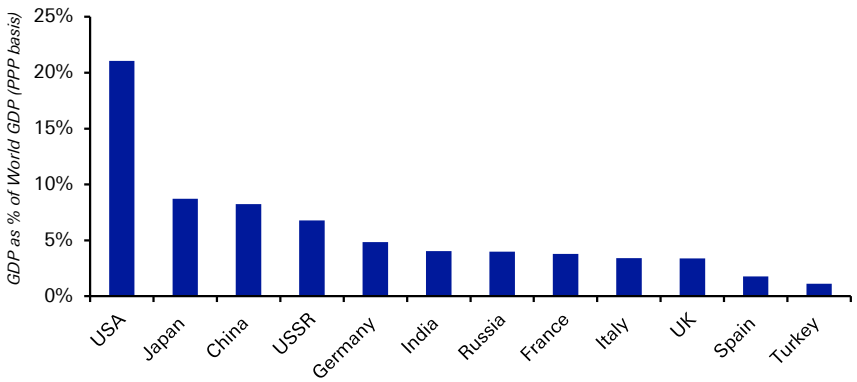
Source: Deutsche Bank, 'The World Economy, a millenial perspective (2001). Paris: OECD.

With the collapse of the Soviet Union, the Cold War ended and the US became the world's undoubted single superpower both economically (Figure 95) and more importantly in terms of its global influence. As Sunday Telegraph Journalist Peregrine Worsthorne put it in 1991,

"The result is that the United States now appears as a world power hors de pair. Its superiority in politico-military power over the Soviet Union leaps to the eye and seems to have impressed even the Red Army generals. It is the one country in the world that has the ability to fight a large-scale high-technology war. This is a gap that can only increase as President Gorbachev struggles with growing economic collapse and political disintegration at home. There are now no longer two superpowers. There is one hyper-power with all the rest far behind."

With the rise of the US to global dominance, the level of geopolitical tensions structurally declined from their elevated Cold War levels. Again this is not to say there were not wars or periods of heightened geopolitical tensions around the world. But these tension spikes were broadly regional in nature and generally temporary in nature.

Figure 95: US Dominance: 1991 Hyperpower



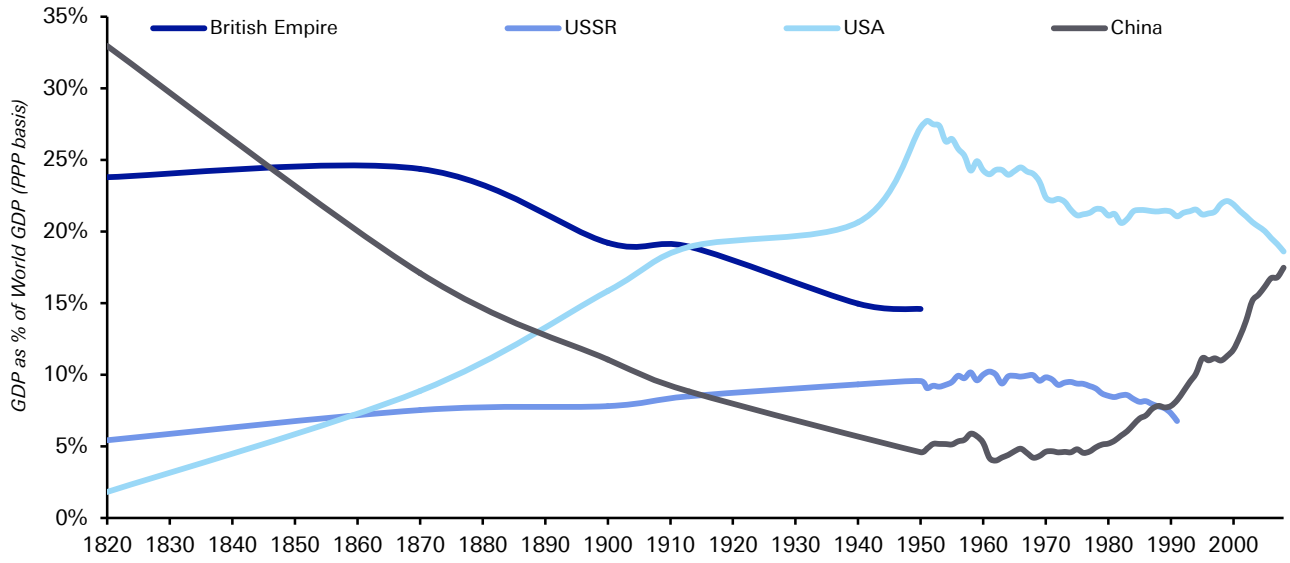
Source: Deutsche Bank, 'The World Economy, a millenial perspective (2001). Paris: OECD.

This is the modern world

"Let China sleep, for when she awakes, she will shake the world." Napoleon Bonaparte

However history did not end with the Cold War and, as Mark Twain put it, whilst history doesn't repeat it often rhymes. As Alexander, Rome and Britain fell from their positions of absolute global dominance, so too has the US begun to slip. America's global economic dominance has been declining since 1998, well before the Global Financial Crisis. A large part of this decline has actually had little to do with the actions of the US but rather with the unraveling of a century's long economic anomaly. China has begun to return to the position in the global economy it occupied for millenia before the industrial revolution (Figure 96).

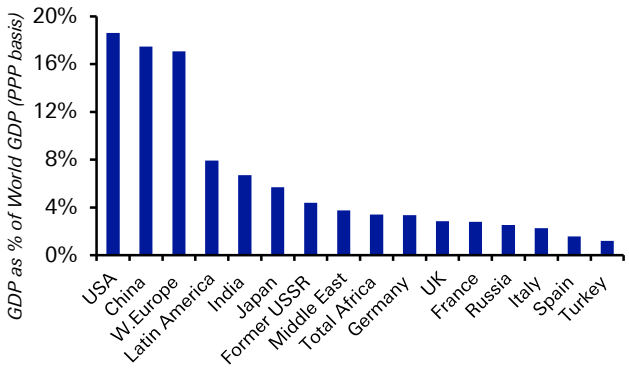
Figure 96: The Rise and Fall of Modern Empires



Source: Deutsche Bank, 'The World Economy, a millenial perspective (2001). Paris: OECD.

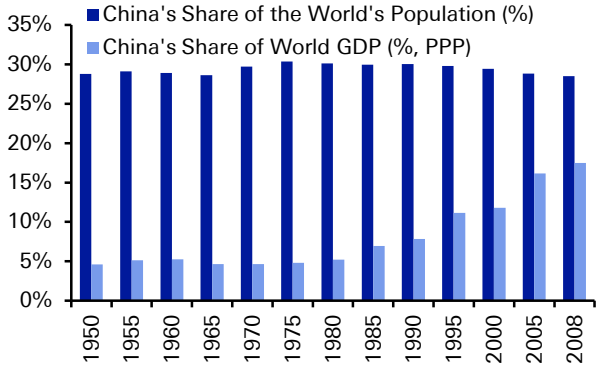
In 1950 China's share of the world's population was 29%, its share of world economic output (on a PPP basis) was about 5% (Figure 98). By contrast the US was almost the reverse, with 8% of the world's population the US commanded 28% of its economic output.

Figure 97: World Economy Standings - 2008



Source: Deutsche Bank, 'The World Economy, a millenial perspective (2001). Paris: OECD.

Figure 98: China – Population vs Economy



Source: Deutsche Bank, 'The World Economy, a millenial perspective (2001). Paris: OECD., UN Population Database

By 2008, China's huge, centuries-long economic underperformance was well down the path of being overcome (Figure 97). Based on current trends China's economy will overtake America's in purchasing power terms within the next few years. The US is now no longer the world's sole economic superpower and indeed its share of world output (on a PPP basis) has slipped below the 20% level which we have seen was a useful sign historically of a single dominant economic superpower. In economic terms we already live in a bi-polar world. Between them the US and China today control over a third of world output (on a PPP basis).

However as we have already highlighted, the relative size of a nation's economy is not the only determinant of superpower status. There is a "geopolitical" multiplier that must be accounted for which can allow nations to outperform or underperform their economic power on the global geopolitical stage. We have discussed already how first the unwillingness of the US to engage with the rest of the world before WWII meant that on the world stage the US was not a superpower inspite of its huge economic advantage, and second how the ability and willingness of the USSR to sacrifice other goals in an effort to secure its superpower status allowed it to compete with the US for geopolitical power despite its much smaller economy. Looking at the world today it could be argued that the US continues to enjoy an outsized influence compared to the relative size of its economy, whilst geopolitically China underperforms its economy. To use the term we have developed through this piece, the US has a geopolitical multiplier greater then 1, whilst China's is less than 1. Why?

On the US side, almost a century of economic dominance and half a century of superpower status has left its impression on the world. Power leaves a legacy. First the USA's "soft power" remains largely unrivalled - US culture is ubiquitous (think McDonald's, Hollywood and Ivy League universities), the biggest US businesses are global giants and America's list of allies is unparalleled. Second the US President continues to carry the title of "leader of the free world" and America has remained committed to defending this world. Although more recently questions have begun to be asked (more later), the US has remained the only nation willing to lead intervention in an effort to support this "free world" order and its levels of military spending continues to dwarf that of the rest of the world. US military spending accounts for over 35% of the world total and her Allies make up another 25%.

In terms of Chinese geopolitical underperformance there are a number of plausible reasons why China continues to underperform its economy on the global stage. First and foremost is its list of priorities. China remains

committed to domestic growth above all other concerns as, despite its recent progress, millions of China's citizens continue to live in poverty. Thus so far it has been unwilling to sacrifice economic growth on the altar of global power. This is probably best reflected in the relative size of its military budget which in dollar terms is less than a third the size of Americas. Second China has not got the same level of soft power that the US wields. Chinese-style communism has not had the seductive draw that Soviet communism had and to date the rise of China has generally scared its neighbors rather then made allies of them.

These factors probably help explain why in a geopolitical sense the US has by and large appeared to remain the world's sole superpower and so, using the model of superpower dominance we have discussed, helps explain why global geopolitical tensions had remained relatively low, at least before the global financial crisis.

However there is a case to be made that this situation has changed in the past five or so years. Not only has China's economy continued to grow far faster than America's, perhaps more importantly it can be argued that the USA's geopolitical multiplier has begun to fall, reducing the dominance of the US on the world stage and moving the world towards the type of balanced division of geopolitical power it has not seen since the end of the Cold War. If this is the case then it could be that the world is in the midst of a structural, not temporary, increase in geopolitical tensions.

Why do we suggest that the USA's geopolitical multiplier, its ability to turn relative economic strength into geopolitical power, might be falling? Whilst there are many reasons why this might be the case, three stand out. First, since the GFC the US (and the West in general) has lost confidence. The apparent failure of laissez faire economics that the GFC represented combined with the USA's weak economic recovery has left America less sure then it has been in at least a generation of its free market, democratic national model. As this uncertainty has grown, so America's willingness to argue that the rest of the world should follow America's model has waned. Second the Afghanistan and in particular the Iraq War have left the US far less willing to intervene across the world. One of the major lessons that the US seems to have taken away from the Iraq war is that it cannot solve all of the world's problems and in fact will often make them worse. Third, the rise of intractable partisan politics in the US has left the American people with ever less faith in their government.

The net result of these changes in sentiment of the US people and its government has been the diminishment of its global geopolitical dominance. The events of the past 5+ years have underlined this. Looking at the four major geopolitical issues of this period we raised earlier – the outcome of the Arab Spring (most notably in Syria), the rise of the Islamic State, Russia's actions in Ukraine and China's regional maritime muscle flexing – the US has to a large extent been shown to be ineffective. President Obama walked away from his "red line" over the Syrian government's use of chemical weapons. The US has ruled out significant intervention in Northern Iraq against the Islamic State. America has been unable to restrain Pro-Russian action in Ukraine and took a long time (and the impetus of a tragic civilian airplane disaster) to persuade her allies to bring in what would generally be considered a "first response" to such a situation - economic sanctions. And so far the US has had no strategic response to China's actions in the East and South China seas. Importantly these policy choices don't necessarily just reflect the choice of the current Administration but rather they reflect the mood of the US people. In Pew's 2013 poll on America's Place in the World, a majority (52%) agreed that "the US should mind its own business internationally and let other countries get along the best they can on their own". This percentage compares to a read of 20% in 1964, 41% in 1995 and 30% in 2002.

The geopolitical consequences of the diminishment of US global dominance

Each of these events has shown America's unwillingness to take strong foreign policy action and certainly underlined its unwillingness to use force. America's allies and enemies have looked on and taken note. America's geopolitical multiplier has declined even as its relative economic strength has waned and the US has slipped backwards towards the rest of the pack of major world powers in terms of relative geopolitical power.

Throughout this piece we have looked to see what we can learn from history in trying to understand changes in the level of structural geopolitical tension in the world. We have in general argued that the broad sweep of world history suggests that the major driver of significant structural change in global levels of geopolitical tension has been the relative rise and fall of the world's leading power. We have also suggested a number of important caveats to this view – chiefly that a dominant superpower only provides for structurally lower geopolitical tensions when it is itself internally stable. We have also sought to distinguish between a nation being an "economic" superpower (which we can broadly measure directly) and being a genuine "geopolitical" superpower (which we can't). On this subject we have hypothesised that the level of a nations geopolitical power can roughly be estimated multiplying its relative economic power by a "geopolitical multiplier" which reflects that nations ability to amass and project force, its willingness to intervene in the affairs of the world and the extent of its "soft power".

Given this analysis it strikes us that today we are in the midst of an extremely rare historical event – the relative decline of a world superpower. US global geopolitical dominance is on the wane – driven on the one hand by the historic rise of China from its disproportionate lows and on the other to a host of internal US issues, from a crisis of American confidence in the core of the US economic model to general war weariness. This is not to say that America's position in the global system is on the brink of collapse. Far from it. The US will remain the greater of just two great powers for the foreseeable future as its "geopolitical multiplier", boosted by its deeply embedded soft power and continuing commitment to the "free world" order, allows it to outperform its relative economic power. As America's current Defence Secretary, Chuck Hagel, said earlier this year, "We (the USA) do not engage in the world because we are a great nation. Rather, we are a great nation because we engage in the world." Nevertheless the US is losing its place as the sole dominant geopolitical superpower and history suggests that during such shifts geopolitical tensions structurally increase. If this analysis is correct then the rise in the past five years, and most notably in the past year, of global geopolitical tensions may well prove not temporary but structural to the current world system and the world may continue to experience more frequent, longer lasting and more far reaching geopolitical stresses than it has in at least two decades. If this is indeed the case then markets might have to price in a higher degree of geopolitical risk in the years ahead.

Mean Reversion Conclusions

We now move on to the data-heavy back section of the report which includes all the long-term returns data from bonds and equities across numerous global markets. First we update our annual mean reversion exercise. One of the original motivations for first compiling this report back in 2005 was the belief that traditional developed world asset classes exhibited a rhythm of returns through time that were subject to clear mean reversion tendencies. In every edition of this report we've updated what we consider to be the potential future returns of various asset classes based on them mean reverting over different time horizons.

This a US centric exercise given the long unbroken history available. However we continue to include EUR and GBP credit.

In Figure 99 we show what nominal and real returns could be over the next decade if assets revert back to their long-term average valuations. A brief appendix is posted at the end of this section that takes us through our methodology for the mean reversion exercise. It basically assumes that earnings, PE valuations, inflation, real yields and economic growth return to their long-run averages/trend.

The results are only meant to be a relative value guide and work best on a relative basis across asset classes and the longer the time horizon you view them over. As discussed earlier, we have mainly concentrated on USD assets in this section. This enables us to delve deeper into history to analyse the long-term rhythm of returns. In reading the results, hopefully one will be able to understand the type of returns that a sophisticated Developed Market sees through time.

As we discussed in the first chapter, US equities are one of the most expensive equity markets due to earnings being so far above trend so care must be taken to extrapolate the results across other markets.

Figure 99: Potential Annualised Returns Based on Full Mean Reversion over Different Time Horizons

		Actual LT Annualised Return*		Mean Reversion Expected Nominal Returns			Mean Reversion Expected Real Returns		
		Nominal	Real	3yr	5yr	10yr	3yr	5yr	10yr
US Assets	Equity (Trend Earnings/Average PE)	8.6%	6.8%	-15.9%	-7.6%	-0.9%	-18.2%	-10.0%	-3.4%
	Equity (Trend Earnings/Average PE since 1958)	8.6%	6.8%	-8.0%	-2.5%	1.9%	-10.5%	-5.1%	-0.8%
	Treasury (10yr)	5.1%	3.3%	-3.7%	-0.7%	1.5%	-6.3%	-3.4%	-1.1%
	Treasury (30yr)	4.7%	1.6%	-6.0%	-2.1%	0.9%	-8.6%	-4.7%	-1.7%
	IG Corporate Bond	5.7%	2.6%	-4.4%	-0.8%	2.0%	-7.0%	-3.4%	-0.6%
	BBB Bond	6.7%	3.9%	-4.7%	-0.8%	2.2%	-7.3%	-3.4%	-0.5%
	Property	3.5%	0.4%	-8.9%	-4.5%	-1.0%	-11.4%	-7.0%	-3.6%
	Gold	2.0%	0.3%	-20.6%	-12.0%	-5.0%	-22.7%	-14.3%	-7.4%
	Oil	1.5%	-0.7%	-21.9%	-12.9%	-5.5%	-24.0%	-15.2%	-7.9%
High Yield	USD High Yield	8.8%	5.9%	-1.8%	1.2%	3.4%	-4.4%	-1.5%	0.8%
	Treasury (Duration Matched)	6.3%	3.5%	-2.4%	0.0%	1.9%	-5.0%	-2.6%	-0.8%
	EUR High Yield			-4.1%	-0.6%	2.0%	-6.3%	-2.8%	-0.1%
	Treasury (Duration Matched)			-3.8%	-1.2%	0.7%	-6.4%	-3.8%	-1.9%
iBoxx EUR	Corporate Bond			-4.0%	-1.0%	1.2%	-6.2%	-3.2%	-0.8%
	BBB Bond			-3.2%	-0.5%	1.5%	-5.5%	-2.7%	-0.6%
	Non-Financial Bond			-4.7%	-1.5%	1.0%	-6.9%	-3.6%	-1.1%
	Non-Financial BBB Bond			-3.7%	-0.9%	1.2%	-6.0%	-3.1%	-0.9%
	Bund (Duration Matched)			-4.4%	-1.6%	0.6%	-6.6%	-3.7%	-1.5%
iBoxx GBP	Corporate Bond			-4.2%	-0.5%	2.3%	-6.7%	-3.0%	-0.1%
	BBB Bond			-1.3%	1.2%	3.2%	-3.9%	-1.3%	0.7%
	Non-Financial Bond			-5.1%	-1.2%	1.9%	-7.6%	-3.6%	-0.6%
	Non-Financial BBB Bond			-2.5%	0.4%	2.7%	-5.0%	-2.1%	0.2%
	Gilt (Duration Matched)			-4.5%	-1.1%	1.4%	-6.9%	-3.6%	-1.0%
iBoxx USD	Corporate Bond			-2.4%	0.4%	2.5%	-5.1%	-2.3%	-0.1%
	BBB Bond			-1.6%	0.9%	2.8%	-4.2%	-1.8%	0.1%
	Non-Financial Bond			-3.5%	-0.3%	2.2%	-6.1%	-2.9%	-0.5%
	Non-Financial BBB Bond			-2.5%	0.3%	2.4%	-5.2%	-2.4%	-0.2%
	Treasury (Duration Matched)			-3.7%	-0.7%	1.5%	-6.3%	-3.4%	-1.1%

*Note: * - Based on longest available series in our historical returns analysis.*
Source: Deutsche Bank, GFD

For equities we use two slightly different methods. Method 1 simply looks at mean reverting earnings back to their long-term trend and PE ratios back to their long-term average. Method 2 recognises that earnings growth may have increased (albeit slightly) post 1958 and uses the trend line of earnings seen since then and the (again slightly higher) average PE ratio seen since. We have often noted and again alluded to it earlier in this study that up until 1958 dividend yields were always above bond yields. This situation reversed for the next 50 years when in November 2008 S&P 500 dividends briefly crossed above bond yields again. Since this point the two have crossed a few times. Last year's move higher in 10 year Treasury yields saw bond yields back above dividend yields and despite seeing yields decline this year, bond yields still remain above the c.2.0% dividend yield currently offered by the S&P 500.

The jury is still out however as to whether the post 1958 move to lower dividends and perhaps higher earnings growth has actually been positive or negative for equity returns. We think it's actually been negative as there is no conclusive evidence that earnings have broken permanently higher (and not just cyclically) from their long-term trend post-1958. Basically returns seem to be higher when investors receive dividends rather than when companies retain dividends and attempt to expand their businesses. We've written about this in length in previous studies for those that want to explore the arguments further.

Overall this leaves us preferring method 1 but we've included both results in the exercise for those that think it's a slightly different market now to that seen prior to 1958 and the great dividend crossover.

If we use method 1, annualised real returns on this method show a negative trend over the next decade. In fact following the strength in equities last year the nominal returns based on this analysis also look to be negative. The returns are slightly better if you use method 2 although real returns over the next decade still just about fall into negative territory. The important point to note is that the returns based on this analysis are comfortably below the longer-term averages using either method. This backs up our claim that US equities are expensive on an historical basis.

Before we move on from equities we should stress that the biggest problem with valuations today is that earnings/profits in the US are at a very high share of GDP relative to history. If this does eventually mean revert, our low future return numbers are absolutely justifiable. If however we've moved to a permanent new plateau of higher earnings relative to the size of the economy then our numbers are too low.

Potential Treasury returns for both 10yr and 30yr Treasuries sit it between the results for the two different methods for equities. However due to the fall in yields we've seen so far in 2014 the potential returns are lower, particularly for the 30yr Treasury, than they were when we published last year. If we assume mean reversion over the next decade then 30yr Treasuries are expected to return just under 1% p.a. in nominal terms with the outcome for 10yr Treasuries (1.5% p.a.) slightly better. Real returns are expected to be negative for both, a point we have already made earlier in this report.

Future credit returns also look challenging based on this analysis with the potential LT IG corporate and BBB returns around 2% p.a. assuming we mean revert over the next decade. This is some way below the LT average levels of around 6% p.a with real returns expected to be negative. On a more positive note LT credit is expected to outperform Treasuries by around 1% p.a. Extending this analysis to the iBoxx indices gives us a broadly similar outcome with real returns expected to be negative if we mean revert over the next decade. The main exception here is GBP BBBs although even then potential returns are only just in positive territory. Across the board, credit should outperform equivalent government bonds over the medium to long-term though which confirms our analysis in the first section that spread valuations aren't extreme.

Looking now at HY we can see the potential real returns for USD HY assuming mean reversion over the next decade are still positive although the 3.4% p.a. nominal return is considerably below the near 9% p.a. average level through history. Even the potential excess returns of around 1.5% p.a. don't look that impressive, particularly when compared to IG excess returns, and are lower than they were in last year's publication. EUR HY potential returns are even lower, largely due to the shorter duration and lower yield government bond environment. However this exercise mean reverts defaults back to long-term averages. Over the last decade HY defaults have been below average for nine out of the last ten years so when interpreting these results this should be considered.

For property, using Robert Shiller's long-term data back to 1900, the asset class still appears slightly expensive on a mean reversion basis. In nominal terms our mean reversion suggests house prices could fall by around 1% p.a. over the next decade. It's worth noting that this is the second year in a row where potential returns have fallen based on this analysis. Probably affected by

what has been a general improvement in US real estate in recent years. We should note that this exercise purely looks at mean reverting to its long-term trend relative to inflation. In the first section we looked at global house prices against rents and income and over a shorter period. On this basis US property looks cheaper relative to history.

Overall, the asset class that continues to stand out in this exercise is Commodities. If mean reversion of long-term data back over the last century was your only guide then Oil and Gold are likely to have poor decades in nominal (-5.0% to -5.5% p.a.) and real (-7.4% to -7.9% p.a.) terms. It's worth noting however that our earlier analysis showed that while some commodities such as Oil and Gold are closer to the upper end of their historic valuations there are some commodities, mainly agricultural ones, which are much closer to the cheaper end of their LT valuations.

We now look at the methodology of this mean reversion exercise and then move on to the data bedrock of the piece which is the database of long-term returns across the globe. First we look at the US and then other international markets.

Mean reversion assumptions

As an appendix to this section we outline the methodology and the variables that we have mean reverted in order to calculate potential returns for the various asset classes discussed in this study.

Inflation

The starting point, which is essential for calculating possible future returns across all asset classes (including equities), is to get a future CPI time series. For this we have just reverted the YoY growth in CPI to its long-term average (around 3.2%).

Equities

For equities although we have used slightly different methodologies the broad principles were the same. Essentially we first calculate a mean reverted price series. We do this by first reverting real earnings back to their long-term trend line. We mean revert the current PE ratio back to its long-term average. Combining the reverted earnings and PE ratios we then calculate a price. In order to calculate total returns we have assumed real dividends revert back to their long-term trend line. By combining the prices and the dividends we calculate total returns. As already mentioned we used two slightly different methodologies the specific of which are outlined in the bullets below.

- Method 1: We revert earnings, PE ratios and dividends back to their long-term trend/averages using all available data back to 1871.
- Method 2: We revert earnings, PE ratios and dividends back to their long-term trend/averages based on data since 1958. As already mentioned this recognises that earnings growth may have increased (albeit slightly) post 1958 and the previously discussed dividend crossover.

Treasury/Government bond mean reversion

For Treasuries and other Government bond series we have reverted to the long-term average real yield which has been calculated by subtracting YoY CPI from the nominal bond yield. We can then use these yields to calculate prospective returns.

Corporate bond mean reversion (IG and HY)

For corporate bonds we mean revert credit spreads to their long-term average level. These spreads coupled with the already calculated Treasury/Government bond yields give us an overall corporate bond yield that can be used to calculate possible future returns. We have used appropriate duration matched Treasury/Government yields for the various different corporate bond series.

For the iBoxx indices, which only have data back to 1999, we have created a longer-term spread series by regressing the iBoxx spread data against the Moody's long-term spread series. The results of the regression can be used to calculate a longer-term spread series, which can be used to calculate the long-term average level that is then used for mean reversion purposes.

For further details on how we have calculated bond returns (both Government and corporate) please refer to a previous version of this report (100 Year of Corporate Bond Returns Revisited, 5th November 2008).

US property and commodity mean reversion

For both US property and the various commodity series we have calculated a real adjusted price series and simply mean reverted to the long-term average level of these series.

Historical US Asset Returns

We now look at long-term US returns going back to the start of the 19th century (where possible). Figure 100 and Figure 101 show why we invest in assets over the medium to long-term. Using data going back over 200 years, it is quite clear that history tells us that holding cash on deposit has been a recipe for wealth erosion. We split the data up by nominal and real returns through different time periods. We also show returns annualised within each decade and also by 50 year buckets. This hopefully helps us see both cyclical and secular trends.

Over the entire sample period, Equities outperform Corporate Bonds, which outperform Government Bonds, which outperform Cash, which interestingly has outperformed the Commodities analysed in this section. Over the last 100 years (since 1915), where we have data for the widest selection of assets, Equities outperform 30yr Governments by 5.07% p.a., Corporates by 4.15% p.a. and Cash by 6.55% p.a. (on a nominal basis).

So through time equities have clearly outperformed other assets. The same is also true for the last 5 years with the annualised nominal return remaining close to the 15% area. The next best performing asset class has been corporate bonds with BBBs providing in excess of 10% p.a. in total return, which is actually better than HY (9.26%). This is a consequence of two notable factors. First of all the past 5 years now starts in 2010 and therefore excludes the particularly strong HY performance seen in 2009. Secondly recent years have benefitted from the continued decline in government bond yields and therefore as the BBB series has an average life of 30 years it benefits from the additional duration. This is highlighted by the fact 30yr Treasuries have returned 8.63% p.a. over the last 5 years while 10yr Treasuries have only returned 4.97%. The performance of both equities and credit over the last 5 years is also comfortably higher than the long-term averages.

It has been a tougher time for commodities. Oil and Copper had been among the best performing assets over the last 5 and 10 years in last year's study however Copper is now showing a negative annual return (-0.37%) over the last 5 years while the performance of Oil has been broadly in line with its annualised performance over the last 100 years. Gold is another commodity where the performance over the last 5 years is now closer to long-term averages.

Property (US) is an asset class that has only just out-paced inflation (0.43% p.a. real) over the long-term. We would stress that this is a price-only series and doesn't include potential rental yields but it's a reminder that real adjusted capital returns in the asset class can be minimal over longer time periods, especially in markets like the US where overall ample space and a lack of restrictive planning prevents their being a national supply shortage relative to demand.

Non-financial IG Corporate Bonds have steadily out-performed Government Bonds over all medium-term time periods. The levels of defaults historically seen in IG very rarely erode the additional spread the asset class provides. Periods of under-performance are much more likely to be driven by temporary spread widening. These spread changes tend to be highly cyclical whereas equity and Treasury valuations tend to exhibit a more secular pattern.

HY is still a fairly new market in the context of this study, with new issuance (rather than simply fallen angels) only existing from the mid 1980s. In this time, we've been through longer and less frequent business cycles than long-term

history, but also through two deep default cycles (2000-2003 and 2007-2009), with the former far worse for HY (especially in Europe) than it was for the overall economy. So we would argue that we don't have enough data yet to assess what a likely long-term return number for HY should be. However the excess return of 2.86% p.a. over Government Bonds since 1990 (2.49% p.a. since 1986) might be argued to be disappointing relative to the lower risk returns seen in IG credit. Much of this 'disappointment' has been obscured by the high total returns in fixed income which has given the asset class a healthy 8.70% p.a. nominal return over the last 25 years (since 1990) and 8.82% p.a. since 1986. This is relevant as HY investors are more total return biased than the more excess return biased IG investors.

In the following section (starting on page 92) we extend the analysis of historical asset returns to equity and bond markets around the world.

Figure 100: Nominal Returns for US Assets over Different Time Horizons

	Equity	Corp Bond	AAA Bond	BBB Bond	Treasury (10yr)	Treasury (30yr)	HY Bond	Treasury (HY Matched)	Treasury Bill	House Prices (Price Only)	Gold	Copper	Oil	Wheat
last 5yrs (2009-2014)	14.67%	9.47%	8.38%	10.30%	4.97%	8.63%	9.26%	2.68%	0.07%	2.54%	3.27%	-0.37%	4.27%	4.13%
last 10yrs (2004-2014)	7.31%	7.45%	6.92%	7.74%	4.91%	6.30%	7.77%	3.85%	1.44%	0.47%	11.38%	7.47%	8.48%	3.64%
last 15yrs (1999-2014)	4.01%	9.07%	8.73%	9.21%	6.08%	7.56%	7.46%	4.91%	1.84%	3.48%	10.51%	8.97%	9.31%	5.82%
last 25yrs (1989-2014)	9.47%	9.16%	8.78%	9.52%	6.83%	7.90%	8.70%	5.85%	3.08%	3.16%	4.45%	4.39%	6.19%	0.79%
last 50yrs (1964-2014)	9.80%	7.95%	7.59%	8.37%	7.20%	6.87%			5.15%	4.86%	7.45%	4.58%	7.28%	2.40%
last 75yrs (1939-2014)	10.96%	6.12%	5.67%	6.70%	5.51%	5.05%			3.95%	4.74%	4.92%	4.41%	5.01%	2.12%
last 100yrs (1914-2014)	10.13%	5.98%			5.20%	5.06%			3.58%	3.66%	4.22%	3.25%	4.30%	1.37%
last 125yrs (1889-2014)	9.22%				4.70%				3.41%		3.36%	2.16%	3.71%	1.51%
last 150yrs (1864-2014)	8.85%				4.71%				3.49%		2.24%	1.07%	1.47%	0.79%
last 175yrs (1839-2014)	8.90%				4.89%				3.71%		2.39%	1.42%		
last 200yrs (1814-2014)	8.58%				4.92%						2.06%	0.86%		
since 1800	8.55%				5.07%						1.97%	0.84%		
since 1900	9.57%	5.74%			4.77%	4.70%			3.51%	3.47%	3.66%	2.47%	3.61%	1.75%
since 1920	10.09%	6.22%	5.95%	6.73%	5.34%	5.20%			3.58%	3.66%	4.44%	3.03%	3.18%	0.75%
since 1930	9.55%	6.16%	5.89%	6.67%	5.33%	5.10%			3.55%	4.02%	4.98%	3.45%	4.19%	1.60%
since 1971	10.50%	9.39%	8.86%	9.92%	7.72%	7.85%			5.12%	4.98%	8.36%	4.16%	7.93%	2.43%
RETURNS BY DECADE														
1800-1809	11.09%				9.12%						0.00%	-1.62%		
1810-1819	4.91%				6.23%						0.00%	-4.63%		
1820-1829	6.94%				5.53%						0.00%	-1.63%		
1830-1839	5.34%				2.75%						0.67%	1.38%		
1840-1849	7.83%				7.47%				5.02%		-0.03%	-2.57%		
1850-1859	1.62%				3.98%				5.08%		0.00%	2.35%		5.70%
1860-1869	18.34%				6.30%				5.04%		1.81%	1.90%	-12.73%	-1.80%
1870-1879	7.73%				3.67%				4.11%		-1.78%	-2.05%	-14.26%	5.23%
1880-1889	5.68%				5.48%				3.04%		0.00%	-1.66%	-0.70%	-5.09%
1890-1899	5.37%				3.93%				2.33%		0.00%	-1.26%	4.88%	-1.21%
1900-1909	9.92%	4.38%			1.63%	2.17%			3.04%	1.97%	0.00%	-3.55%	-1.43%	6.06%
1910-1919	4.35%	2.62%			2.52%	2.52%			3.28%	3.15%	0.00%	3.34%	13.33%	7.19%
1920-1929	14.78%	6.73%	6.52%	7.30%	5.48%	6.05%			3.88%	0.65%	0.00%	-0.48%	-4.98%	-6.18%
1930-1939	-0.47%	6.48%	7.48%	6.40%	3.95%	5.49%			0.58%	-1.21%	5.41%	-3.51%	-1.81%	-2.22%
1940-1949	8.99%	3.92%	2.92%	5.43%	2.70%	2.42%			0.48%	8.12%	1.47%	4.00%	0.28%	7.64%
1950-1959	19.26%	0.16%	-0.08%	0.59%	0.39%	-0.50%			2.02%	2.97%	-1.38%	5.96%	1.46%	-0.69%
1960-1969	7.76%	0.57%	0.42%	0.89%	2.76%	0.51%			4.06%	1.85%	0.04%	5.43%	0.78%	-2.96%
1970-1979	5.77%	5.34%	5.02%	5.85%	6.08%	3.71%			6.48%	7.99%	32.23%	6.28%	28.04%	11.43%
1980-1989	17.47%	13.72%	13.03%	14.43%	12.78%	12.64%			9.13%	6.94%	-2.85%	0.57%	-5.40%	-0.74%
1990-1999	18.21%	9.31%	8.84%	9.99%	7.98%	8.40%	10.59%	7.27%	4.95%	2.67%	-4.02%	-2.12%	1.67%	-6.31%
2000-2009	-0.95%	8.86%	8.91%	8.67%	6.63%	7.03%	6.57%	6.04%	2.74%	3.95%	14.32%	13.96%	11.91%	6.67%
2010-2014	14.67%	9.47%	8.38%	10.30%	4.97%	8.63%	9.26%	2.68%	0.07%	2.54%	3.27%	-0.37%	4.27%	4.13%
RETURNS BY HALF CENTURY														
1800-1849	7.20%				6.20%						0.13%	-1.83%		
1850-1899	7.61%				4.67%				3.91%		0.00%	-0.16%		0.48%
1900-1949	7.39%	4.81%			3.25%	3.72%			2.24%	2.49%	1.35%	-0.09%	0.89%	2.34%
1950-1999	13.55%	5.70%	5.33%	6.22%	5.91%	4.84%			5.30%	4.46%	4.00%	3.17%	4.72%	-0.03%
2000-2014	4.01%	9.07%	8.73%	9.21%	6.08%	7.56%	7.46%	4.91%	1.84%	3.48%	10.51%	8.97%	9.31%	5.82%

Note: 2014 Returns are calculated up to 31August. So for example the last 5 years data is actually for 4 years and 8 months, 10 years for 9 years and 8 months. Source: Deutsche Bank, GFD

Figure 101: Real Returns for US Assets over Different Time Horizons

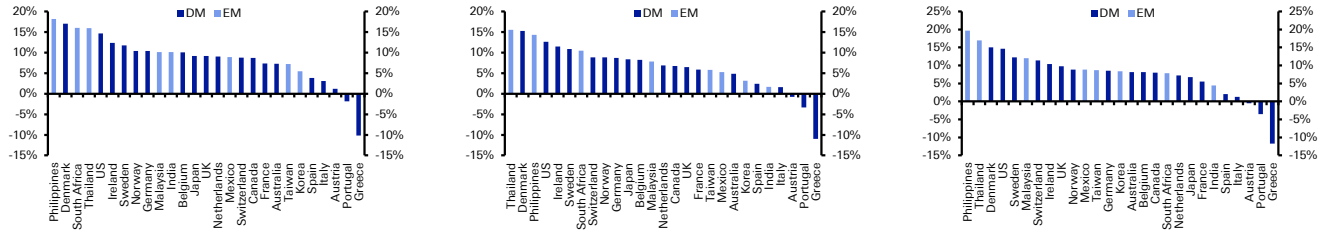
	Equity	Corp Bond	AAA Bond	BBB Bond	Treasury (10yr)	Treasury (30yr)	HY Bond	Treasury (HY Matched)	Treasury Bill	House Prices (Price Only)	Gold	Copper	Oil	Wheat
last 5yrs (2009-2014)	12.62%	7.51%	6.44%	8.32%	3.09%	6.69%	7.30%	0.84%	-1.72%	0.70%	1.42%	-2.15%	2.40%	2.27%
last 10yrs (2004-2014)	5.02%	5.15%	4.64%	5.44%	2.67%	4.03%	5.47%	1.64%	-0.73%	-1.67%	9.00%	5.17%	6.16%	1.43%
last 15yrs (1999-2014)	1.65%	6.60%	6.27%	6.74%	3.68%	5.13%	5.03%	2.53%	-0.46%	1.14%	8.01%	6.50%	6.83%	3.42%
last 25yrs (1989-2014)	6.73%	6.43%	6.06%	6.78%	4.16%	5.20%	5.98%	3.20%	0.50%	0.58%	1.84%	1.78%	3.53%	-1.73%
last 50yrs (1964-2014)	5.43%	3.66%	3.31%	4.06%	2.94%	2.61%			0.96%	0.69%	3.18%	0.42%	3.01%	-1.67%
last 75yrs (1939-2014)	6.85%	2.19%	1.76%	2.75%	1.60%	1.15%			0.10%	0.86%	1.04%	0.54%	1.12%	-1.67%
last 100yrs (1914-2014)	6.70%	2.69%			1.93%	1.79%			0.36%	0.44%	0.98%	0.04%	1.06%	-1.78%
last 125yrs (1889-2014)	6.22%				1.82%				0.57%		0.51%	-0.65%	0.86%	-1.29%
last 150yrs (1864-2014)	6.51%				2.45%				1.26%		0.04%	-1.11%	-0.72%	-1.38%
last 175yrs (1839-2014)	6.71%				2.78%				1.63%		0.33%	-0.62%		
last 200yrs (1814-2014)	6.84%				3.23%						0.42%	-0.76%		
since 1800	6.75%				3.33%						0.28%	-0.83%		
since 1900	6.30%	2.59%			1.65%	1.58%			0.43%	0.39%	0.57%	-0.59%	0.53%	-1.28%
since 1920	7.20%	3.43%	3.17%	3.93%	2.57%	2.43%			0.86%	0.94%	1.70%	0.32%	0.47%	-1.90%
since 1930	6.22%	2.93%	2.66%	3.42%	2.12%	1.90%			0.40%	0.86%	1.79%	0.30%	1.01%	-1.49%
since 1971	6.10%	5.03%	4.52%	5.54%	3.43%	3.56%			0.93%	0.80%	4.05%	0.02%	3.63%	-1.65%
RETURNS BY DECADE														
1800-1809	11.09%				9.12%						0.00%	-1.62%		
1810-1819	4.56%				5.87%						-0.34%	-4.96%		
1820-1829	9.05%				7.62%						1.98%	0.31%		
1830-1839	3.23%				0.70%						-1.35%	-0.65%		
1840-1849	10.82%				10.45%				7.94%		2.75%	0.13%		
1850-1859	0.07%				2.39%				3.47%		-1.53%	0.79%		4.08%
1860-1869	13.58%				2.02%				0.81%		-2.29%	-2.20%	-16.24%	-5.75%
1870-1879	10.20%				6.04%				6.50%		0.47%	0.19%	-12.30%	7.64%
1880-1889	5.68%				5.48%				3.04%		0.00%	-1.66%	-0.70%	-5.09%
1890-1899	5.23%				3.79%				2.19%		-0.13%	-1.39%	4.74%	-1.34%
1900-1909	7.36%	1.94%			-0.74%	-0.22%			0.63%	-0.41%	-2.34%	-5.80%	-3.73%	3.58%
1910-1919	-2.78%	-4.40%			-4.48%	-4.49%			-3.78%	-3.90%	-6.84%	-3.72%	5.59%	-0.14%
1920-1929	15.87%	7.74%	7.53%	8.32%	6.48%	7.06%			4.87%	1.61%	0.95%	0.46%	-4.08%	-5.29%
1930-1939	1.60%	8.69%	9.72%	8.61%	6.11%	7.69%			2.67%	0.85%	7.60%	-1.50%	0.24%	-0.19%
1940-1949	3.45%	-1.36%	-2.31%	0.07%	-2.52%	-2.79%			-4.63%	2.62%	-3.69%	-1.29%	-4.83%	2.17%
1950-1959	16.67%	-2.02%	-2.25%	-1.60%	-1.80%	-2.67%			-0.20%	0.74%	-3.52%	3.66%	-0.75%	-2.84%
1960-1969	5.11%	-1.89%	-2.05%	-1.59%	0.23%	-1.96%			1.51%	-0.65%	-2.41%	2.84%	-1.69%	-5.34%
1970-1979	-1.51%	-1.91%	-2.20%	-1.44%	-1.21%	-3.43%			-0.85%	0.56%	23.14%	-1.03%	19.23%	3.76%
1980-1989	11.78%	8.22%	7.56%	8.89%	7.32%	7.19%			3.84%	1.76%	-7.55%	-4.30%	-9.98%	-5.54%
1990-1999	14.83%	6.19%	5.73%	6.85%	4.90%	5.30%	7.43%	4.20%	1.95%	-0.26%	-6.77%	-4.92%	-1.23%	-8.99%
2000-2009	-3.42%	6.15%	6.19%	5.96%	3.97%	4.36%	3.91%	3.39%	0.18%	1.36%	11.46%	11.12%	9.12%	4.01%
2010-2014	12.62%	7.51%	6.44%	8.32%	3.09%	6.69%	7.30%	0.84%	-1.72%	0.70%	1.42%	-2.15%	2.40%	2.27%
RETURNS BY HALF CENTURY														
1800-1849	7.70%				6.70%						0.60%	-1.37%		
1850-1899	6.85%				3.93%				3.19%		-0.70%	-0.86%		-0.23%
1900-1949	4.91%	2.40%			0.87%	1.33%			-0.11%	0.13%	-0.98%	-2.40%	-1.44%	-0.02%
1950-1999	9.17%	1.62%	1.27%	2.12%	1.83%	0.79%			1.24%	0.43%	-0.01%	-0.81%	0.68%	-3.88%
2000-2014	1.65%	6.60%	6.27%	6.74%	3.68%	5.13%	5.03%	2.53%	-0.46%	1.14%	8.01%	6.50%	6.83%	3.42%

Note: 2014 Returns are calculated up to 31August. So for example the last 5 years data is actually for 4 years and 8 months, 10 years for 9 years and 8 months. Source: Deutsche Bank, GFD

Historical International Asset Returns

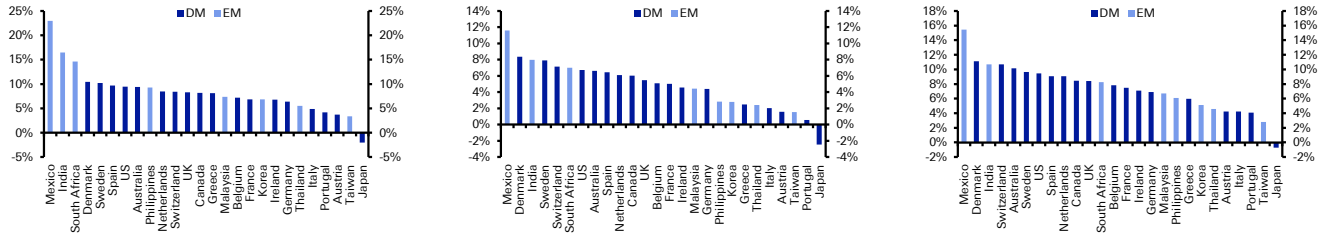
International equity return charts

Figure 102: Last 5 Years Annualised Equity Returns – Nominal (left), Real (middle), USD (right)



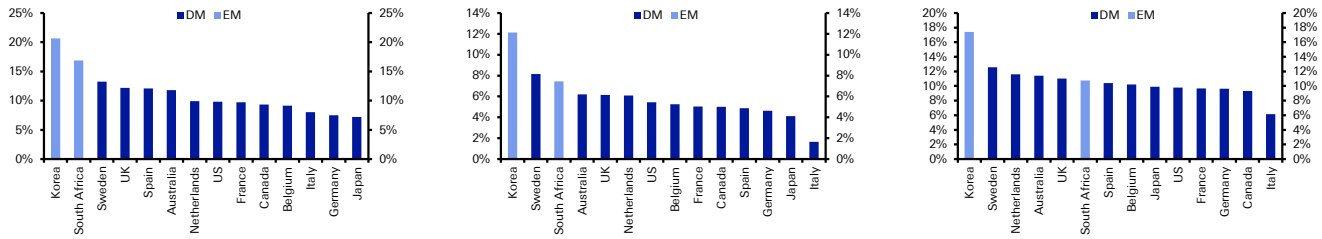
Source: Deutsche Bank, GFD

Figure 103: Last 10 Years Annualised Equity Returns – Nominal (left), Real (middle), USD (right)



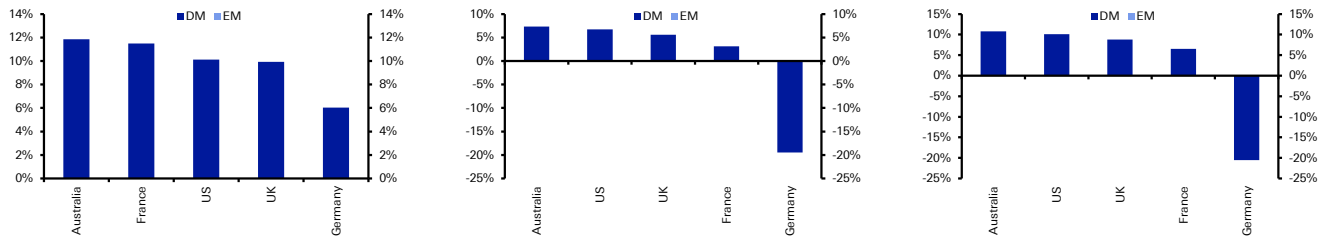
Source: Deutsche Bank, GFD

Figure 104: Last 50 Years Annualised Equity Returns – Nominal (left), Real (middle), USD (right)



Source: Deutsche Bank, GFD

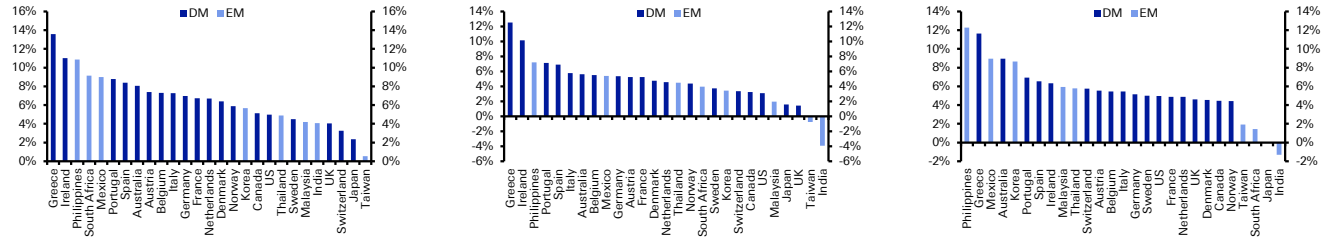
Figure 105: Last 100 Years Annualised Equity Returns – Nominal (left), Real (middle), USD (right)



Source: Deutsche Bank, GFD

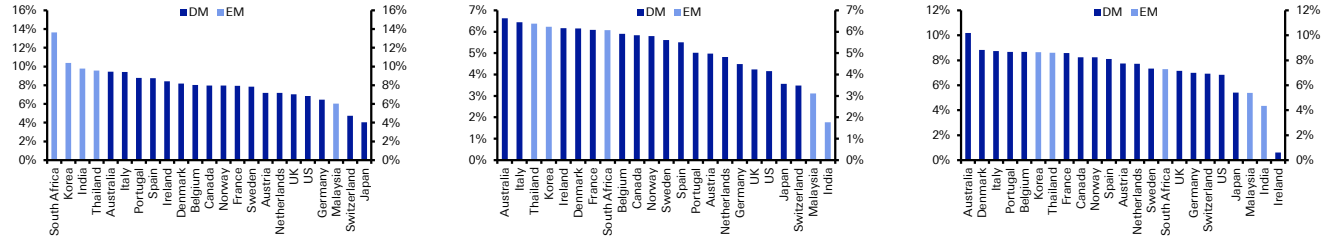
International 10 year government bond return charts

Figure 106: Last 5 Years Annualised 10 Year Government Bond Returns – Nominal (left), Real (middle), USD (right)



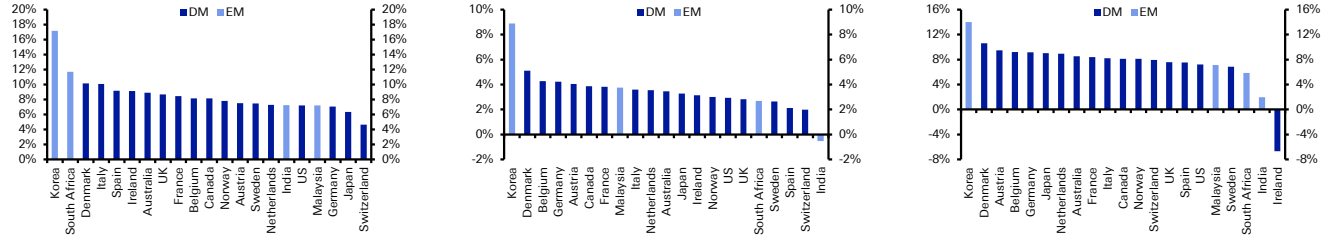
Source: Deutsche Bank, GFD

Figure 107: Last 10 Years Annualised 10 Year Government Bond Returns – Nominal (left), Real (middle), USD (right)



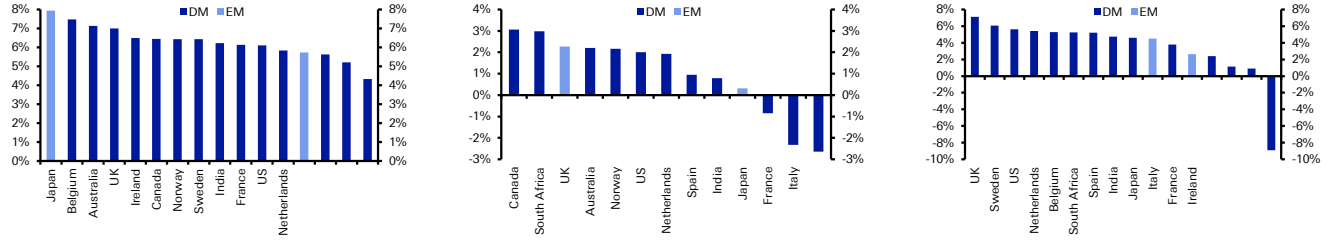
Source: Deutsche Bank, GFD

Figure 108: Last 50 Years Annualised 10 Year Government Bond Returns – Nominal (left), Real (middle), USD (right)



Source: Deutsche Bank, GFD

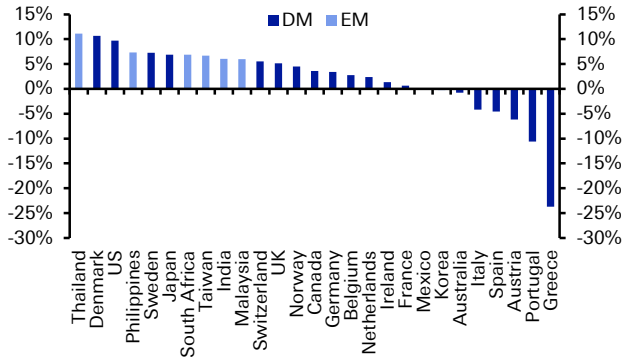
Figure 109: Last 100 Years Annualised 10 Year Government Bond Returns – Nominal (left), Real (middle), USD (right)



Source: Deutsche Bank, GFD

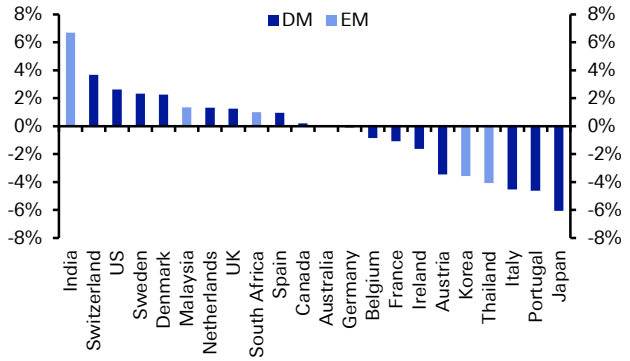
International equity minus bond return charts

Figure 110: Last 5 Yrs Annualised Equity-Bond Return



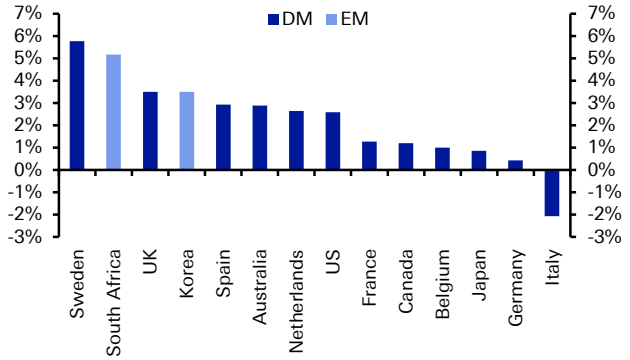
Source: Deutsche Bank, GFD

Figure 111: Last 25 Yrs Annualised Equity-Bond Return



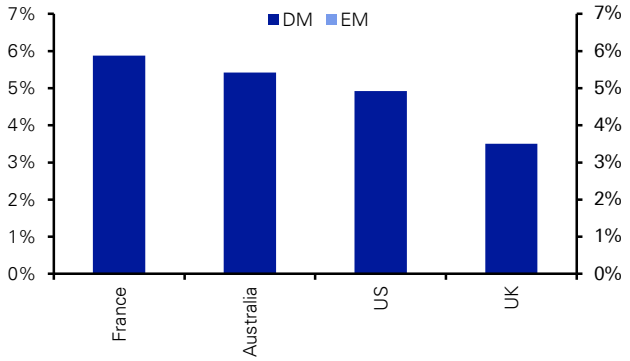
Source: Deutsche Bank, GFD

Figure 112: Last 50 Yrs Annualised Equity-Bond Return



Source: Deutsche Bank, GFD

Figure 113: Last 100 Yrs Annualised Equity-Bond Return



Source: Deutsche Bank, GFD

International return tables

Figure 114: Developed Market Nominal Annualised Equity and Bond Returns

								RETURNS BY DECADE																						
	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	Since 1800	1800-1809	1810-1819	1820-1829	1830-1839	1840-1849	1850-1859	1860-1869	1870-1879	1880-1889	1890-1899	1900-1909	1910-1919	1920-1929	1930-1939	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009	2010-2014
EQUITY																													
Australia	7.3%	7.8%	9.4%	11.8%	11.9%	12.0%											7.9%	13.6%	9.7%	15.4%	10.2%	10.1%	15.3%	14.0%	8.6%	17.7%	11.0%	8.9%	7.3%
Austria	1.2%	0.3%	3.7%																						6.5%	16.3%	1.4%	7.4%	1.2%
Belgium	10.0%	5.5%	7.2%	9.2%																				3.4%	7.2%	20.6%	11.4%	1.8%	10.0%
Canada	8.7%	8.2%	8.2%	9.3%																		8.4%	13.3%	10.0%	10.4%	12.2%	10.6%	5.6%	8.7%
Denmark	17.1%	11.3%	10.4%																						7.9%	23.8%	11.1%	6.7%	17.1%
France	7.3%	5.8%	6.9%	9.7%	11.5%	10.5%												5.6%	8.1%	16.9%	-1.5%	20.7%	24.0%	4.5%	6.8%	21.9%	14.3%	-0.3%	7.3%
Germany	10.4%	8.5%	6.4%	7.5%	6.0%	5.4%									7.7%	10.0%	5.1%	5.6%	-18.7%	18.1%	4.5%	-6.0%	25.8%	6.0%	2.2%	15.9%	12.1%	-0.9%	10.4%
Greece	-10.1%	-6.1%	8.1%																							36.2%	38.3%	-7.2%	-10.1%
Ireland	12.4%	-0.2%	6.8%																								14.4%	-2.8%	12.4%
Italy	3.1%	0.8%	4.9%	8.0%																	6.5%	30.4%	23.5%	3.7%	-3.0%	28.0%	12.6%	-1.5%	3.1%
Japan	9.2%	2.8%	-2.0%	7.2%																	14.2%	15.9%	33.9%	13.0%	12.3%	21.3%	-4.3%	-5.0%	9.2%
Netherlands	9.1%	7.2%	8.5%	9.9%																				6.1%	4.4%	21.5%	19.4%	-1.6%	9.1%
Norway	10.4%	10.9%																											10.4%
Portugal	-1.8%	1.7%	4.2%																								11.1%	0.6%	-1.8%
Spain	3.8%	4.3%	9.7%	12.1%																			13.3%	19.1%	-1.2%	27.4%	18.7%	4.3%	3.8%
Sweden	11.7%	10.2%	10.2%	13.3%																3.5%	-0.2%	10.5%	16.3%	8.1%	6.7%	32.4%	19.0%	1.3%	11.7%
Switzerland	8.8%	7.3%	8.4%																						2.0%	10.6%	16.0%	1.1%	8.8%
UK	9.2%	7.8%	8.3%	12.2%	9.9%	8.7%	6.9%	8.1%	5.4%	4.8%	4.3%	4.8%	3.8%	4.4%	4.9%	5.5%	3.0%	0.6%	1.5%	9.5%	1.9%	8.9%	17.2%	8.3%	10.2%	23.9%	14.9%	1.6%	9.2%
US	14.7%	7.3%	9.5%	9.8%	10.1%	9.6%	8.6%	11.1%	4.9%	6.9%	5.3%	7.8%	1.6%	18.3%	7.7%	5.7%	5.4%	9.9%	4.3%	14.8%	-0.5%	9.0%	19.3%	7.8%	5.8%	17.5%	18.2%	-0.9%	14.7%
BOND																													
Australia	8.1%	6.5%	9.4%	8.9%	6.4%	6.1%								5.3%	5.8%	5.1%	3.5%	3.4%	2.1%	4.6%	4.7%	5.1%	3.1%	4.2%	6.9%	12.4%	12.9%	6.7%	8.1%
Austria	7.4%	5.5%	7.2%	7.5%																	0.4%	7.0%	6.4%	6.2%	8.1%	8.7%	8.5%	5.8%	7.4%
Belgium	7.3%	5.6%	8.0%	8.1%	6.4%	5.6%						3.7%	6.1%	5.0%	5.3%	4.8%	2.6%	2.8%	-1.1%	8.5%	2.9%	4.9%	4.3%	4.4%	6.3%	12.0%	10.4%	6.0%	7.3%
Canada	5.1%	5.1%	8.0%	8.1%	6.1%	5.6%								5.0%	7.2%	5.3%	3.6%	1.8%	2.8%	5.8%	5.2%	3.5%	1.5%	3.7%	6.8%	13.4%	10.7%	6.8%	5.1%
Denmark	6.4%	5.3%	8.2%	10.1%	7.5%	6.8%	6.0%	3.6%	4.9%	10.6%	4.0%	3.6%	4.8%	4.6%	6.0%	4.9%	3.2%	3.7%	-0.5%	7.4%	6.0%	4.8%	4.5%	4.1%	10.1%	18.9%	11.2%	6.1%	6.4%
France	6.7%	5.4%	7.9%	8.4%	5.6%	5.0%	6.2%	32.1%	6.0%	10.6%	3.7%	0.5%	6.7%	4.9%	6.0%	4.5%	4.3%	3.1%	-1.0%	0.0%	3.8%	2.8%	4.8%	4.3%	6.1%	14.9%	10.7%	5.9%	6.7%
Germany	7.0%	5.6%	6.5%	7.1%																	7.5%	-17.3%	5.9%	5.8%	8.1%	8.2%	6.9%	5.8%	7.0%
Greece	13.6%	7.4%																										5.3%	13.6%
Ireland	11.0%	6.4%	8.4%	9.1%	6.2%	5.6%												1.5%	-0.7%	6.2%	3.8%	7.1%	-0.6%	3.4%	5.5%	18.4%	10.6%	5.1%	11.0%
Italy	7.3%	5.5%	9.4%	10.1%	7.0%	6.5%			14.3%	10.2%	7.2%	5.6%	6.3%	1.0%	12.3%	6.4%	5.9%	5.1%	1.5%	2.9%	5.9%	5.0%	3.3%	5.0%	6.5%	17.3%	14.3%	5.8%	7.3%
Japan	2.3%	2.1%	4.0%	6.3%	6.5%	6.2%										7.0%	5.7%	5.8%	1.4%	7.8%	8.2%	4.1%	5.9%	12.3%	6.8%	9.2%	7.2%	1.8%	2.3%
Netherlands	6.7%	5.4%	7.2%	7.3%	4.3%	4.1%	5.0%	3.8%	17.7%	8.9%	3.2%	5.5%	5.7%	2.4%	6.0%	6.2%	2.6%	2.6%	2.1%	6.3%	4.7%	4.6%	0.2%	-7.7%	7.5%	9.6%	8.7%	5.9%	6.7%
Norway	5.9%	4.4%	8.0%	7.8%	6.1%	5.6%					4.0%	3.9%	3.3%	3.6%	5.5%	6.8%	1.3%	3.7%	1.2%	6.9%	4.2%	12.1%	-3.6%	5.0%	4.6%	11.9%	11.7%	5.4%	5.9%
Portugal	8.8%	6.1%	8.8%																							19.5%	10.9%	6.7%	8.8%
Spain	8.4%	6.2%	8.7%	9.2%	7.1%	6.9%	8.5%	3.6%	13.6%	23.3%	9.8%	15.6%	9.5%	2.4%	10.7%	11.4%	5.2%	8.9%	2.7%	5.3%	5.8%	5.9%	2.8%	4.8%	6.0%	16.3%	12.1%	5.6%	8.4%
Sweden	4.5%	4.4%	7.9%	7.5%	5.8%	5.4%									5.9%	6.4%	3.5%	3.4%	-1.2%	6.7%	5.6%	7.3%	1.3%	3.6%	4.3%	12.4%	11.9%	5.6%	4.5%
Switzerland	3.2%	3.3%	4.7%	4.6%																6.0%	4.2%	4.1%	2.7%	2.9%	5.8%	3.9%	5.9%	4.3%	3.2%
UK	4.0%	4.5%	7.0%	8.7%	6.4%	5.6%	4.9%	6.1%	4.1%	7.2%	3.3%	3.8%	3.3%	2.8%	3.8%	2.7%	2.9%	1.2%	-1.1%	5.2%	7.1%	3.3%	3.4%	5.0%	9.4%	14.0%	10.2%	5.4%	4.0%
US	5.0%	4.9%	6.8%	7.2%	5.2%	4.8%	5.1%	9.1%	6.2%	5.5%	2.8%	7.5%	4.0%	6.3%	3.7%	5.5%	3.9%	1.6%	2.5%	5.5%	4.0%	2.7%	0.4%	2.8%	6.1%	12.8%	8.0%	6.6%	5.0%

Source: Deutsche Bank, GFD

Figure 115: Developed Market Real Annualised Equity and Bond Returns

	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	Since 1800	RETURNS BY DECADE 1800-1809	1810-1819	1820-1829	1830-1839	1840-1849	1850-1859	1860-1869	1870-1879	1880-1889	1890-1899	1900-1909	1910-1919	1920-1929	1930-1939	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009	2010-2013
EQUITY																													
Australia	4.8%	5.0%	6.6%	6.2%	7.4%	7.8%											9.5%	12.3%	4.2%	14.6%	11.3%	4.5%	8.4%	11.2%	-1.4%	8.6%	8.6%	5.6%	4.8%
Austria	-0.8%	-1.6%	1.6%																						0.5%	12.2%	-1.0%	5.5%	-0.8%
Belgium	8.2%	3.5%	5.1%	5.2%																				0.6%	0.1%	15.2%	9.1%	-0.3%	8.2%
Canada	6.8%	6.3%	6.0%	5.0%																		3.7%	10.6%	7.1%	2.7%	5.6%	8.3%	3.5%	6.8%
Denmark	15.2%	9.3%	8.4%																						-1.6%	16.3%	8.8%	4.7%	15.2%
France	5.8%	4.2%	5.0%	5.0%	3.1%	3.2%												5.3%	-3.3%	8.3%	-4.3%	-8.8%	17.4%	0.6%	-2.2%	14.1%	12.2%	-2.1%	5.8%
Germany	8.7%	6.8%	4.4%	4.6%	-19.5%	-17.3%									6.1%	9.6%	5.2%	3.6%	-32.6%	-89.3%	6.5%	-9.5%	23.1%	3.5%	-2.6%	12.8%	9.6%	-2.5%	8.7%
Greece	-11.0%	-7.9%	2.5%																							14.3%	25.4%	-10.1%	-11.0%
Ireland	11.5%	-1.3%	4.6%																								11.8%	-5.2%	11.5%
Italy	1.6%	-1.0%	2.0%	1.6%																	6.1%	-12.8%	19.9%	0.2%	-14.3%	15.7%	8.3%	-3.7%	1.6%
Japan	8.4%	2.5%	-2.5%	4.1%																	10.4%	-25.1%	30.2%	7.1%	3.1%	18.5%	-5.3%	-4.7%	8.4%
Netherlands	6.9%	5.3%	6.1%	6.1%																				2.0%	-2.6%	18.3%	16.6%	-3.7%	6.9%
Norway	8.8%	8.9%																											8.8%
Portugal	-3.3%	0.1%	0.6%																								5.1%	-1.9%	-3.3%
Spain	2.4%	2.3%	6.4%	4.9%																			7.1%	12.6%	-13.9%	16.0%	14.1%	1.3%	2.4%
Sweden	10.9%	8.7%	7.9%	8.1%																8.4%	-0.9%	6.5%	11.3%	4.1%	-2.0%	23.0%	15.6%	-0.6%	10.9%
Switzerland	8.9%	6.9%	7.1%																						-2.8%	7.0%	13.6%	0.2%	8.9%
UK	6.5%	5.1%	5.5%	6.1%	5.6%	4.9%	5.0%	4.6%	6.3%	7.2%	3.7%	6.9%	3.7%	3.9%	5.4%	5.9%	3.0%	-0.2%	-5.8%	12.9%	1.4%	5.9%	12.5%	4.5%	-2.6%	15.9%	11.0%	-0.3%	6.5%
US	12.6%	5.0%	6.7%	5.4%	6.7%	6.3%	6.8%	11.1%	4.6%	9.1%	3.2%	10.8%	0.1%	13.6%	10.2%	5.7%	5.2%	7.4%	-2.8%	15.9%	1.6%	3.4%	16.7%	5.1%	-1.5%	11.8%	14.8%	-3.4%	12.6%
BOND																													
Australia	5.6%	3.8%	6.6%	3.4%	2.2%	2.1%									5.6%	4.8%	5.0%	2.3%	-3.0%	3.8%	5.7%	-0.2%	-3.1%	1.7%	-2.9%	3.8%	10.4%	3.5%	5.6%
Austria	5.3%	3.5%	5.0%	4.1%																			1.5%	2.7%	2.0%	4.8%	5.9%	3.9%	5.3%
Belgium	5.5%	3.6%	5.9%	4.3%		0.5%						4.8%	5.8%	3.5%	1.5%	3.9%	-0.7%	-0.2%			3.6%	-6.9%	2.2%	1.6%	-0.8%	6.9%	8.2%	3.9%	5.5%
Canada	3.3%	3.3%	5.8%	3.9%	3.0%															6.7%	7.1%	-1.0%	-0.9%	1.0%	-0.7%	6.8%	8.4%	4.6%	3.3%
Denmark	4.8%	3.5%	6.2%	5.1%	3.1%	2.8%				20.2%	4.3%	3.9%	3.3%	4.1%	6.2%	5.6%	3.3%	2.6%	-8.8%	8.4%	4.0%	0.3%	0.6%	-1.4%	0.5%	11.7%	9.0%	4.1%	4.8%
France	5.2%	3.8%	6.1%	3.8%	-2.3%	-2.0%							6.2%	4.2%	5.5%	4.6%	4.5%	2.7%	-11.5%	-7.4%	0.8%	-22.4%	-0.8%	0.4%	-2.8%	7.5%	8.7%	4.0%	5.2%
Germany	5.3%	3.9%	4.5%	4.2%																	9.5%	-20.4%	3.6%	3.4%	3.0%	5.3%	4.5%	4.0%	5.3%
Greece	12.5%	5.3%																										2.0%	12.5%
Ireland	10.1%	5.2%	6.2%	3.1%																	3.0%	1.8%	-4.1%	-0.9%	-6.7%	8.8%	8.0%	2.5%	10.1%
Italy	5.8%	3.7%	6.4%	3.6%	-2.6%	-2.0%									10.7%	7.1%	6.1%	4.3%	-8.7%	-5.2%	5.5%	-29.8%	0.2%	1.5%	-5.8%	6.1%	9.9%	3.4%	5.8%
Japan	1.6%	1.8%	3.6%	3.3%	-0.9%	-0.6%										10.5%	-0.9%	2.2%	-7.1%	11.9%	4.6%	-32.7%	3.0%	6.4%	-2.0%	6.7%	6.1%	2.1%	1.6%
Netherlands	4.5%	3.5%	4.8%	3.5%	0.9%	0.9%	3.6%	2.9%	19.2%	10.7%	2.9%	6.9%	5.5%	2.6%	5.8%	8.1%	3.4%	0.7%	-4.6%	8.5%	6.1%	-3.0%	-3.4%	-11.2%	0.3%	6.7%	6.2%	3.6%	4.5%
Norway	4.4%	2.5%	5.8%	3.0%	2.0%	1.9%					3.2%	2.9%	2.0%	4.5%	5.6%	7.1%	0.5%	2.7%	-9.3%	11.7%	3.1%	7.8%	-8.2%	1.3%	-3.5%	3.4%	9.0%	3.4%	4.4%
Portugal	7.1%	4.4%	5.0%																							2.4%	4.9%	4.1%	7.1%
Spain	6.9%	4.1%	5.5%	2.1%	0.8%	1.4%				28.2%	7.0%	17.5%	6.8%	2.7%	9.5%	12.2%	5.3%	8.6%	-1.1%	4.5%	0.8%	-3.3%	-2.8%	-0.9%	-7.6%	5.9%	7.8%	2.6%	6.9%
Sweden	3.7%	3.0%	5.6%	2.6%		1.8%									5.9%	6.9%	2.7%	2.3%	-11.0%	11.8%	4.9%	3.4%	-3.0%	-0.2%	-4.2%	4.4%	8.6%	3.7%	3.7%
Switzerland	3.3%	2.8%	3.5%	2.0%																9.5%	5.5%	-0.4%	1.5%	-0.3%	0.8%	0.6%	3.7%	3.3%	3.3%
UK	1.4%	1.9%	4.2%	2.8%	2.2%	1.9%	2.9%	2.7%	5.0%	9.7%	2.7%	5.9%	3.3%	2.3%	4.3%	3.1%	2.9%	0.5%	-8.1%	8.5%	6.6%	0.5%	-0.7%	1.3%	-3.2%	6.6%	6.5%	3.4%	1.4%
US	3.1%	2.7%	4.2%	2.9%	1.9%	1.6%	3.3%	9.1%	5.9%	7.6%	0.7%	10.5%	2.4%	2.0%	6.0%	5.5%	3.8%	-0.7%	-4.5%	6.5%	6.1%	-2.5%	-1.8%	0.2%	-1.2%	7.3%	4.9%	4.0%	3.1%

Source: Deutsche Bank, GFD

Figure 116: Developed Market USD Annualised Equity and Bond Returns

								RETURNS BY DECADE																				
	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	Since 1800	1800-1809	1810-1819	1820-1829	1830-1839	1840-1849	1850-1859	1860-1869	1870-1879	1880-1889	1890-1899	1900-1909	1910-1919	1920-1929	1930-1939	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009	2010-2013
EQUITY																													
Australia	8.2%	9.8%	10.2%	11.4%	10.8%	11.0%											8.0%	13.6%	6.9%	18.5%	5.5%	6.4%	15.3%	14.0%	8.5%	13.8%	9.0%	12.4%	8.2%
Austria	-0.5%	0.0%	4.3%																						14.6%	16.8%	0.0%	11.3%	-0.5%
Belgium	8.2%	5.2%	7.8%	10.2%																				3.4%	13.5%	17.8%	10.1%	5.4%	8.2%
Canada	8.0%	9.3%	8.5%	9.3%																		8.5%	15.1%	8.7%	9.5%	12.3%	8.1%	9.0%	8.0%
Denmark	15.0%	10.9%	11.1%																						11.5%	21.3%	9.8%	10.5%	15.0%
France	5.5%	5.5%	7.5%	9.7%	6.5%	6.2%												5.7%	0.3%	7.5%	-6.9%	-1.7%	19.9%	3.2%	10.3%	17.6%	12.9%	3.3%	5.5%
Germany	8.5%	8.2%	6.9%	9.6%	-20.5%	-18.0%									7.6%	10.0%	5.1%	5.6%	-36.5%	-90.5%	10.0%	-29.1%	25.9%	7.3%	10.3%	16.1%	10.5%	2.7%	8.5%
Greece	-11.7%	-6.4%	6.0%																							17.5%	28.5%	-4.2%	-11.7%
Ireland	10.4%	-0.6%	7.1%																								12.2%	0.7%	10.4%
Italy	1.3%	0.4%	4.2%	6.2%																	6.1%	-7.6%	23.6%	3.6%	-5.4%	22.3%	8.0%	2.1%	1.3%
Japan	6.8%	2.7%	-0.7%	9.9%																	6.1%	-25.6%	33.9%	13.0%	16.9%	27.7%	-0.9%	-4.1%	6.8%
Netherlands	7.2%	6.9%	9.1%	11.6%																				6.5%	11.3%	21.4%	17.7%	1.9%	7.2%
Norway	8.9%	10.7%																											8.9%
Portugal	-3.5%	1.4%	4.1%																								7.9%	4.2%	-3.5%
Spain	2.1%	4.0%	9.1%	10.4%																			3.8%	17.3%	-0.7%	21.2%	13.9%	8.0%	2.1%
Sweden	12.3%	9.7%	9.7%	12.6%																6.0%	-1.5%	8.2%	16.3%	8.1%	9.1%	27.2%	15.4%	3.0%	12.3%
Switzerland	11.4%	9.6%	10.7%																						12.7%	11.0%	15.6%	5.6%	11.4%
UK	9.8%	6.3%	8.4%	11.0%	8.8%	7.7%	6.5%	8.1%	5.6%	5.5%	4.3%	4.8%	3.9%	6.4%	2.9%	5.5%	3.1%	0.6%	-1.1%	12.4%	-0.2%	5.2%	17.2%	6.7%	9.3%	20.0%	14.9%	1.6%	9.8%
US	14.7%	7.3%	9.5%	9.8%	10.1%	9.6%	8.6%	11.1%	4.9%	6.9%	5.3%	7.8%	1.6%	18.3%	7.7%	5.7%	5.4%	9.9%	4.3%	14.8%	-0.5%	9.0%	19.3%	7.8%	5.8%	17.5%	18.2%	-0.9%	14.7%
BOND																													
Australia	8.9%	8.5%	10.2%	8.5%	5.4%	5.2%								7.3%	3.8%	5.1%	3.6%	3.4%	-0.5%	7.4%	0.2%	1.5%	3.1%	4.2%	6.8%	8.7%	10.9%	10.1%	8.9%
Austria	5.5%	5.2%	7.7%	9.5%																	3.5%	-18.2%	6.4%	6.3%	16.3%	9.2%	7.0%	9.6%	5.5%
Belgium	5.5%	5.3%	8.7%	9.2%	4.6%	4.0%						3.5%	6.3%	4.9%	5.3%	4.8%	2.6%	2.8%	-8.2%	-3.6%	4.7%	-0.3%	4.3%	4.5%	12.6%	9.4%	9.2%	9.8%	5.5%
Canada	4.4%	6.2%	8.2%	8.1%	6.1%	5.5%								8.0%	4.2%	5.3%	3.5%	1.6%	2.0%	6.5%	4.1%	3.6%	3.2%	2.4%	5.9%	13.5%	8.2%	10.2%	4.4%
Denmark	4.6%	5.0%	8.8%	10.6%	7.1%	6.4%				12.3%	6.6%	4.2%	5.3%	6.3%	4.0%	4.9%	3.2%	3.7%	-3.7%	11.1%	2.6%	1.7%	4.5%	3.2%	13.9%	16.5%	10.0%	9.9%	4.6%
France	4.9%	5.0%	8.6%	8.4%	0.9%	0.9%			3.7%	10.9%	3.7%	0.4%	7.0%	4.9%	5.9%	4.5%	4.4%	3.1%	-8.2%	-8.0%	-1.9%	-16.3%	1.3%	3.0%	9.6%	10.8%	9.4%	9.7%	4.9%
Germany	5.1%	5.3%	7.0%	9.2%																	13.2%	-37.6%	5.9%	7.1%	16.7%	8.4%	5.4%	9.6%	5.1%
Greece	11.6%	7.0%																										8.7%	11.6%
Ireland	6.3%	3.9%	0.6%	-6.7%	-8.9%	-7.6%												1.5%	-1.5%	7.0%	6.8%	-0.3%	-22.4%	-57.5%	-1.2%	6.4%	-3.4%	2.0%	6.3%
Italy	5.4%	5.2%	8.7%	8.2%	1.2%	1.5%				11.6%	7.3%	5.2%	6.9%	0.4%	11.5%	7.6%	5.4%	5.8%	-7.5%	-0.8%	5.5%	-25.7%	3.4%	4.9%	3.9%	12.1%	9.6%	9.6%	5.4%
Japan	0.0%	1.9%	5.4%	9.0%	2.4%	2.6%										5.4%	0.9%	5.8%	1.5%	7.6%	0.5%	-33.2%	5.9%	12.3%	11.2%	14.9%	11.0%	2.8%	0.0%
Netherlands	4.9%	5.1%	7.7%	8.9%	4.7%	4.4%	5.3%	5.4%	16.9%	9.2%	3.1%	5.5%	6.1%	2.2%	5.8%	6.2%	2.6%	2.6%	1.3%	7.2%	7.6%	-2.5%	0.3%	-7.3%	14.7%	9.6%	7.3%	9.6%	4.9%
Norway	4.4%	4.2%	8.2%	8.1%	5.6%	5.2%					6.7%	4.5%	3.8%	5.3%	3.5%	6.8%	1.4%	3.6%	-1.6%	9.9%	2.5%	6.8%	-3.6%	4.9%	8.6%	8.6%	9.5%	8.9%	4.4%
Portugal	6.9%	5.8%	8.7%																							7.2%	7.7%	10.5%	6.9%
Spain	6.5%	5.9%	8.1%	7.5%	3.8%	4.2%				24.4%	9.9%	15.8%	9.7%	2.1%	10.1%	10.9%	3.2%	11.0%	3.4%	1.6%	2.7%	-3.3%	-5.8%	3.2%	6.6%	10.6%	7.6%	9.4%	6.5%
Sweden	5.0%	3.9%	7.3%	6.8%	5.2%	4.8%									5.8%	6.3%	3.6%	3.3%	-3.5%	9.3%	4.2%	5.1%	1.3%	3.7%	6.6%	8.0%	8.4%	7.5%	5.0%
Switzerland	5.8%	5.5%	6.9%	7.9%																6.9%	5.7%	4.5%	2.7%	2.9%	16.9%	4.3%	5.6%	8.9%	5.8%
UK	4.6%	3.0%	7.2%	7.6%	5.3%	4.6%	4.4%	6.1%	4.4%	8.0%	3.3%	3.7%	3.4%	4.8%	1.9%	2.7%	3.0%	1.2%	-3.6%	8.0%	4.9%	-0.2%	3.4%	3.4%	8.6%	10.4%	10.2%	5.4%	4.6%
US	5.0%	4.9%	6.8%	7.2%	5.2%	4.8%	5.1%	9.1%	6.2%	5.5%	2.8%	7.5%	4.0%	6.3%	3.7%	5.5%	3.9%	1.6%	2.5%	5.5%	4.0%	2.7%	0.4%	2.8%	6.1%	12.8%	8.0%	6.6%	5.0%

Source: Deutsche Bank, GFD

Figure 117: Emerging Market Nominal Annualised Equity and Bond Returns

	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	Since 1800	RETURNS BY DECADE 1800-1809	1810-1819	1820-1829	1830-1839	1840-1849	1850-1859	1860-1869	1870-1879	1880-1889	1890-1899	1900-1909	1910-1919	1920-1929	1930-1939	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009	2010-2013
EQUITY																													
India	10.1%	15.8%	16.5%																							21.1%	15.2%	10.1%
Korea	5.4%	10.4%	6.8%	20.7%																				40.7%	29.2%	4.6%	9.9%	5.4%
Malaysia	10.2%	10.4%	7.4%																						12.8%	5.6%	7.8%	10.2%
Mexico	8.9%	15.5%	23.0%																							35.9%	18.3%	8.9%
Philippines	18.2%	15.7%	9.3%																							9.3%	5.1%	18.2%
South Africa	16.0%	17.3%	14.6%	16.9%																				16.0%	24.1%	13.9%	14.7%	16.0%
Taiwan	7.2%	7.7%	3.4%																							3.9%	0.9%	7.2%
Thailand	16.0%	11.4%	5.5%																						27.3%	-2.4%	8.7%	16.0%
BOND																												
India	4.1%	4.0%	9.8%	7.2%	5.7%	5.3%	5.0%	5.7%	6.3%	5.3%	5.5%	4.6%	3.0%	5.1%	4.2%	4.1%	3.1%	2.3%	0.5%	5.9%	8.0%	4.2%	3.0%	4.2%	4.9%	4.4%	14.1%	8.5%	4.1%
Korea	5.7%	4.6%	10.4%	17.2%																				28.5%	27.2%	22.1%	15.6%	7.7%	5.7%
Malaysia	4.2%	4.6%	6.0%	7.2%																					11.3%	9.0%	7.6%	5.5%	4.2%
Mexico	9.0%	10.2%																									14.5%	9.0%
Philippines	10.9%	12.4%																									16.3%	10.9%
South Africa	9.2%	8.1%	13.6%	11.7%	7.9%	7.5%									4.6%	5.6%	3.7%	4.8%	2.0%	4.8%	4.8%	3.5%	5.3%	4.9%	7.4%	15.2%	17.5%	12.1%	9.2%
Taiwan	0.6%	2.4%																									6.9%	0.6%
Thailand	4.9%	6.5%	9.6%																						13.6%	13.7%	7.9%	4.9%

Source: Deutsche Bank, GFD

Figure 118: Emerging Market Real Annualised Equity and Bond Returns

	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	Since 1800	RETURNS BY DECADE 1800-1809	1810-1819	1820-1829	1830-1839	1840-1849	1850-1859	1860-1869	1870-1879	1880-1889	1890-1899	1900-1909	1910-1919	1920-1929	1930-1939	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009	2010-2013
EQUITY																													
India	1.7%	6.8%	8.0%																							10.6%	8.6%	1.7%
Korea	3.2%	7.6%	2.8%	12.1%																				22.3%	20.3%	-0.9%	6.5%	3.2%
Malaysia	7.8%	7.6%	4.4%																						9.0%	1.7%	5.5%	7.8%
Mexico	5.3%	11.2%	11.6%																							13.7%	12.7%	5.3%
Philippines	14.3%	10.8%	2.8%																							0.5%	-0.2%	14.3%
South Africa	10.5%	10.8%	7.0%	7.5%																				5.4%	8.3%	4.2%	8.1%	10.5%
Taiwan	5.8%	6.2%	1.5%																							1.0%	0.0%	5.8%
Thailand	15.5%	9.4%	2.4%																						21.1%	-6.9%	6.1%	15.5%
BOND																												
India	-3.9%	-4.0%	1.8%	-0.5%	0.3%	0.4%										3.1%	3.5%	1.3%	-4.5%	5.3%	11.4%	-5.2%	1.6%	-1.6%	-2.6%	-4.0%	4.2%	2.3%	-3.9%
Korea	3.4%	1.9%	6.2%	8.9%																				13.4%	10.5%	13.6%	9.5%	4.5%	3.4%
Malaysia	2.0%	2.0%	3.1%	3.7%																					5.4%	5.4%	3.6%	3.2%	2.0%
Mexico	5.4%	6.1%																									9.1%	5.4%
Philippines	7.2%	7.6%																									10.5%	7.2%
South Africa	3.9%	2.1%	6.1%	2.7%	2.3%	2.4%												6.0%	-3.0%	4.4%	5.3%	-1.2%	1.6%	2.2%	-2.4%	0.5%	7.5%	5.7%	3.9%
Taiwan	-0.8%	1.0%																										5.9%	-0.8%
Thailand	4.5%	4.6%	6.4%																						8.1%	8.5%	5.3%	4.5%

Source: Deutsche Bank, GFD

Figure 119: Emerging Market USD Annualised Equity and Bond Returns

								RETURNS BY DECADE																							
	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	Since 1800	1800-1809	1810-1819	1820-1829	1830-1839	1840-1849	1850-1859	1860-1869	1870-1879	1880-1889	1890-1899	1900-1909	1910-1919	1920-1929	1930-1939	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009	2010-2013
EQUITY																														
India	4.4%	11.9%	10.7%																							10.2%	14.5%	4.4%
Korea	8.4%	10.6%	5.1%	17.4%																				34.3%	24.9%	-0.7%	9.6%	8.4%
Malaysia	12.0%	12.4%	6.7%																						10.4%	2.1%	8.9%	12.0%
Mexico	8.8%	13.6%	15.4%																							19.8%	14.5%	8.8%
Philippines	19.7%	18.7%	6.1%																							2.3%	3.6%	19.7%
South Africa	7.8%	10.0%	8.2%	10.7%																				14.3%	11.0%	4.2%	12.6%	7.8%
Taiwan	8.7%	8.4%	2.8%																							2.0%	0.7%	8.7%
Thailand	17.0%	13.6%	4.6%																						24.3%	-6.0%	10.0%	17.0%
BOND																												
India	-1.3%	0.6%	4.3%	1.9%	2.6%	2.6%					6.8%	3.7%	3.3%	4.7%	2.1%	2.7%	2.6%	2.3%	3.7%	3.8%	6.0%	0.5%	2.9%	-0.5%	4.3%	-3.2%	3.8%	7.8%	-1.3%
Korea	8.6%	4.8%	8.6%	14.0%																				7.3%	21.4%	18.0%	9.8%	7.5%	8.6%
Malaysia	5.9%	6.5%	5.4%	7.1%																					15.1%	6.7%	3.9%	6.6%	5.9%
Mexico	9.0%	8.4%																									10.9%	9.0%
Philippines	12.3%	15.2%																									14.6%	12.3%
South Africa	1.4%	1.4%	7.3%	5.8%	4.5%	4.5%									2.6%	5.6%	3.8%	4.8%	-0.6%	7.6%	2.6%	0.0%	5.3%	4.9%	5.9%	3.0%	7.6%	10.1%	1.4%
Taiwan	1.9%	3.0%																									6.7%	1.9%
Thailand	5.8%	8.6%	8.6%																						10.9%	9.5%	9.1%	5.8%

Source: Deutsche Bank, GFD

Appendix 1

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