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Long-Term Asset Return Study

The Next Financial Crisis

Deutsche Bank AG/London

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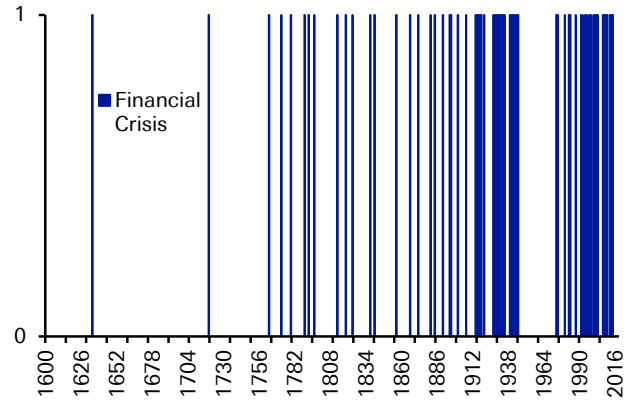
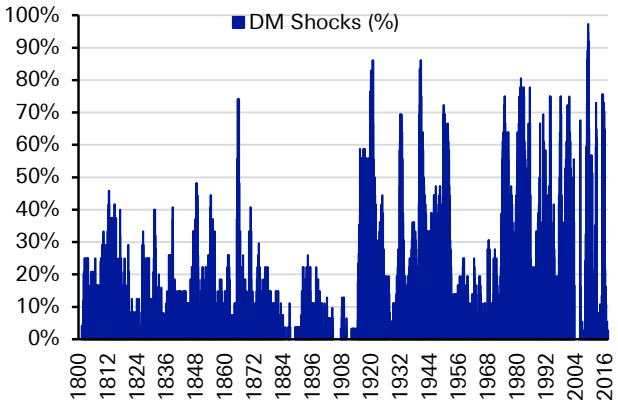
Executive Summary

- This year's long-term study looks at the frequency of financial crises and shocks through history and speculates as to where the next crises may originate from.
- We think that the post Bretton Woods (1971-) global financial system remains vulnerable to financial crises. A simple internet search of financial crises through history (Figure 1, LHS chart) confirms that the frequency has increased over this period. Examples include the UK secondary banking crisis (1975), the two Oil shocks (1970s), numerous EM defaults (mid-1980s), US Savings and Loans mass failures (late 80s/early 90s), various Nordic financial crises (late 80s), Japanese stock bubble bursting (1990-), various ERM shocks/devaluations (1992), the Mexican Tequila crisis (1994), the Asian crisis (1997), the Russian & LTCM crisis (1998), the Dot.com crash (2000), the various accounting scandals (02/03), the GFC (08/09) and the Euro Sovereign crisis (10-12).
- A more quantitative search backs this up (Figure 1, RH chart). We show the number of DM countries (%) in our sample back to 1800 experiencing one of the following on a YoY basis; -15% Equities, -10% FX, -10% Bond move, a sovereign default, or +10% inflation. This is our crisis/shock indicator. 0% equals no country with one of these conditions met, 100% equals all in our sample with one being met.

Figure 1: Occurrence of Financial Crises through history (binary variable: 1 = Crisis, left) & % of DM countries facing a Financial Shock equally weighted (right)



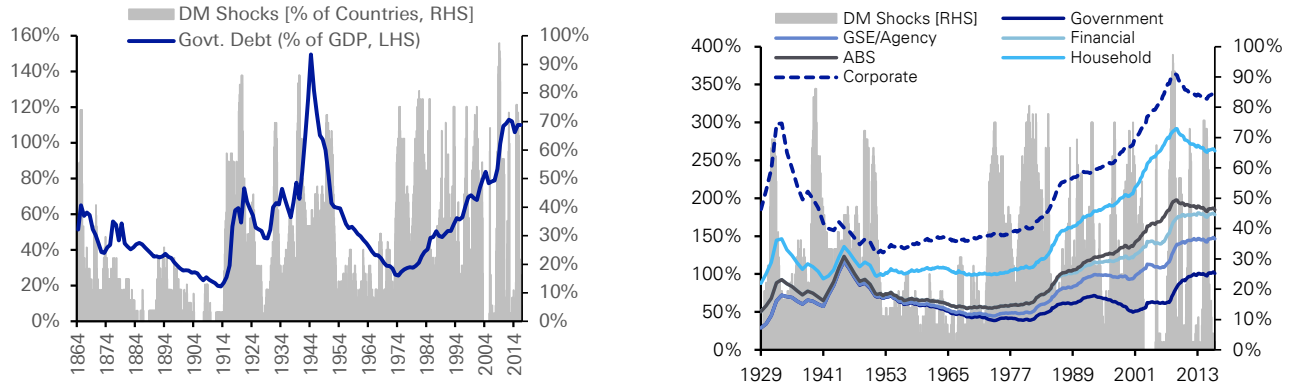


Source: Deutsche Bank, Global Financial Data, Author's calculations

- It would therefore take a huge leap of faith to say that crises won't continue to be a regular feature of the current financial system that has been in place since the early 1970s. The near exponential growth of finance and its liberalisation since this point has encouraged this trend.
- Indeed as we'll show in this report there are a number of areas of the global financial system that look at extreme levels. This includes valuations in many asset classes, the incredibly unique size of central bank balance sheets, debt levels, multi-century all-time lows in interest rates and even the level of potentially game changing populist political support around the globe. If there is a crisis relatively soon (within the next 2-3 years), it would be hard to look at these variables and say that there was no way of spotting them.

- Having said that, crises tend to have a large element of unpredictability. If they didn't then surely more would predict their imminent arrival. So while we highlight a lot of the main global vulnerabilities in this report, history would tell us that there is still a chance that when the next crisis comes its origin will take us by surprise to a certain degree. As will its timing. In the remainder of this executive summary we highlight the conditions that have encouraged crises through history and the main areas of worry as to why we may be vulnerable for another financial crisis relatively soon.
- Periods with a higher number of crises/shocks coincide with higher levels of debt….

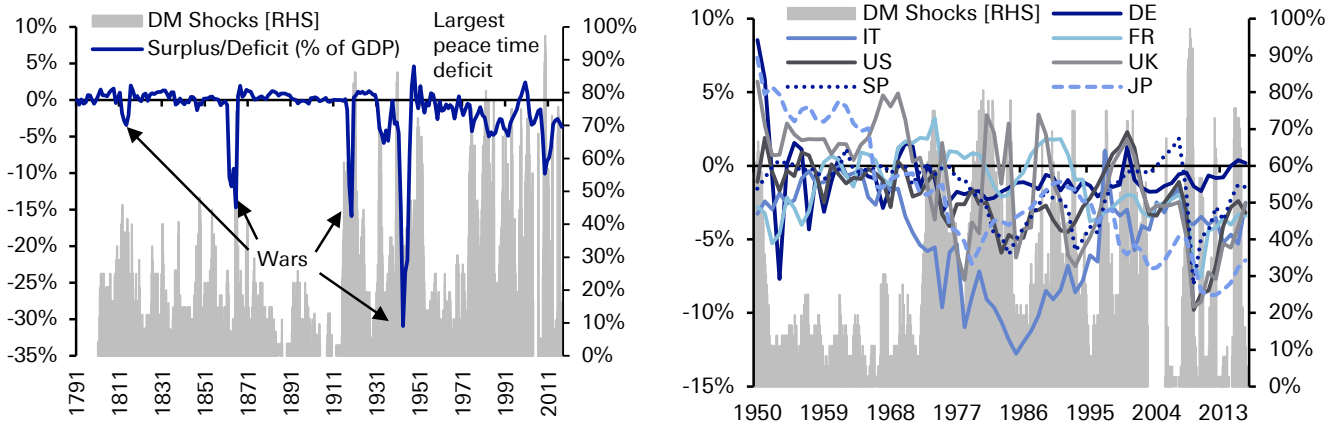
Figure 2: G7 Government Debt to GDP (left) and US Total Debt to GDP by sector (cumulatively stacked, right) – both graphs with DM Financial Shocks (% of countries) on RHS axis



Source: Deutsche Bank, Global Financial Data, Haver
Note: US Debt to GDP data is cumulative (corporate debt to GDP corresponds to total debt to GDP)

- …and with it higher budget deficits. G7 Government Debt was only previously higher with impact of WWII and before the early 1970s, persistent budget deficits only really existed in war time. Now a permanent feature.

Figure 3: US Budget Surplus/Deficit (% of GDP, left) and global budget deficits (% of GDP, right) – both graphs with DM Financial Shocks (% of countries) on RHS axis

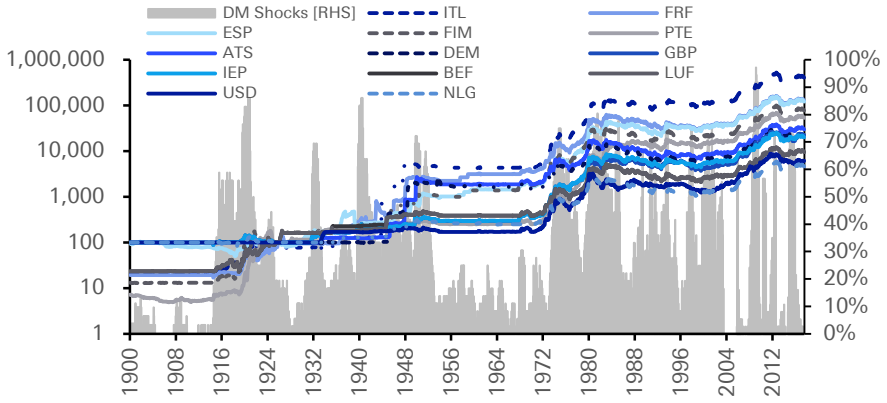


Source: Deutsche Bank, Global Financial Data, Haver

- We think the final break with precious metal currency systems from the early 1970s (after centuries of adhering to such regimes) and to a fiat currency world has encouraged budget deficits, rising debts, huge credit creation, ultra loose monetary policy, global build-up of imbalances, financial deregulation and more unstable markets.

- The various breaks with gold based currencies over the last century or so has correlated well with our financial shocks/crises indicator. It shows that you are more likely to see crises/shocks when we break from hard currency systems. Some of the devaluation to Gold has been mindboggling over the last 100 years.

Figure 4: Gold Prices in various currencies (Dec 1925 = 100, Y-axis in logarithmic scale) and DM Financial Shocks (RHS)



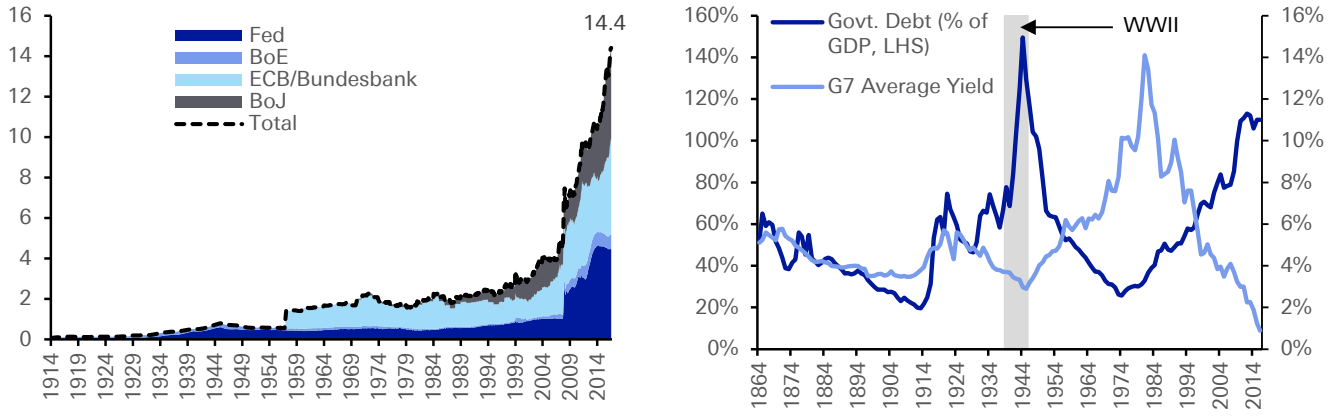
Source: Deutsche Bank, Global Financial Data, Bloomberg Finance LP

- Perversely, the current post Bretton Woods system also allows for huge operations/stimulus to overcome any crisis/shock. We also shouldn't underestimate the positive impact that this can have on nominal asset prices. Cash is arguably a far more dangerous asset in a fiat currency but unstable regime than it is in a more stable less crisis prone one. However, by continually using stimulus to deal with crises and not letting creative destruction take over, you make a subsequent crisis more likely by passing the problem along to some other part of the global financial system, and usually in bigger size. In a fiat currency world, intervention and money creation is the path of least resistance. In a Gold standard world, mining new gold was the only stable way of increasing the money supply.
- We think this leaves the current global economy particularly prone to a cycle of booms, busts, heavy intervention, recovery and the cycle starting again. There is no natural point where a purge of the excesses is forced by a restriction on credit creation.
- So we're quite confident that there will likely be another financial crisis/shock pretty soon with their frequency continuing to be high until we create a more stable global financial framework.

So where will the next crisis come from?

- An obvious issue is how we resolve the combination of the unwinding of unparalleled central bank balance sheet sizes at a time of record peacetime government debt and multi-century record low yields (Figure 5).

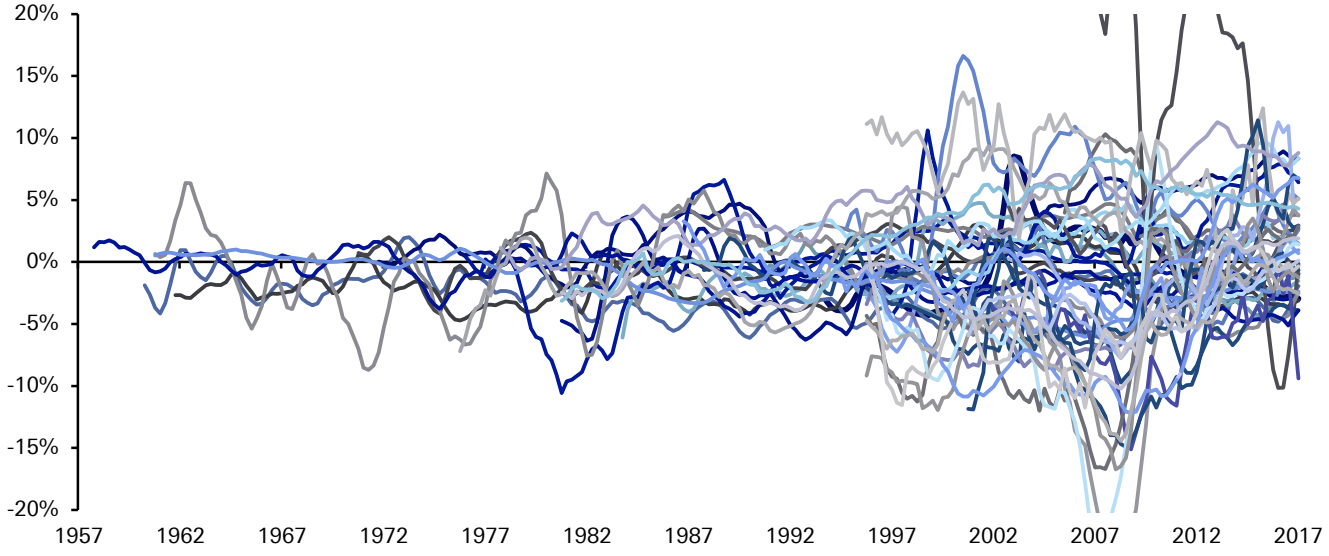
Figure 5: Central Banks Assets inflation adjusted to June 2017 price levels (left) and G7 Government Debt (% of GDP) with Average G7 10Y Government Bond Yield (right)



Source: Deutsche Bank, Global Financial Data, Haver, official websites of Central banks

- We also still have extreme levels of global imbalances (Figure 6) which pose a risk as international capital flows are necessary to support the status quo. These are harder to control by authorities or predict.

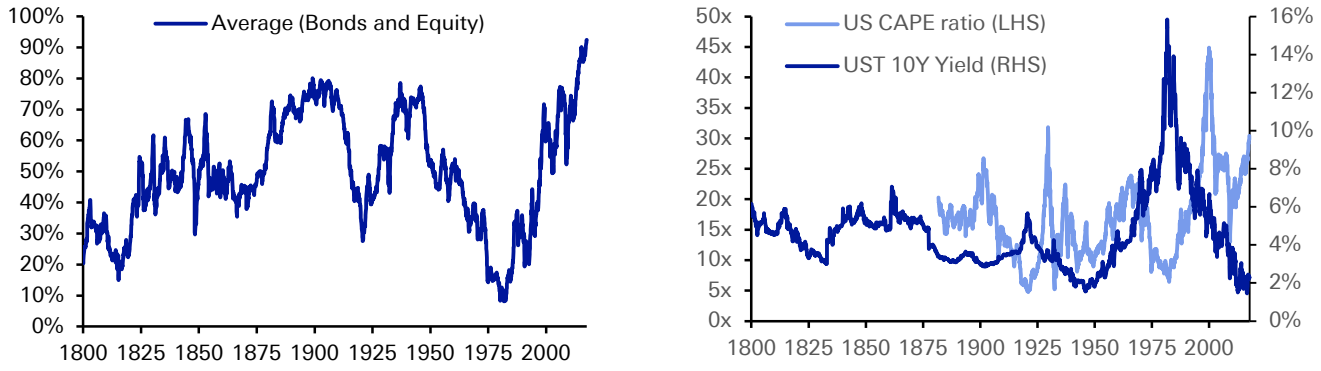
Figure 6: G20 (including European Union countries) Current Account Balances (Net, % of GDP)



Source: Deutsche Bank, Haver, Global Financial Data

- All this is occurring at a time of extremely high global asset prices and still low economic growth relative to the past. Could we be vulnerable to a major asset price correction that creates the conditions for a crisis?

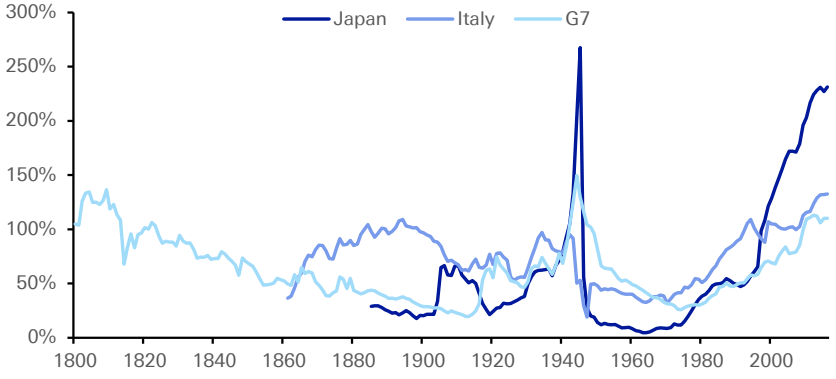
Figure 7: Percentile Valuations of 15 DM Bond and Equity Markets back to 1800 (left) and US CAPE ratio vs. US 10Y yield (right)



Source: Deutsche Bank, Global Financial Data, Bloomberg Finance LP

- Global central banks have facilitated these elevated asset prices. A long series of global financial problems have now been passed through all parts of the financial system with most of these problems stacked up and now resting with central banks and Governments. The buildup of debt that this has created has forced central banks to keep yields at ultra-low levels, thus raising the prices of a variety of other global assets.
- Italy and Japan have seemingly unsustainable debt burdens and are likely vulnerable to a crisis outcome. However both have had this for some time which mitigates short-term risks. Italy is perhaps more vulnerable because of precarious and fragile politics, elevated levels of populism and a central bank that is regional and not domestically controlled. Japan shows how long a crisis can be avoided but that doesn't automatically mean we should be complacent, especially as the BoJ now owns over 40% of the JGB market (from under 10% in 2012).

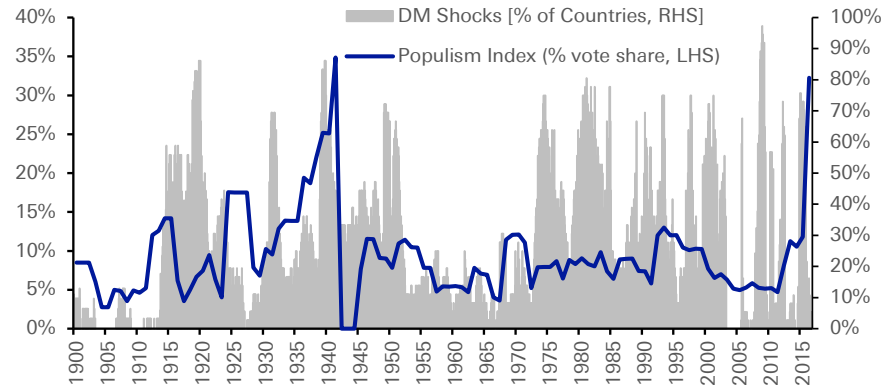
Figure 8: Government Debt to GDP ratios – Italy, Japan and G7 aggregate



Source: Deutsche Bank, Global Financial Data, Haver

- On populism, our index (Figure 9) tracking its rise across key DM countries shows that we are close to the 1930s highs. Is this a precursor to a big crisis? Does it make for more unpredictable politics, economics and markets?

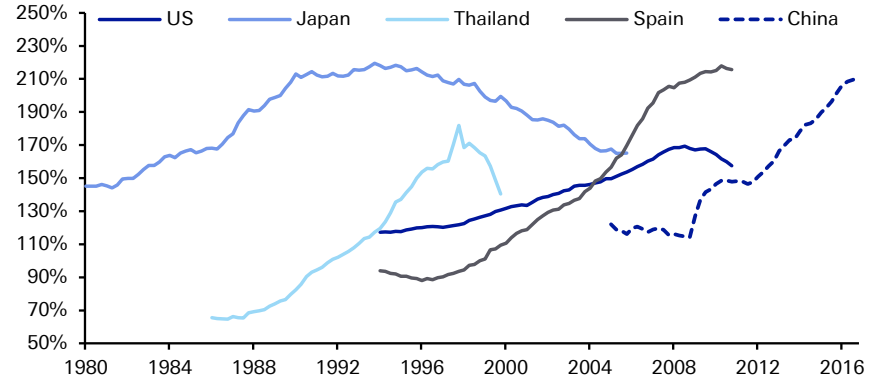
Figure 9: Populism index (% of vote across key countries, population weighted, LHS) and DM Financial Crises (RHS)



Source: Deutsche Bank, Author's Calculations

- We see China's credit growth post GFC as also an area of great concern. As an example, in a recent IMF report they analysed 43 global cases of credit booms in which the credit to GDP ratio increased by more than 30 percentage points over a 5-year period. Only 5 cases ended without a major growth slowdown or financial crisis immediately afterwards. The IMF also caveated that these 5 cases, considering country specific factors, provided little comfort. If that wasn't enough, the fund also points out that all credit booms that began when the ratios were above 100% ended badly.

Figure 10: Non-financial debt (% of GDP) leading up to key financial crises vs. current trend for China



Source: Deutsche Bank, Haver

- These are perhaps the main observable risks out there but we go through a list of other potential catalysts in the piece. As we discuss at the top, by their very nature, financial crises or shocks are generally unpredictable.
- While we can't be confident of where and when the next crisis will occur we can be pretty confident that the conditions remain in place for a world of frequent crises.

Our report also contains all the usual historical data on returns across numerous asset classes and countries through history with data going back over 200 years in many cases.

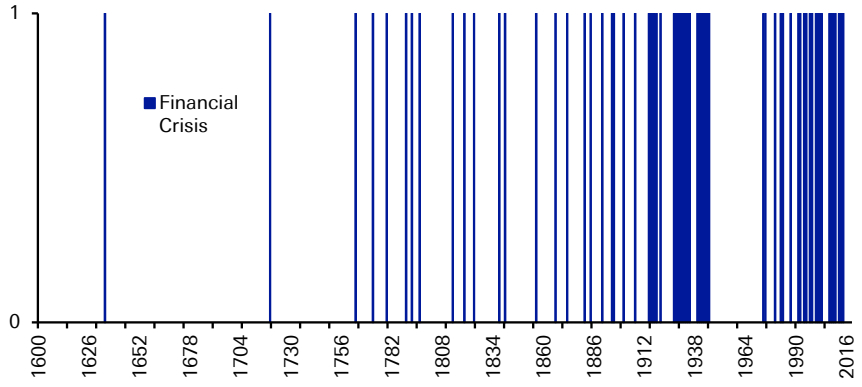
Data Summary on a page

- In the US, over the last 100 years (since end 1917), where we have data for the widest selection of assets, Equities outperform 10yr and 30yr Governments by around +5.2% p.a., Corporates by +4.2% p.a. and T-bills (cash proxy) by +6.8% p.a. (on a nominal basis). They also outperform Gold by 6.1% p.a., Oil by 7.7%, and US housing (prices only) by 6.5% p.a.
- In real terms over the past 100 years all of the analysed commodity series with the exception of Gold have seen negative returns with the Commodity index down -1.4% p.a. Gold and Housing (ex-rents) have returned just +1.2% and +0.8% p.a. respectively, comfortably lower than Equities (+7.2% p.a.), 10yr Treasuries (+2.2% p.a.) and Corporate Bonds (+3.1% p.a.). Over recent years, assets like housing and commodities have been used as a portfolio alternative to equities/bonds. History suggests that such a strategy is unlikely to produce superior long run results.
- The post 1971 period is an important theme in this piece. Nominal US equity returns (10.4% p.a.) have been higher than in the 1900-1970 period (9.0% p.a.) but real returns slightly lower (6.2% vs. 6.4% p.a.). 10 year Treasuries have seen outperformance post 1971 (7.3% p.a.) vs 1900-1970 (2.9% p.a.) on a nominal basis and 3.2% and 0.5% p.a. real.
- Gold returned only 0.8% p.a. nominal and -1.5% real between 1900-1970. Since then these numbers are 7.8% and 3.7% p.a. respectively.
- Since 1800, US equities have only had two negative decades in nominal terms. The 1930s (-0.5% p.a.) and the 2000s (-0.9%). There have been three in real terms (1910s: -2.8%, 1970s: -1.5%, 2000s: -3.4%). In nominal terms, three of the best five decades for equities since 1800 have occurred in the last four decades (including this current decade not yet complete). However this period also included the worst decade (the 2000s).
- 10yr Treasuries and corporate bonds have never seen a negative return decade in nominal terms but 6 out of the 12 decades since 1900 have seen a negative real return from Treasuries, including four successive decades from the 1940s. The last 4 decades have seen stunningly positive real returns for bonds although with each decade we have seen these annualized returns decline, and as we have previously highlighted and show in the mean reversion section of this report, we can't help thinking that we're setting ourselves up for a return to a few negative real return decades ahead in bonds as we venture out towards 2050.
- Internationally, there is a survivor bias in fixed income. Although the majority of the analysed countries with data back to 1900 have provided positive real returns over this period there have been some notable exceptions with France (-1.2% p.a.), Italy (-1.9% p.a.) and Japan (-0.6% p.a.) all seeing negative real returns. Germany would be the worst if we had reliable data for the hyperinflation era. This shows that negative real returns in bonds are easily possible over even very long periods. With debt levels so high & yields so low, such an outcome looks likely going forward.
- Since the Euro was introduced (1999), there is little doubt that real equity returns in Europe have been relatively disappointing. Germany is marginally better (+3.7% p.a.) than the US and UK (both +3.5% p.a.) but Greece (-7.1% p.a.) and Portugal (-1.1% p.a.) have all failed to see positive real total returns. Italy (+0.6% p.a.), Spain (+2.3% p.a.) and Ireland (+2.0% p.a.) are also relatively weak - worrying stats for supporters of the Euro.

Identifying Financial Crises through history

Although we currently live in an extremely low volatility world, with the VIX hitting all-time lows this summer (with data back to 1990), we think the period we are living through is especially vulnerable to financial crises. That is not to say that the specifics of the next crises are predictable, just that recent history suggests that one could happen soon. In this introductory chapter we'll show that since the Bretton Woods system collapsed in the early 1970s and we moved into an era of fiat currencies where we broke all ties to gold, financial crises have been more regular. Figure 11 shows a graph back to the year 1600 using an internet search to highlight as many financial crises as we could find through history. As can be seen, prior to the post WWII Bretton Woods system, financial crises existed, but the frequency was not as intense as the post Bretton Woods world. Interestingly this period between the mid-1940s and early 1970s was the longest stretch without an observable financial crisis for 200-300 years.

Figure 11: Occurrence of Financial Crises through history (binary variable: 1 = Crisis)



Source: Deutsche Bank, Author's calculations

In constructing this relatively crude analysis, it did worry us that there might be a reporting bias that overstated events that occurred more recently and ignored earlier crises given that they arose in the much more distant past. As such we decided to quantify our analysis and try to assess financial crisis by observable financial market and economic criteria using our extensive long-term economic and asset price database.

To compile this we looked at data across 70 countries in 1800, rising to 85 since 1900, 149 from 1950 and 175 by 2017 along with a breakdown between DM and EM countries. We then looked at whether these countries saw one of the following conditions on a rolling 12-month basis.

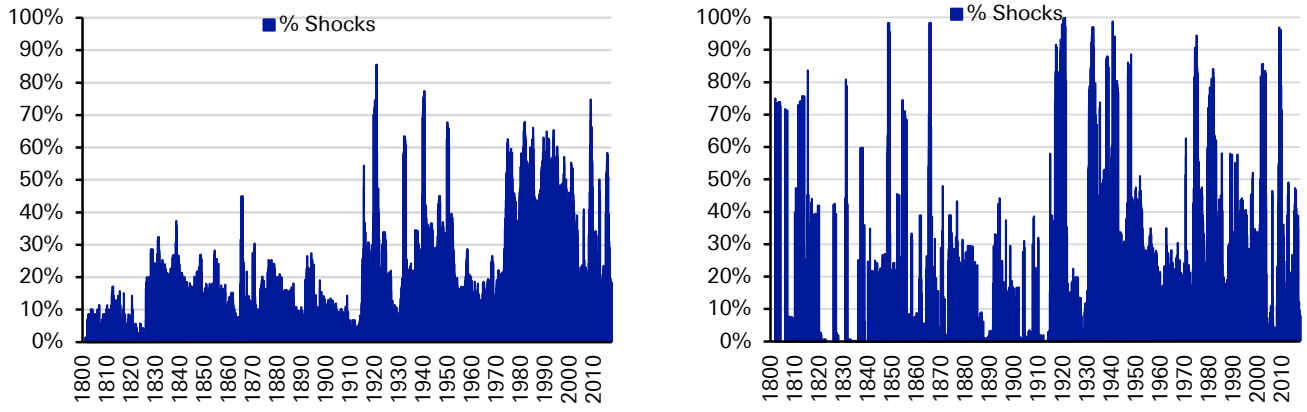
- Equity markets -15% YoY
- FX -10% YoY vs US $
- A Sovereign Default in that calendar year
- Government Bond returns -10% YoY
- Inflation +10% YoY

It's almost impossible to have a one size fits all definition of a financial crisis, especially as there is no set definition. Our analysis might pick up severe market turbulence rather than a well defined textbook crisis but the reality is that as long as it's consistent over time the results through history should be comparable and give us a quantifiable indicator of periods of notably unstable (and negative) financial markets. We will call our analysis financial shocks to avoid confusion.

Our 'financial shock' index is calculated based on the proportion of countries experiencing one of the above conditions in any rolling 12-month period. Given this definition, our indicator for each country is a binary variable that takes on a value of 1 if the country experiences a financial shock and 0 otherwise. Thereafter we aggregate this measure in 2 ways. ***Our first measure*** *is an equally weighted measure that counts the number of countries suffering from a financial shock in a given month and divides it by the number of countries for which we have data available in that same month (hence each country has an equal weight in the aggregate measure), to get the percentage of countries (for which we have data) which are suffering.* ***Our second measure*** *is a GDP weighted measure that uses the sum of each country's indicator (0 or 1) weighted by the ratio of the country's GDP to the total GDP for which we have data available in a given month. Note that both measures are adjusted for data availability so that our aggregate measures are robust to changes in cross-sectional sample size as new countries enter our sample (as data becomes available).*

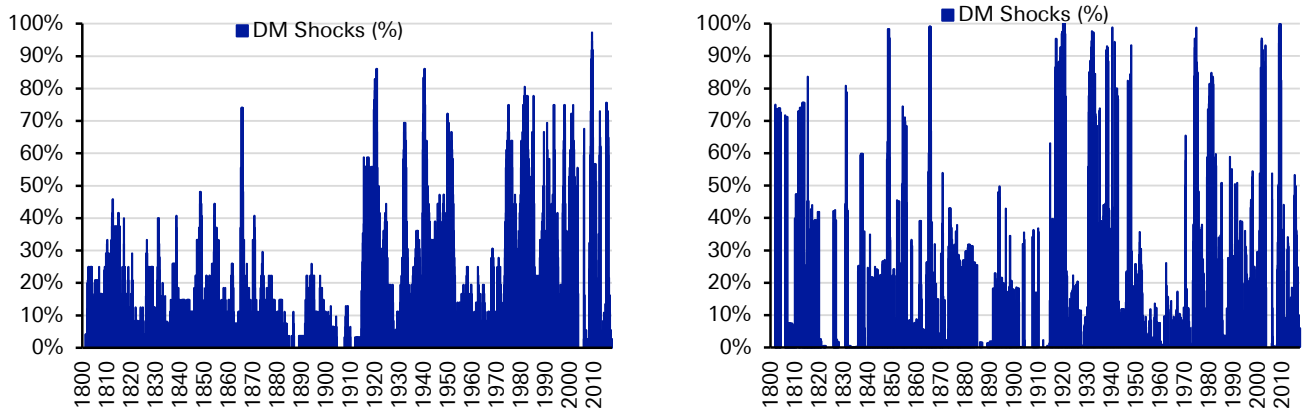
In Figure 12 we show the results for the global economy. We show this both ways with the GDP weighted measure placing a greater emphasis on crises in the larger countries. Figure 13 and Figure 14 then breaks this down by DM and EM economies.

Figure 12: Percentage of Countries facing a Financial Shock – Equally weighted (left) and GDP weighted (right)



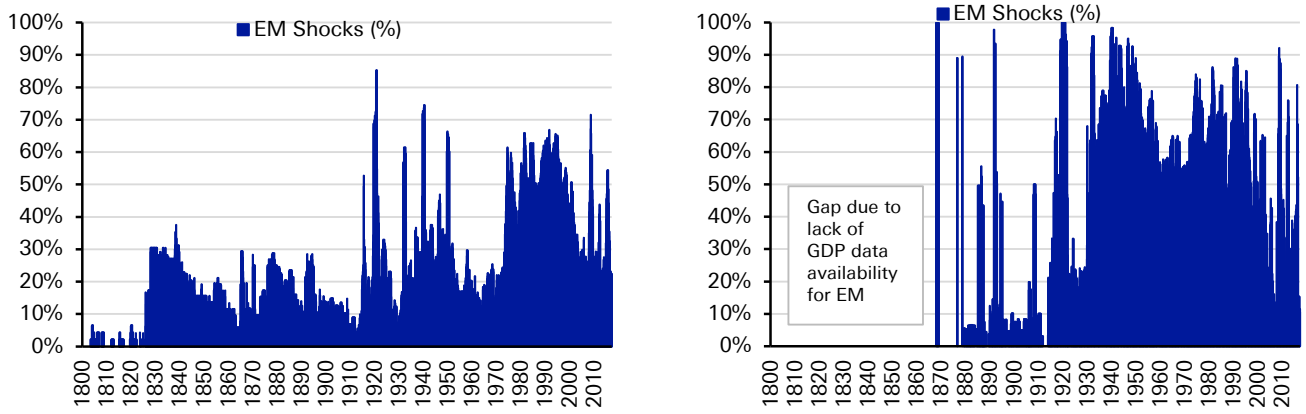
Source: Deutsche Bank, Global Financial Data, Author's calculations

Figure 13: Percentage of DM Countries facing a Financial Shock – Equally weighted (left) and GDP weighted (right)



Source: Deutsche Bank, Global Financial Data, Author's calculations

Figure 14: Percentage of EM Countries facing a Financial Shock – Equally weighted (left) and GDP weighted (right)



Source: Deutsche Bank, Global Financial Data, Author's calculations

This exercise helps confirm the assumption that the post early 1970s period has seen a pick-up in intensity of financial shocks even if there has been strong performance from asset classes during this period. Although, as you'll see in the tables at the back, this has mostly been through higher nominal returns as real returns from 1971 onwards haven't generally been higher (particularly for equities) than the periods up to this point.

Prior to the twentieth century, financial crises/shocks were fairly commonplace, but the relentlessness of their occurrences didn't match that of the last 45 years. Indeed between the mid-1860s and WWI, there weren't any global shocks that impacted at least 50% (by GDP weight) of the countries in our sample. On an un-weighted basis it wasn't until the twentieth century that crises/shocks tended to impact more than a quarter of countries on a global scale.

The period around, and after, WWI changed the global financial crisis landscape. The war obviously impacted the world economy and financial system and crises and shocks became global phenomena. As we'll also see in Figure 21, this pick up in market/economic stress followed the first modern wave of globalisation. So there is some evidence that the rise of global trade

and capital flows encourages more crises, likely by virtue of it encouraging more cross border flows which tend to be less controllable by domestic authorities and more susceptible to reversing course.

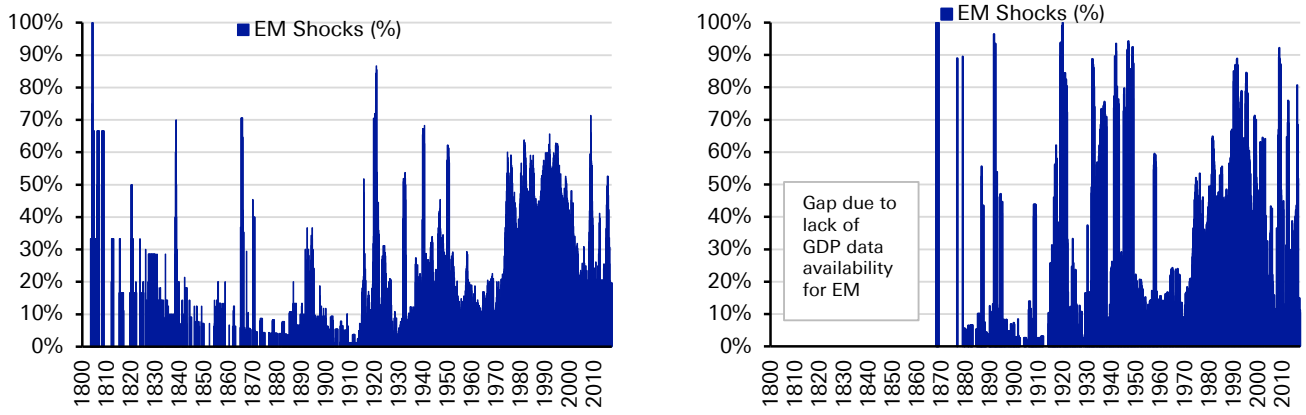
After WWI saw the first truly global financial crisis, we then saw the recovery of the 'roaring 20s'. However this soon made way for the 1930s global Depression and WWII. After the Second World War, we saw the calm before the more recent storm, as the Bretton Woods system heralded in a period of quiet and controlled global financial markets. We'll delve into more detail later as to why we had calm and then why we had the storm.

Differences between DM and EM crises and shocks through history

There are quite major differences between the DM and EM universe over our study. Emerging markets seemed to be in perpetual crisis between the 1930s and the end of the 1990s and are therefore off cycle relative to the DM trend. From the 1930s to the 1990s EM Sovereign defaults were plentiful.

Figure 15 shows the same data for EM without the influence of Sovereign defaults and when compared to Figure 14 highlights that a lot of the 1930s-end 1970s issue with EM was default. However since this point default risk has slowly fallen to ultra-low levels with FX devaluations and inflation taking over as the big theme in the 1980s and 1990s – a period where debt crises across the universe were commonplace. From this point on, even this has been less of an issue.

Figure 15: Percentage of EM Countries facing a Financial Shock (excluding sovereign debt crises) – Equally weighted (left) and GDP weighted (right)



Source: Deutsche Bank, Global Financial Data, Author's calculations

Fiat currencies the problem, but also allow the quick fix

Although our analysis so far shows that the post Bretton Woods financial order has been more crisis and shock prone than the prior 25+ years, and also that seen through most of observable financial history, the reality is that the current period of fiat currencies also arguably allows a buffer against an even greater number of them. So a real double edged sword. Since 1971, the global financial system has completely broken its ties with precious metal currencies systems. Prior to this period the vast majority of countries were tied to precious metal currencies for all but rare and short periods away from them.

Such forced discipline massively constrained the financial system and in particular made it very difficult to create credit in the same way we do in today's economy. It also made it very difficult for governments to run large budget or current account deficits. Any economic system tied to Gold left

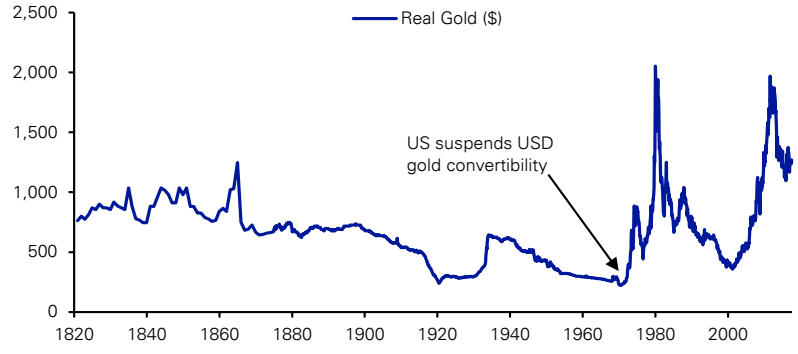
countries unable to expand the amount of money/debt in the economy without fears that it would lead investors to rush to convert the currency into gold as concerns over inflation mounted.

The difference between any global currency system based on gold and the current world financial order is like chalk and cheese. The current environment allows (and maybe encourages) great imbalances and huge credit and debt creation but also allows for huge operations to overcome such crises even if they perhaps make a subsequent crisis more likely by passing the crisis along to some other part of the global financial system and usually in bigger size. In a fiat currency world, intervention and money creation is the path of least resistance. In a Gold standard world, mining new gold is the only stable way of increasing the money supply. We think this leaves the current global economy particularly prone to a cycle of booms, busts and then heavy intervention, recovery and the cycle starting again. There is no natural point where a purge of the excesses is forced by a restriction on credit creation.

The current example of which being the $10 trillion plus of QE/central bank balance sheet expansion seen from the 'big four' since the last financial crisis. A crisis like the one we saw in 2008-09 couldn't have occurred in an era of money being tied to gold, but the huge central bank balance sheet expansion also couldn't have been unleashed. This is a more extreme example of what has been occurring for over 40 years now. Large credit expansions and looser and looser monetary policy to mop up the risks.

As such, the price of Gold has exploded in real terms (see Figure 16) in the last 45 years, albeit with ups and downs. Before the Bretton Woods system collapse, Gold had fallen to an all-time inflation adjusted low in Dollar terms and had consistently fallen in real terms for the best part of 100 years. Since 1971, it has seen 3.71% p.a. real returns and 7.79% p.a. on a nominal basis against that seen between 1900-1970 of -1.53% p.a. and 0.84% p.a. respectively.

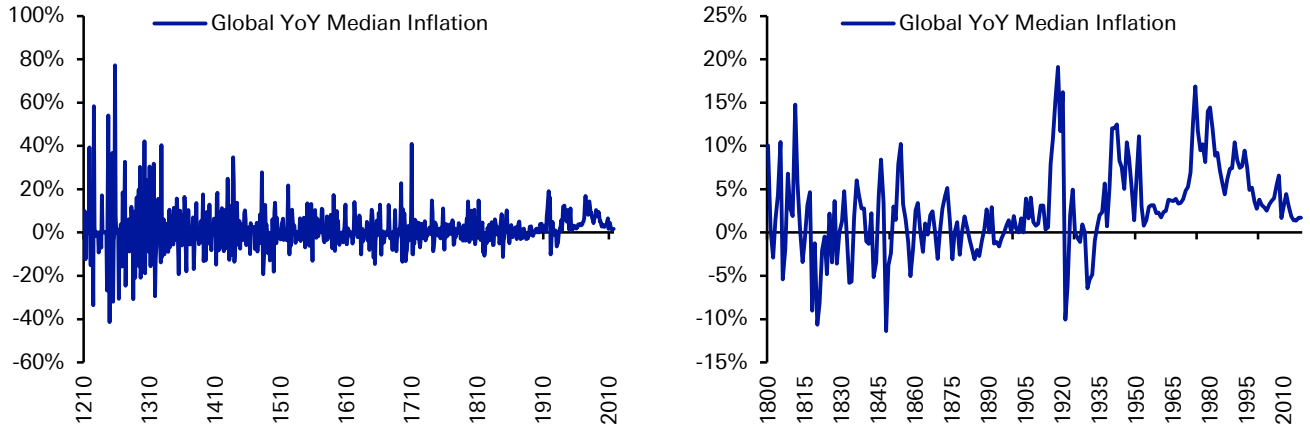
Figure 16: Real Gold Prices ($)



Source: Deutsche Bank, Global Financial Data, Bloomberg Finance LP

Although Gold has fallen in price over the last 5 years as inflation has failed to ignite and deflation fears have mounted, it is still at an elevated trading band relative to when it was specifically tied to currencies. Deflation risk fears are also relative. We still live in positive inflation times. As Figure 17 shows, median global inflation has been positive for 84 successive years now. Prior to this, whether we look at the immediate preceding century or the 700 years prior to this, it's clear that inflation and deflation were near equal bedfellows through history and we oscillated fairly evenly between higher and lower prices. So when we currently hear about how low inflation is, we should put it in the context that it has remained positive virtually everywhere in modern times.

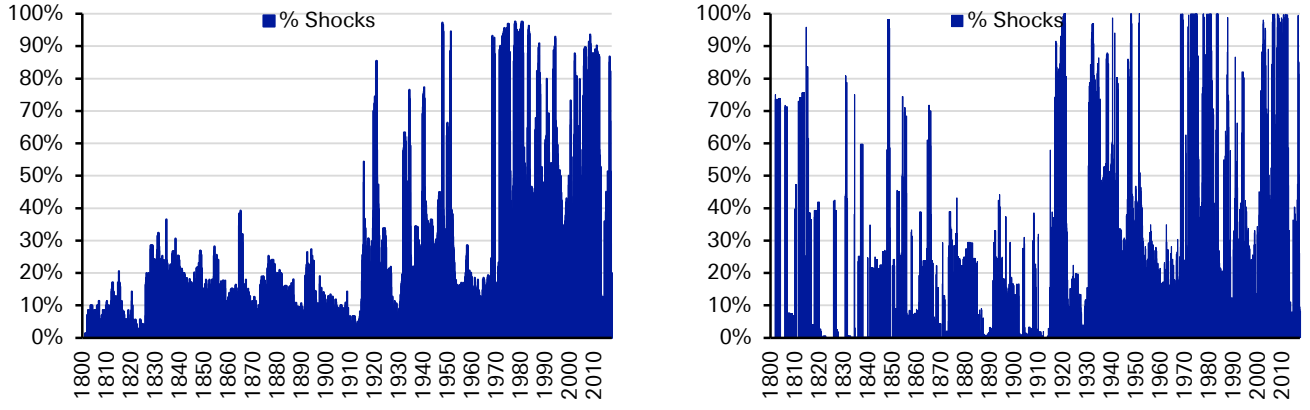
Figure 17: Median Global Inflation (YoY) – from 1210 (left) and 1800 (right)



Source: Deutsche Bank, Global Financial Data

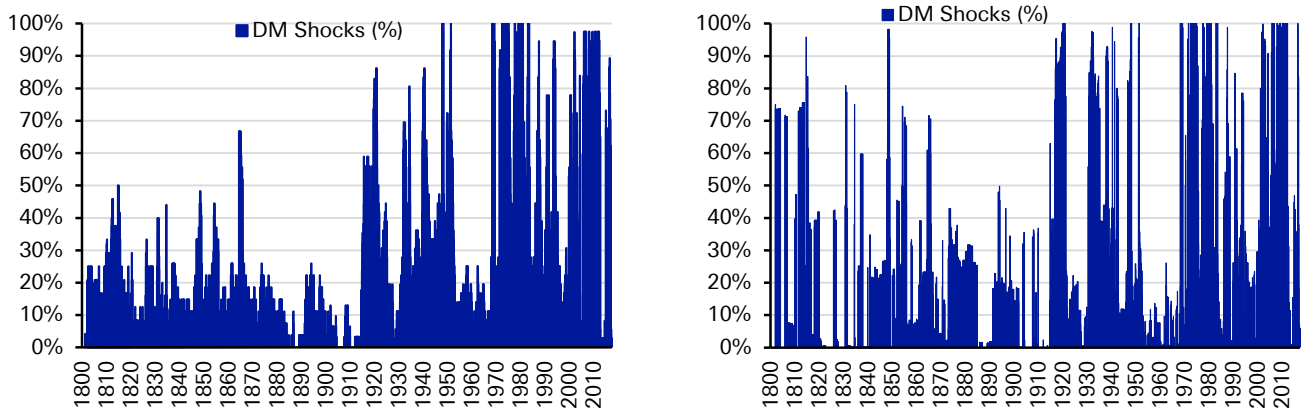
To try to adjust for this modern era debasement of money, we repeat the exercise of identifying crises/shocks over the last 200+ years and replace the down 10% FX criteria with a down 10% versus Gold criteria for each currency. In doing so, we can highlight more aggressively the changes to the financial system over the last 45 years relative to the past. As Figure 18 - Figure 20 show there are many more instances where our index is at or close to 100%, which means that in that particular year, one of our 'shock' criteria has been breached for every country (or the vast majority) in the study. We live in a world where bubbles and excesses are allowed to be created and in a world where monetary debasement follows to try to correct such imbalances. The story is equally compelling whether you look at DM or EM. Such a measure may seem meaningless in today's modern financial system but we highlight it to show how different it is to the system that existed before the early 1970s.

Figure 18: Percentage of Countries facing a Financial Shock (FX measured against Gold) – Equally weighted (left) and GDP weighted (right)



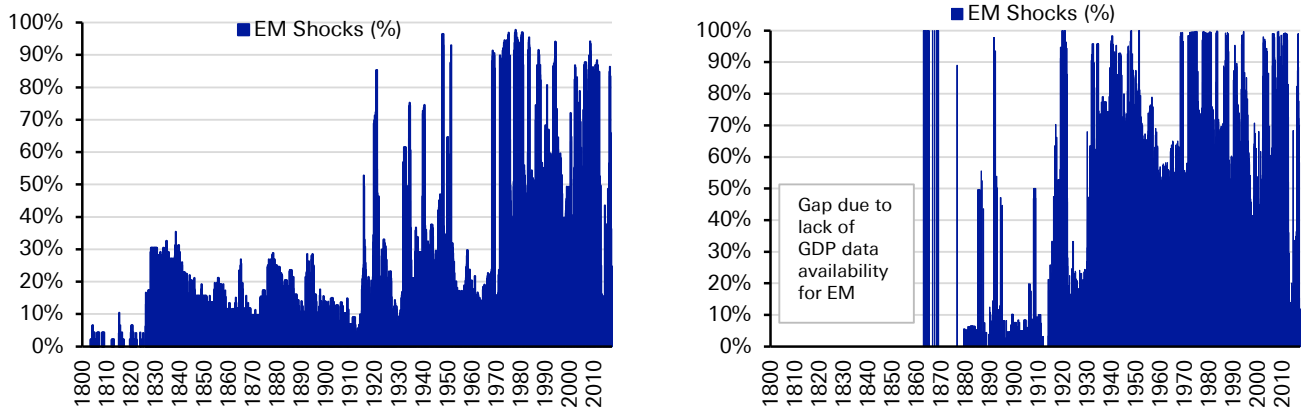
Source: Deutsche Bank, Global Financial Data, Author's calculations

Figure 19: Percentage of DM Countries facing a Financial Shock (FX measured against Gold) – Equally weighted (left) and GDP weighted (right)



Source: Deutsche Bank, Global Financial Data, Author's calculations

Figure 20: Percentage of EM Countries facing a Financial Shock (FX measured against Gold) – Equally weighted (left) and GDP weighted (right)



Source: Deutsche Bank, Global Financial Data, Author's calculations

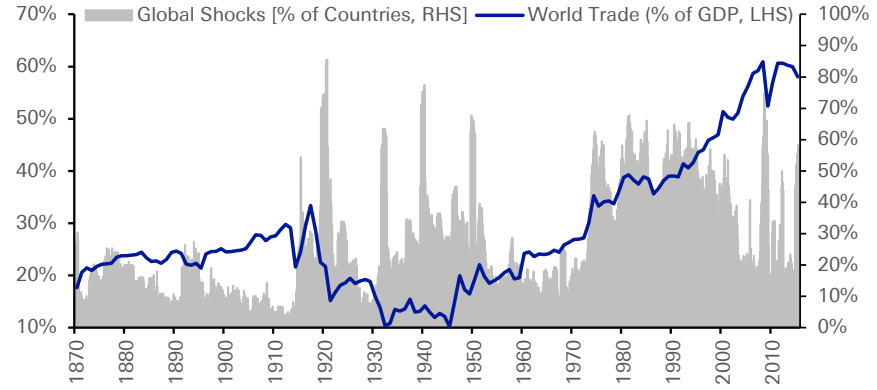
To conclude in this opening section, we believe that financial shocks and crises have been a more common feature of the last 45 years and have occurred at a frequency similar to that seen between the two World Wars. We also stress that the fiat currency world that has helped encourage this, also provides the framework to escape from each event. The consequence though is that the total stock of debt is higher as each recovery starts than it was before the crisis began. This actually helps lay the ground for the next crisis and the boom/bust cycle rolls on. In the next section we'll examine in more detail why the frequency of crises has increased over the last century and in particular over the last 45 years.

Why has the frequency of financial crises increased?

Financial crises have been around since the Dutch Tulip Crisis in 1637 at the very least but it wasn't until the latter part of the nineteenth century that their frequency increased and they became more global.

As the twentieth century approached, globalization was witnessing its first major push and as such, finance became more international with cross border trade and lending increasing. As such, there was opportunity for crises to have wings outside their country of origin.

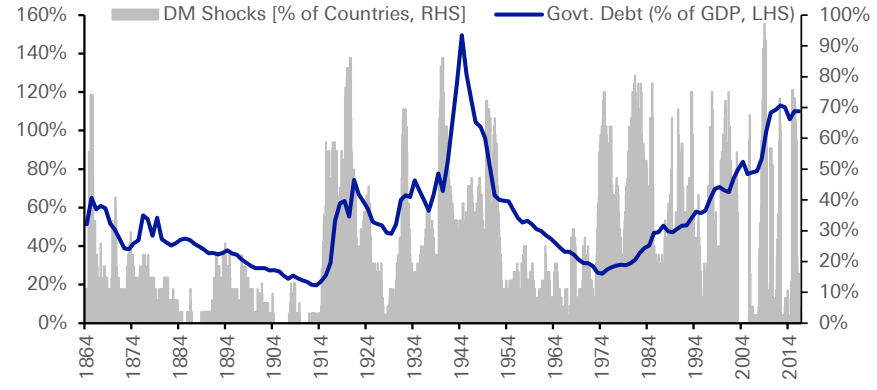
Figure 21: World Trade to GDP (LHS) and Global Financial Shocks (RHS)



Source: Deutsche Bank, Haver, Global Financial Data, Penn World Tables

As we also saw earlier the two main periods of more concentrated global crises were between WWI and WWII, and secondly the period post 1971 after the collapse of the Bretton Woods system. As Figure 22 shows both these periods saw increasing Government debt.

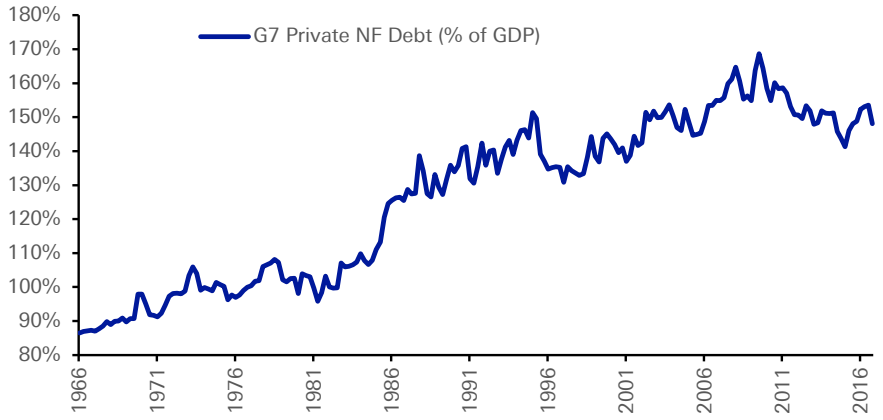
Figure 22: G7 Government Debt to GDP (LHS) and DM Financial Shocks (RHS)



Source: Deutsche Bank, Haver, Global Financial Data

It's safe to say both periods saw other parts of the economy lever up as well. We can show this aggregated for the latter period (see Figure 23 but there's less data available globally for the former period for non-government debt.

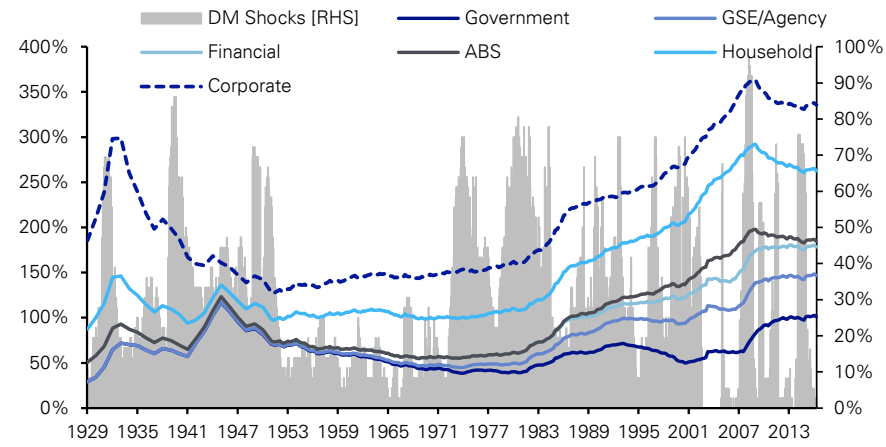
Figure 23: G7 Total Private Non-Financial Debt (% of GDP)



Source: Deutsche Bank, Haver

However, Figure 24 looks at the US from 1929 onwards and while it misses out the first leg of the post WWI period, we can see that non-Government debt was already high prior to the 1929 stock market crash and early 1930s depression which would have hit GDP (the denominator in this equation).

Figure 24: US Total Debt to GDP by sector (cumulatively stacked, LHS) and DM Financial Shocks (RHS)



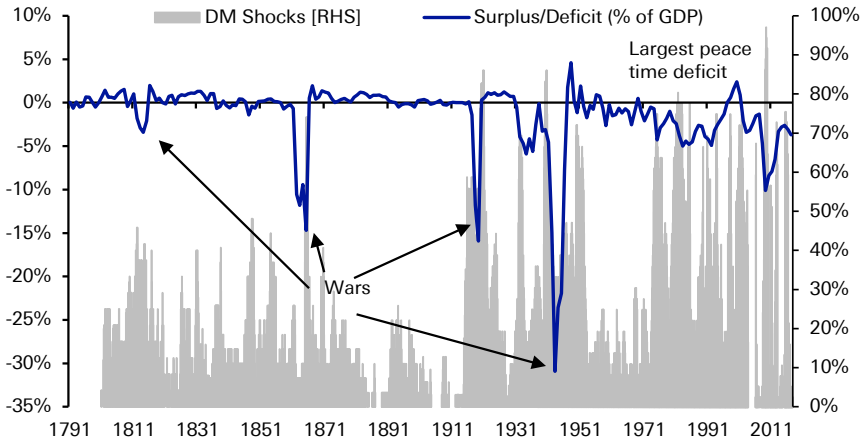
Source: Deutsche Bank, Haver, Federal Reserve

At the G7 level (Figure 22) Government Debt to GDP has never been higher than current levels outside of the WWII years and is now at levels higher than those seen during the Great Depression. However, yields continue to hover around all-time lows. As we'll see in the section where we try to predict future crises, this combination is certainly a risk going forward.

Back to correlating debt with financial crises, it's clear that the start of the modern era of increased frequencies of crises corresponded to the trough of the current secular debt/GDP cycle. From 1975, G7 government debt started to climb again. Free from the shackles of the Bretton Woods system, countries were able to borrow more freely. Indeed this shows up in the annual deficit numbers.

The high government deficits that have been run since the 2008/09 GFC have simply been an extension of the post Bretton Woods multi-decade trend. Figure 25 shows the US annual budget deficit back to 1791 and illustrates that the deficits seen since the early 1970s have consistently been higher than all of history apart from the brief spikes due to wars and the one seen during the early 1930s and the Depression years. Obviously deficits have fallen since the immediate post GFC years, but looking at recent history, one doubts whether under the current global financial system we can return to balanced budgets again in the foreseeable future. It's therefore unclear as to how debt/GDP ratios will decline over any observable horizon period without a careful combination of low yields, higher inflation and higher growth – a difficult combination to create.

Figure 25: US Annual Budget Surplus/Deficit (1791 to present, LHS) and DM Financial Shocks (RHS)

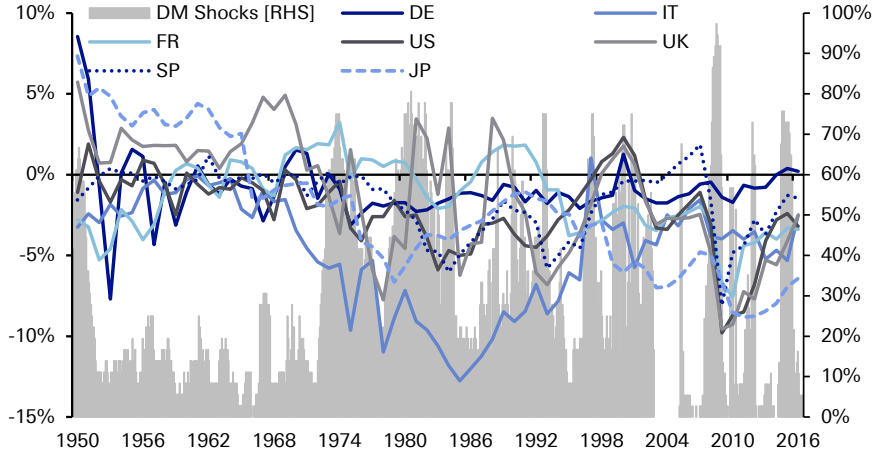


Source: Deutsche Bank, Global Financial Data

Prior to the Bretton Woods system collapsing in 1971 and with it our last currency link to gold, a balanced budget was a routine peace time phenomena in developed economies with little variability around this. Even when the deficit spiked due to wars, there tended to be a quick return to surplus after each conflict ended. However in modern times, apart from the 4 years of small surpluses between 1998 and 2001 (internet bubble related), the US has run an annual deficit every year since 1969. In fact they have been in deficit for 53 out of the last 60 years (including 2017).

Elsewhere, the UK chancellor has recently pushed back the plan to balance the budget to 2025 with some recent reports suggesting that this could be pushed back further to 2027 later this year. If these targets are hit (and it's a big if), it would mean 24 or 26 successive annual deficits. Elsewhere Spain has been in deficit for 53 of the last 61 years. Japan has run an annual budget deficit since 1966, France since 1993, and Italy has seen perpetual annual deficits since we have reliable data back to 1950 (except 1997). Figure 26 plots the annual budget deficits for these countries and shows just how unusual budget surpluses have been in the last 45 plus years. Surpluses have often only been seen briefly in artificial booms like the one already discussed around the turn of the millennium, the late 1980s consumer boom/bubble in the UK and the property bubble in Spain just before the GFC.

Figure 26: Annual Budget Deficit by Country (since 1948, LHS) and DM Financial Shocks (RHS)



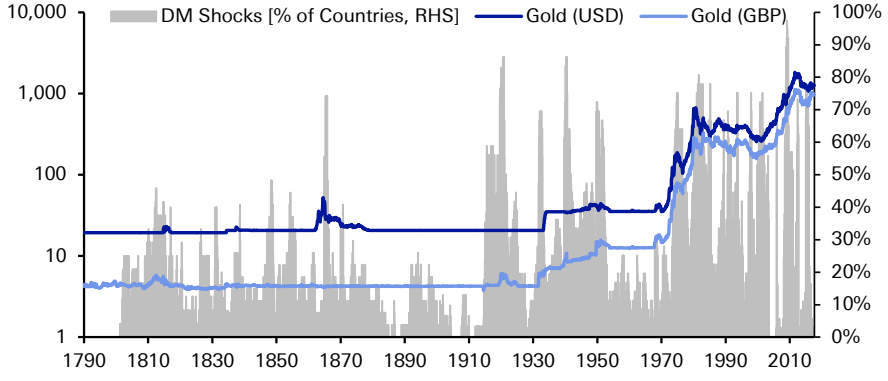
Source: Deutsche Bank, Global Financial Data, Haver

So as discussed, prior to the last 45 years, notable deficits only tended to occur in extreme situations which largely corresponded with wars or from savage economic shocks like the Great Depression. With a multi-decade compounding of deficits, we are now left with debt/GDP numbers across large parts of the developed world that have required extreme central bank intervention to finance them. We'll examine later whether this continues to make the global economy crisis prone, but for now, we think this modern day deficit and debt accumulation regime has created the conditions for regular financial crises.

Linking crises to the debasement of money against Gold

Figure 27 shows the price of Gold in Dollars and GBP over the last 220+ years with our financial crises indicator overlaid on top. The data for Gold is shown on a log scale which is needed to sensibly capture the dramatic moves in the price over the last 100 years.

Figure 27: Gold Prices in USD and GBP (since 1790, LHS) and DM Financial Shocks (RHS)



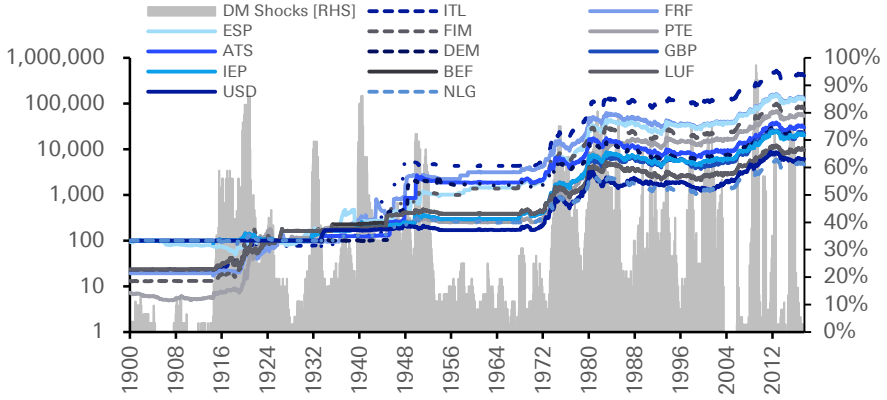
Source: Deutsche Bank, Global Financial Data, Bloomberg Finance LP

The UK and the US are a good place to start as the UK was the world's superpower as we moved into the 20th century and the US then grew into this role as the first half of the last century progressed. As can be seen, the UK and

to a lesser extent the US, slowly devalued against gold during the 20th century up to the early 1970s before the process accelerated from the point that the Bretton Woods system collapsed after 1971.

The reality is that this was a common theme across the globe and Figure 28 replicates Figure 27 but for a much wider selection of countries. We've rebased at 100 in 1925 after Germany's hyperinflation period.

Figure 28: Gold Prices in various currencies (Dec 1925 = 100, Y-axis in logarithmic scale) and DM Financial Shocks (RHS)



Source: Deutsche Bank, Global Financial Data, Bloomberg Finance LP

It's worth reminding ourselves that this graph is also compiled on a log scale which can visually understate the scale of the loss of purchasing power seen against Gold over the last century. Such losses did occur in stages though. As can be seen from the graph, the 1930s Depression period, and the war-torn 1940s, saw sizeable devaluations against Gold from most countries as many re-valued or left the Gold Standard due to high economic stress. Post WWII, the Bretton Woods system then broadly stabilised currencies by creating a Dollar standard where the US agreed to convert Dollars into Gold at around $35 per ounce. After 20 plus years of relative currency stability (helped by heavy post WWII capital controls), the late 1960s started to see pressures building on this Dollar/Gold peg as some countries chose to switch their Dollars into Gold as concern mounted about the loosening of US monetary policy and increased fiscal spending as a result of the Vietnam War. At the same time some countries had to devalue within the system so cracks had started to form. By 1971 President Nixon had decided that this peg was unsustainable and on 15th August he suspended convertibility.

August 15th 1971 - the date we ushered in a new era of financial crises?

From 1971 onwards, all countries devalued aggressively against Gold at a pace only seen through history during the 1930s and 1940s. But this time rather than a selection of countries experiencing such a trend, the devaluation was universal. As the late 1960s developed, there were pressures on both sides of the Dollar standard but overall it was a period where Governments started to pursue more expansionary fiscal policies without central banks reining in the monetary spigots to offset this. We saw on the previous pages that persistent and widespread Government deficits are a feature only really seen in the last 45 years or so. In a world of the Gold (or Dollar) Standard, those countries loosening policy too much would have naturally seen a rush to convert their currencies into Gold, thus destabilising their economic policy framework.

When the Dollar convertibility ended, the shackles were off and countries no longer had to adhere to strict policies in order to defend their peg to Gold or to the Dollar. The era of global fiat currencies had begun and we moved into a new world order almost totally different to any that had preceded it. With nothing backing paper money, the path to almost unlimited credit creation had begun. Prior to this point, although the strictness of tying currencies to Gold had been slowly diluted, there was always a physical limit to how much money there could be in an economy at any point in time. Over the course of the last 45 years financial market regulation also progressively loosened allowing private sector institutions to create money in a manner never previously seen on such a scale through history. A combination of fiat currencies and ever weakening financial market regulation basically ensured exponential growth in credit and debt creation.

This change has made boom and bust cycles more prevalent at a global level and ushered in an era of regular crises, but ones that have so far been tamed by even looser policy and debt/credit growth.

A brief walk through the causes of crises of the last 45 years

As the 1960s progressed, tensions were starting to build in what was on the surface the most stable global financial system in observable history. The period marked the origination and rise of Eurocurrencies which can be defined as deposits located in banks outside the home market thus allowing banks to bypass capital controls in international lending and planting the seed for the financial system post 1971. Eurocurrencies also allowed banks to circumnavigate home market reserve requirements, interest rate ceilings, deposit insurance and quantitative controls on credit growth.

As their use became more widespread they started to impact individual nation's balance of payments and as the 1960s drew towards a close, the Fed started to respond to allow domestic lending to compete by loosening regulations. The modern financial system thus started to take shape and the Bretton Woods system begun to see irreversible damage.

Trade imbalances started to grow and US went from a surplus to deficit country, especially with the costs of the Vietnam War. While the dollar remained at the centre of the financial system, the excess dollars created and the increasing liberalisation of global financial markets, led to global inflation and the risk of a convertibility run.

Eventually Nixon suspended Dollar convertibility to Gold on August 15th 1971 and we very quickly moved to a new world economic order. The immediate aftermath of the end of the Bretton Woods system coincided with the spectacular rise in the price of Oil partly related to inflationary forces but also due to geo-political tensions in the Middle East. The combination of the petrodollars it created and the new liberalisation in financing led to a large rise in lending, particularly to EM countries to enable them to finance their oil imports. As well as Eurocurrencies, this period started to see the huge growth of portfolio investing which led to a substantial increase in global capital mobility at a time of ever loosening capital controls around the world.

In the 1970s, Keynesian policies dominated as a cure to address the economic problems of the day and debt was allowed to climb to cushion the impact of weaker economies. Debt and inflation climbed, not helped by the impact of the two main Oil crises of the decade. By the end of the 1970s, and as we started the 1980s, the economic consensus was changing towards a bias for tighter monetary policy and (relative) fiscal austerity. Ideas from the likes of Milton Friedman started to take over. This was a big move away from regulation and towards free markets and one away from big government towards the belief

that they should play as small a role in the economy as possible. This coincided with the re-birth of neoliberalisim and the "Washington Consensus" that dominated over the next few decades.

Fed Chair Volcker took up the fight against inflation and the depreciating dollar as the 1970s ended and raised interest rates in 1979. This heavily contributed to the ensuing Latin American Debt crisis of the 1980s. The US Savings and Loans crisis during the same decade also had its roots in tighter monetary policy and also the loosening of financial regulation towards the sector in the early 1980s. This decade saw very high real rates and therefore large debtors/ borrowers without decent income, economic or profit growth were vulnerable.

The early 1990s then saw numerous financial crises which ranged from the busts in the Nordic banking sector due to rapid financial deregulation over the previous decade, the varying impact of the early 1990s global recession, various house price crashes after the boom of the 1980s, and then onto the various ERM crises not helped by the inflationary pressures of German reunification. Meanwhile, Japan was about to sow the seeds of its lost generation of growth with its asset price bubble bursting from spectacular levels (especially property and equities) around the end of the 1980s. Japan was another economy that saw heavy financial deregulation in the 1980s which accelerated the asset price bubble.

As the 1990s progressed, the drive towards increasing globalisation and neo-liberalisim was boosted by the collapse of communism in the late 1980s and the end of the Cold War. As a result, an increasing number of countries became exposed to global financial markets and the unpredictable and volatile capital flows that this entails. Meanwhile Latin American economies recovered from their debt crises of the 1980s and Asian economies thrived. However in both regions inflows very quickly reversed as market sentiment changed in the middle-latter part of the decade. Indeed the very reforms that the likes of Mexico were encouraged to make after their debt crises in the 1980s came back to haunt them as liberalisation of their economy heralded massive inflows in the early 1990s and then encouraged outflows as global investors became more nervous about the state of the economy and increasing debt levels a few years later.

The Asian crisis followed a similar path of financial liberalisation, large inflows and large asset bubbles. However many of these countries' currencies were pegged to the Dollar and a bull run in the Greenback started to impact their export growth and their economic performance and the root of the speculative attacks on their currencies had manifested. Asset prices and currencies collapsed across the region in late 1997 and another set of crises had been triggered.

A year later, we saw the Russian crisis hit as contagion from Asia spread and global investors increasingly pulled money out of the region and demanded more and more yield through the summer of 1998 to finance its bond issues. Ironically in 1996 and 1997 huge amounts of overseas investors ventured into Russian government bonds sowing the seeds of the eventual run on the economy. The situation wasn't helped by rapidly declining oil prices through 1998 but again the earlier financial liberalisation was a problem and exposed the economy to fickle foreign investors. The various Latin American crises around the same time added to the litany of global crises in 1997-98.

Ironically, these crises arguably sowed the seeds for the post 2000 problems as those most impacted built up high reserves to try to ensure they never again saw a repeat of the scale of their vulnerabilities to the whims of overseas investors. However these reserves flowed back into US Treasuries and other

AAA government bond markets and helped contribute to the so called "bond conundrum". The lower yields that this entailed could only help encourage more and more debt accumulation elsewhere.

Back to 1998 though, as a consequence of the Russian default and trades associated to it, US hedge fund LTCM unraveled leaving many US banks exposed. The Fed responded by brokering a bail-out and by cutting rates which prevented the crises spreading to systemic proportions. However one can argue that this triggered the excess of the global equity bubble over the next eighteen months as investors felt that the Fed was providing moral hazard. This triggered a decade of financial excess as market participants increasingly felt that the Fed had their back whatever was thrown at the financial system. Obviously this excess was punctuated by the equity crash of 2000 but as rates were cut from 6.5% to 1.75% in 2001 alone and to 1% by 2003, the moral hazard was back and the excesses allowed to build again.

A fairly widespread global property bubble was ignited with that seen in the US ultimately the most destructive to the financial system given how many levered financial products were created on the back of it. Regulation as we now know was light and central banks generally felt that markets were the best judge of risk. Shadow banking activity was a huge driver of the excess in the system which would never have been possible in the heavily regulated markets of the Bretton Woods period or in any period where money creation was tied to precious metals.

As the shockwaves spread, so Central banks and Governments had to intervene in sizes never before seen across the globe. The stresses this placed on European Government's balance sheets, coupled with the sharp reduction in activity and capital flows out of their debt then led to the European Sovereign crisis including the various rescue packages and Greek debt restructuring. Prior to this many European peripheral countries were heavily reliant on external funding for their debt. Fickle international investors in financially liberalised markets have been a common ingredient across many of the crises seen since the end of the Bretton Woods system.

A cataclysmic European Sovereign default crisis was perhaps prevented by the historically unique expansion of the ECB's balance sheet over the last 5 plus years.

So after a whistle stop tour of post 1971- crises we arrive at the present day where volatility is at multi-decade lows and asset prices are at increasingly expensive levels around the globe largely due to the extraordinary global monetary printing seen over the last decade. It doesn't feel that we've come to the end of a period of regular financial crises - just a lull before the next consequence of previous actions manifests itself.

In the next chapter we highlight potential catalysts for the next financial crisis. Obviously their occurrence and timings are highly unpredictable but that shouldn't prevent a discussion on where they may arise.

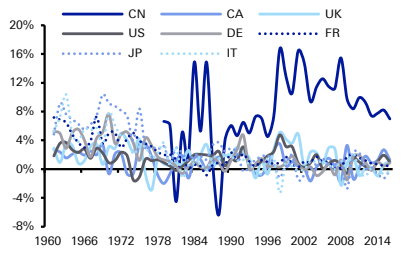
China and Demographics facilitated the credit boom bust cycle

Before we move onto looking at what could cause the next crisis, we should add that China and demographics have perhaps both contributed to the modern boom/bust culture. In our eyes these two are linked as around the end of the 1970s both created a positive disinflationary shock on the global economy by dramatically increasing the size of the global labour force – a trend that has continued to this current day. This 'positive' disinflationary shock allowed central banks and governments to solve every problem thrown

at them by turning on the monetary and fiscal spigots which have arguably allowed each crisis to be solved but only via an increase in global debt and pushing the problem on to someone else in the future.

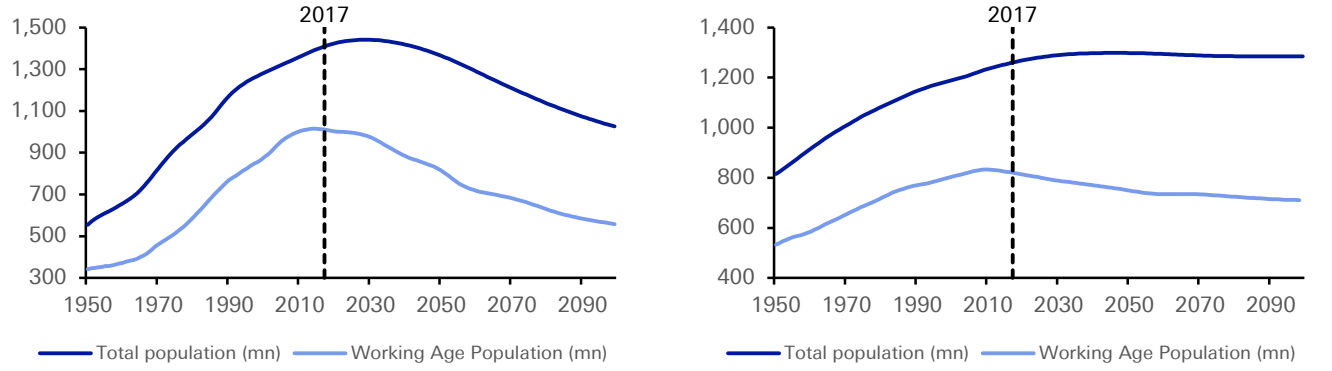
In terms of demographics, the working age share of the population troughed at the end of the 1970s in the large DM economies and we have seen a surge of workers since (Figure 30). At the same time China coincidently decided to integrate itself into the global economy for the first time in many centuries. The net impact of both these trends was to massively depress DM wage inflation right up to the current day (Figure 29). In turn this helped ensure that inflation was on a naturally downward path over the past 35 years and thus allowing policy makers to aggressively intervene whenever any problems arose in the financial system or global economy. The lack of inflation pressure encouraged intervention rather than creative destruction. This in turn increasingly allowed more and more excess to build up in the system as each crisis ended with the stock of global debt higher relative to output than before it struck.

Figure 29: YoY Real wage growth



Source: Deutsche Bank, Haver

Figure 30: Total and Working Age (15-64) population in millions – China (left) and DM aggregate (right)



Source: Deutsche Bank, Haver (UN Population data)

Had inflation not been controlled by external factors it's debatable whether central banks and governments would have had the same freedom to oil the wheels of excess over the past few decades. So whilst we have laid a large amount of blame for a higher frequency of crises on the collapse of precious metal currency systems, the reality is that a huge surge in the labour force also encouraged the highly unstable environment.

We would stress that the last 45 years has seen tremendous asset price growth, especially in nominal terms, so this is not to say that the period has been a struggle for investors. It's more that finance has generally been more prone to crisis and the eventual intervention and liquidity has led to large asset price inflation across the board and led to an increased likelihood of subsequent crises that also need to be solved thus creating a vicious cycle (or virtuous circle depending on your view) of crises and booms.

We're not advocating a return to the Gold Standard or Bretton Woods System

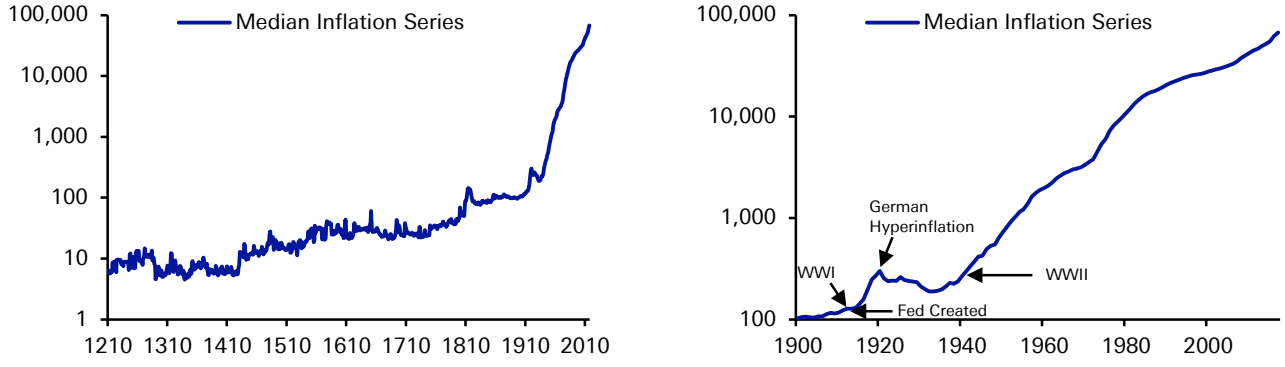
In reading this note readers could be forgiven for thinking we are advocating a return to a Gold Standard or something resembling the Bretton Woods system. However this is not the case as a return to such a rigid system today would be a disastrous, if understandable reaction to the excesses of the last 45 years. The savage economic hardship of the 1930s, especially for those that stuck to the Gold Standard for too long, and the extreme difficulties that the Euro peripheral countries have experienced post the GFC highlights that economic and policy rigidity are a potential nightmare for nations in need of a big adjustment or outside help.

Nevertheless, although a return to a Gold Standard type system is not the right policy today, if we continue to see more and more money printing over the next few years, there will likely be a slow romanticising of the perceived stability of the pre-1971 world. Indeed if we do eventually muddle through and get to a more sustainable, less imbalanced and less indebted global economy, there may well be moves towards some kind of new global monetary world order simply to prevent the excesses of the last four and a half decades from happening again. Such a debate would be sensible but needs to happen after we work through the tremendous amounts of excesses in the system. If we can in the future benefit from the disciplines similar to those seen during the period where currencies were linked to precious metals, whilst maintaining some kind of genuine safety valve/flexibility, then we could have a more stable global financial system to that seen since 1971. This will be easier said than done but expect this debate to build.

Inflation still the most likely outcome until new global financial system found

Figure 31 shows median global inflation first from 1209 (left) and then from 1900 (right). As we've discussed in previous notes inflation took on a totally different persona after the start of the twentieth century. The charts are again on a log scale to allow us to easily see the near exponential increase in inflation over the last 100 years or so, especially relative to what occurred before. Note that had we used the median instead of the average, the chart would look almost absurd given the extreme levels of hyperinflation seen in several countries over the last century. The data behind the right hand graph is based on a full set of 24 countries where we have inflation data back to 1900. Prior to this, many countries have data that goes back several decades with some back through the centuries. For the series back to 1210 we have included data as and when it becomes available.

Figure 31: Global median inflation series since 1209 (left) and 1900 (right)



Source: Deutsche Bank, Global Financial Data

As we explained in last year's study ("An Ever Changing World"), we actually think the 35 year super cycle of lower and lower global inflation has reached an inflection point. Although it's hard to see inflation immediately spiking up, we think the trends are subtly shifting. Firstly DM working age populations, having surged for the last three and a half decades, are in the process of peaking and actually declining in many countries. This should slowly reverse the ever downward pressure on wages. We'd note that China has been a super-sized version of this with the working age population now expected to decline sharply over the coming years (LHS of Figure 30).

Added to this, the rise of populism seems to have reached a point where such candidates are winning national votes (e.g. Brexit/Trump). This is important as it now seems to be the downtrodden workers in the population that are

demanding a change and as such politicians will be encouraged to change the balance between fiscal and monetary policy to ensure that they are listening to the most impassioned voters. Extreme monetary policy has distributed the spoils to capital rather than labour. More aggressive fiscal policy would help address the balance and direct money into the real economy and thus be more inflationary. Finally in 2016, extreme monetary policy reached a point where there was an element where it was doing more harm than good. The best example was in Europe where negative deposit rates and negative government bond yields were at risk of destroying the plumbing of the financial system. Banks' business model was at risk (especially in Europe) and thus their ability to lend in the real economy. We think central bankers have realised this and part of the reason they are now moving away from the most extreme monetary policies is a late realisation that some rates and yield normalization could actually be a positive for growth. 12-18 months ago they seemed convinced that there was no lower bound to rates. They now seem to be more aware of the dangers of such negative rate and yield policies.

Candidates for the next Financial Crisis

In this section we'll highlight some of the potential candidates for the next financial crisis. This is far from a prediction that they will occur but merely to show where some of the stresses are in the financial system and ones that could create global financial and economic problems. The list is also not exhaustive. Crises and shocks by their nature are unpredictable and while we might be right that the current system is crisis prone, we may be missing a brewing problem elsewhere under our noses! So we're more confident that crises can't be avoided in this global financial framework rather than confident of where they'll occur next. Nevertheless, there are places we can look to and the following section details where vigilance and prudence are required.

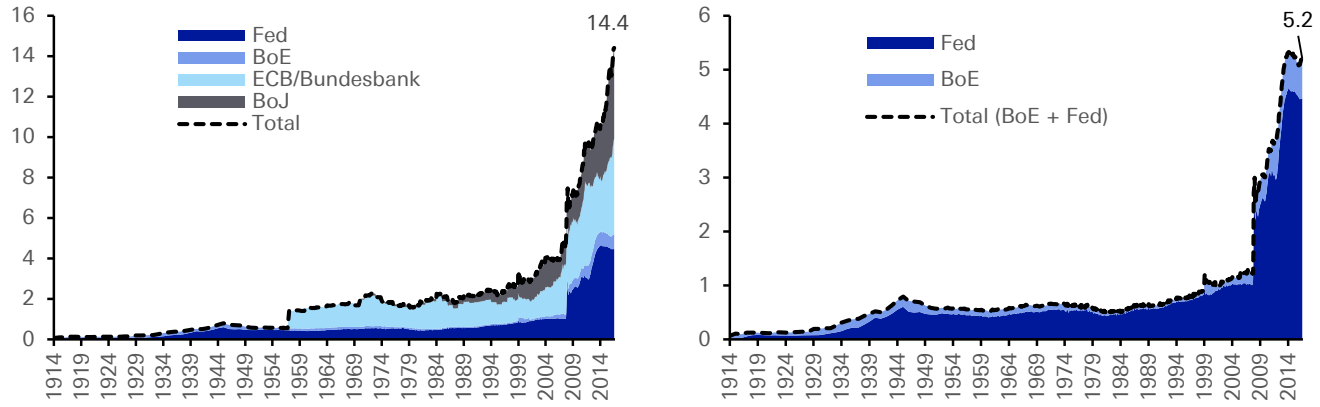
The Great Central Bank unwind

When looking for the next financial crisis, it's hard to escape from the fact that we're seemingly in the early stages of the 'great unwind' of global monetary stimulus at the same time as global debt remains at all-time highs following an increase over the past decade – at the government level at least – which has been unparalleled in peacetime history. Not only are interest rates starting to rise (e.g. US, Canada), but the Fed is about to start running down its balance sheet with the ECB likely to soon announce that the tapering of QE will continue in 2018.

Working in financial markets on a day to day basis it's easy to become blasé about the size of central bank balance sheets. You slowly become anchored to believe the current situation is normal as it's persisted for so long now. However it's anything but normal. Since the financial crisis, $10 trillion plus has been added to the balance sheets of the four largest central banks with over $14 trillion of assets now owned. Since a local trough in March 2015, the ECB alone has added around $2.3 trillion to its balance sheet. To put these numbers into some perspective, the annual output of China - the world's 2nd largest economy and consisting of 1.4 billion people - is around $11.2 trillion – not far off the balance sheet increases of the big four central banks since the GFC. Putting the ECB's increase over the last three years in some context, the French (6th largest in the world) and Indian (7th largest in the world) economies - consisting of 64.7 million and 1.3 billion people respectively – produce an annual output of $2.5 trillion and $2.3 trillion respectively. So in just over two years the ECB has printed the same amount of money that it's taken the whole 1.3bn Indian population to produce economically in a year. Mindboggling numbers.

Figure 32 shows the real adjusted balance sheet size of the largest four DM central banks through history. The Fed and BoE both have data starting from 1914, while the Bundesbank has data from 1957 to 1999 (scaled up to the ECB's balance sheet size as of Dec 1998) and the ECB then from 1999 and finally the BoJ from 1971 onwards. It clearly shows how unique this current situation is relative to history and it has to be the case that this makes the financial system more unstable as a result. We also show just the Fed and BoE data as these two have a series going back at least a century whereas the first chart has data patched in where appropriate. The Bundesbank data clearly starts after the Weimar Republic money printing experiment of the 1920s so the second chart is perhaps a more faithful account of how unusual the last decade has been.

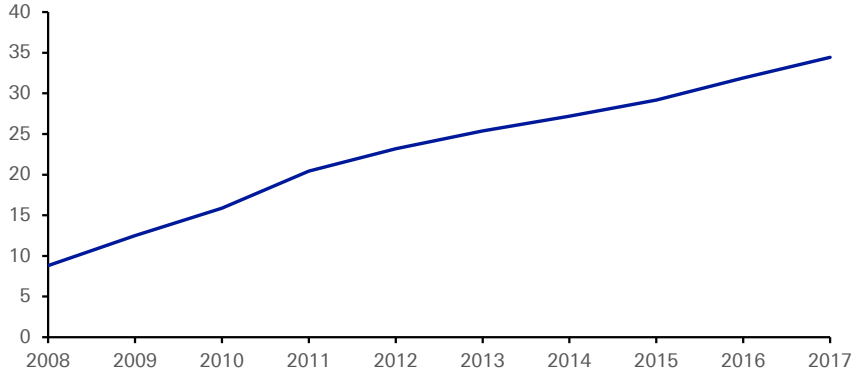
Figure 32: Central Bank Assets (inflation adjusted to June 2017 price levels) – Four largest (left) and only Fed and BoE (right)



Source: Deutsche Bank, Haver, Central Bank websites, FRED

It's not just monetary though. To further emphasise the extraordinary stimulus seen, Figure 33 shows the total real adjusted balance sheet size of the four largest DM central banks plus the cumulative government budget deficits of the US, UK, Japan and Eurozone since the GFC. Including the government budgets provides a rough estimate of the extent of the fiscal stimulus that we've witnessed for the major economies since the financial crisis. We realise that it's not a perfect number as in reality governments have run budget deficits for many years prior to the crisis however it does still show an illustration of the QE + fiscal stimulus impact. The post GFC number we arrive at is a staggering $34 trillion. Another way of looking at it is this is the extra amount of stimulus over and above living within our means (no money printed, no deficits) seen since the GFC. In the end $34 trillion of stimulus and QE has delivered only very low growth, subdued inflation and sky high asset prices around the globe. This is unprecedented territory and how can anyone estimate what the fallout will be when we normalise again?

Figure 33: Sum of Central Bank Assets (inflation adjusted to June 2017 price levels) and cumulative budget deficits for US, Eurozone, UK and Japan in $tn



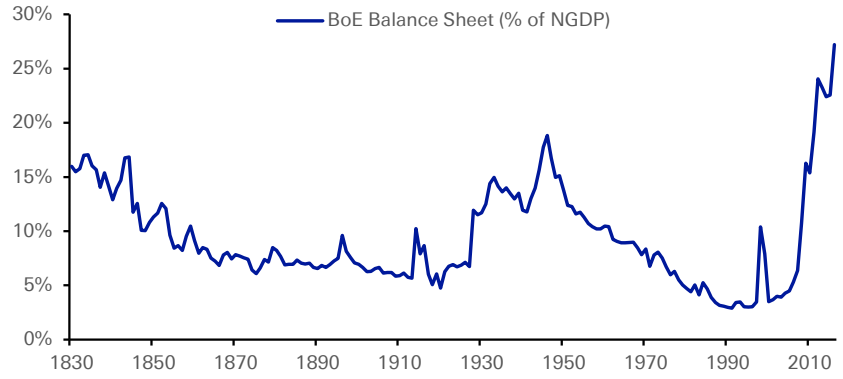
Source: Deutsche Bank, Haver, IMF, GFD, Central Banks, FRED. Note total government budgets are for general government debt.

Money printing at all-time highs?

Money printing is not a new phenomenon through economic history and in some rare individual cases has been far more aggressive than any country is currently embarking on (e.g. The Weimar Republic of the 1920s). However the

breadth of countries now currently printing money is surely unique through history. It's difficult to prove this given the lack of breadth of relevant historic global data but it seems that we are entering unknown money printing territory in many countries. The longest time series of central bank balance sheet data we have is from the Bank of England. Figure 34 shows that 2012 saw the balance sheet surpass the previous peak relative to GDP (17.28%) seen in 1946 just after WWII. As recently as 2007 this number was under 7%, climbing to nearly 30% today. The numbers in the 1930s and 1940s reflect very weak and occasionally negative annual nominal GDP as much as balance sheet expansion so is not directly comparable to today's money printing.

Figure 34: Bank of England Balance Sheet (% of GDP)

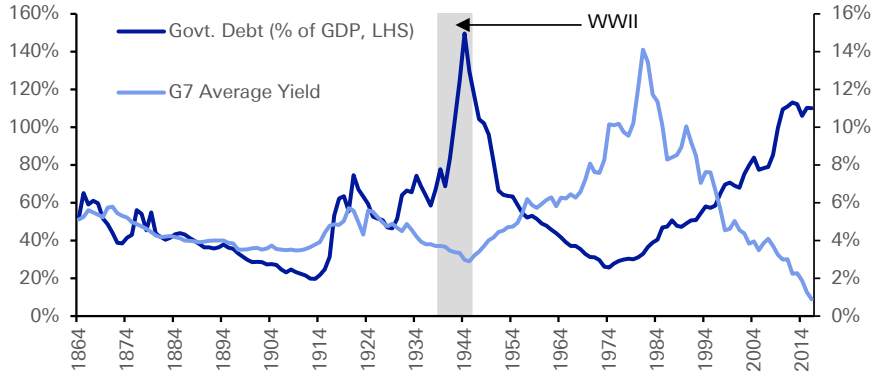


Source: Deutsche Bank, FRED Data, Haver

This trend is being repeated across the developed world to varying degrees and again we are journeying deep into the unknown. Anyone predicting the endgame is speculating outside of the historical dataset as there are few precedents for such broad based global money printing. Even with this extraordinary stimulus most economies are still seeing their weakest recovery in history, further reinforcing the uniqueness of the current environment. What is clear is that the roots of the GFC, and the post GFC era of aggressive money printing and ballooning fiscal deficits would not have been possible in a pre-1971 world.

This recent aggressive money printing has obviously been a response to the huge increased debt burden since the GFC, especially at the government sector. Government debt has clearly continued to climb post crisis but yields have fallen reflecting the artificial nature of bond markets in a QE-world. Figure 35 adapts a previous chart showing total G7 government debt to GDP back to 1864 now adding 10 year government bond yields.

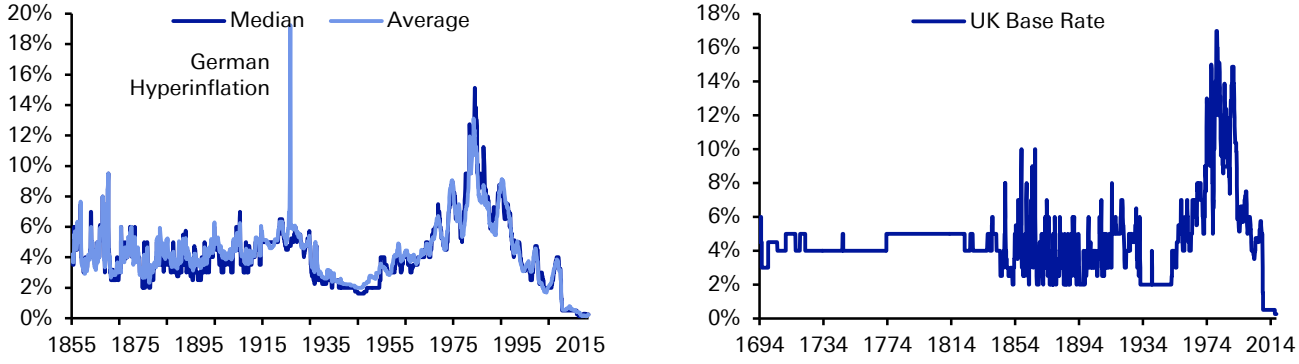
Figure 35: G7 Government Debt (% of GDP, LHS) and Average G7 10Y Yield (%, RHS)



Source: Deutsche Bank, Global Financial Data, Haver, Bloomberg Finance LP

So while G7 Government debt/GDP is now at peacetime highs and only previously exceeded during WWII, interest rates have within the last 12 months been at multi-century all-time lows. Figure 36 shows that this is also the case with base rates with the left hand chart showing the average and median G7 base rate back to 1855 and the right hand chart showing the UK back to the BoE's inception in 1694. The fact that over the last few quarters both base rates and longer-term bonds have been in negative territory in many countries is another unique post-crisis occurrence that no-one can truly know what the longer-term consequences will be.

Figure 36: G7 Base Rates (left) and UK Base Rates (right) back to 1865 and 1694 respectively



Source: Deutsche Bank, Global Financial Data, Bloomberg Finance LP

So when thinking about possible causes of the next crisis, it seems to be prudent to consider that we are at a unique point in time with regards to the relationship between debt, interest rates and central bank balance sheets. Debt remains at record high levels around the globe at a point where central banks are now trying to wean markets off asset purchases to varying degrees. The Fed is likely to stop the reinvestment of proceeds of their holdings this month – a seminal moment in the post crisis years. They are also steadily raising rates. Additionally next month the ECB are likely to announce a further taper for 2018.

As such, the 'Great Unwind' is a journey into the unknown and history would suggest there will be substantial consequences of the move especially given the elevated level of many global asset prices (see later section). Even if the unwind stalls as either central banks get cold feet or if the economy

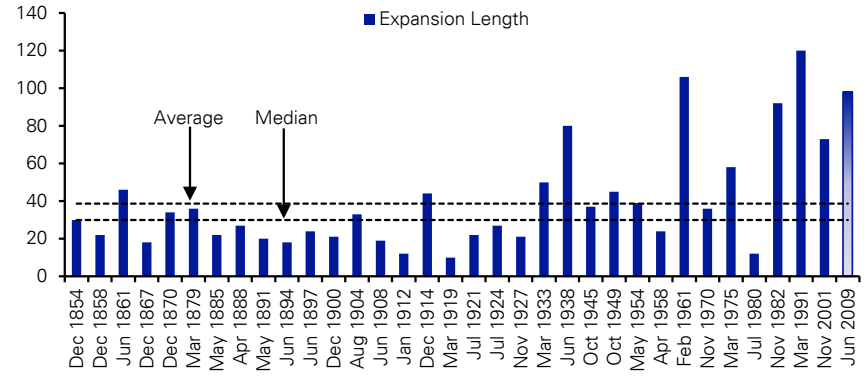
unexpectedly weakens, we will still be left with an unprecedented global situation and one which makes finance inherently unstable even if we are currently living in the lowest volatility markets on record.

Are we out of bullets when the next recession arrives?

The analysis in the previous section highlighted the fact that debt levels globally continue to climb at a time of all time low yields and unparalleled levels of QE that seem to have now past their peak in terms of the rate of accumulation of assets. With the Fed soon to stop reinvestment and the ECB keen to taper further, the great unwind is perhaps underway.

However this is occurring at a very advanced stage of the economic cycle relative to history, and as Figure 37 highlights, by Q1 2018, this current US expansion will be the second longest in history. If we see a recession soon, are we close to being out of ammunition given that central banks remain at or near the zero bound, with many still buying lots of assets? With Government debt levels spiking since the last recession, are politicians able to act as aggressively as they might need to? Could the next recession be the one where policy makers are the most impotent they've been for 45 years or will they simply go for even more extreme tactics and resort to full on monetisation to pay for a fiscal splurge? It does feel that we're at a crossroads and the next downturn could be marked by extreme events given the policy cul-de-sac we seem to be nearing the end of.

Figure 37: Length of US Business Expansions (Months)



Source: Deutsche Bank, NBER

While the length of expansions are not in themselves a predictor of an upcoming recession, the graph above reminds us that over the last 167 years there have been 34 expansions and 33 recessions. So as certain as one can be that night follows day we can be sure that a recession is coming. They are a natural and normal occurrence and many more will occur in our careers and lifetimes.

It does feel though that the excesses in the system in recent years mean that each recession is systemically more and more risky. In turn this means central banks and governments have tended to do everything in their power to avert them. The cost of this in recent years and even recent decades is more and more leverage.

At some point, the authorities will have their hands tied more than they have over the last 35 years of extremely elongated cycles relative to history. Since around 1980, global inflation seems to have been on a downward path independent of central bank and government action. As discussed earlier, favourable demographics and the dramatic and sudden integration of China into the global economic system has produced a huge positive labour supply shock on the world and has depressed the price of labour (workers) in a way that has meant that inflation has been continually depressed.

So it has been possible to address every crisis or economic slowdown with stimulus without any subsequent inflationary shock. As such economic cycles have generally lasted much longer than in the pre-1980s days. However the net result of this entire stimulus is a huge expansion of leverage.

So good news in the short-term but storing up imbalances for later, especially if inflation turns from something that is externally under control to where it goes up at a global level independent of central bank action.

What could lead to inflation structurally rising and ending the era of long business cycles?

This was a key theme of last year's long-term study where we looked at how demographics were turning and how working age populations across the largest economies in the world had or were about to peak. As such the constant downward pressure on wages should have passed its peak. Some cite technology as ensuring that this trend continues. However while we would accept the risk, history has been full of labour saving inventions otherwise we would still be using slow barges and horses to transport equipment and hand held tools instead of mass production techniques. So we think technological change is always there.

What makes us more confident that the structural/secular lows are in place for inflation is that politics is now against policies that have encouraged the low yields and disinflation. The recent rise in populism (covered in a separate section) is as much a rebellion against an era of depressed real wages as much as anything else and its starting to get to a point where important national votes are now being won (e.g. Brexit and Trump) and thus politics is at risk of being reshaped.

Rather than a policy of letting central banks do the heavy policy lifting and sending yields to record low levels with high returns to capital but no inflation, policy makers will likely have to adjust policy to better address the needs of the wider population especially those in the lower half of the income scale. If wages for these people continue to lag, then politicians risk being kicked out very quickly.

We think this will mean a bias towards fiscal policy over monetary policy in the years ahead. This means higher inflation as money will be injected directly into the economy over being injected into asset prices as has been the case in the central bank dominated policy era.

With inflation naturally creeping up, it will become more difficult to control economic cycles and asset prices. As such we would expect economic cycles to occur more naturally and not be extended in the way they have been over the last 35 years. With debt levels so high and with the financial system set up for long cycles with minimal economic shocks we think this means that regular crises will be a consequence even if the very same inflation allows the financial system to eventually see the debt burden adjust down to systemically lower levels in real terms.

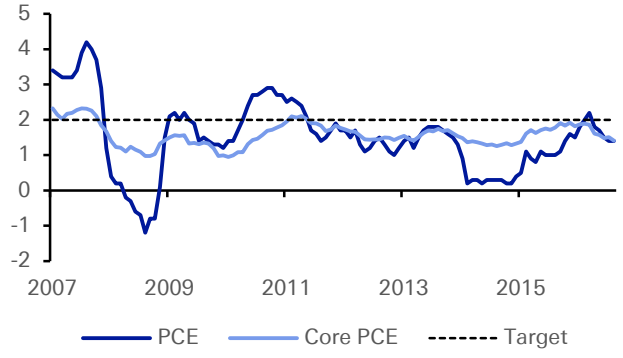
What if inflation continues to disappoint? More QE and negative rates?

In the last section we spoke about possibly being past the secular trough in inflation. However what if we're wrong? Indeed economists have repeatedly been wrong on this post the GFC. What would be the consequence of ultra low inflation?

Since the financial crisis of ten years ago, persistently low inflation has been a constant headache for central banks. To illustrate the extent of the benign global inflation picture, Figure 38 to Figure 41 show headline and core CPI data for the US, Eurozone, UK and Japan over the last 10 years. We've included the relevant central banks' targets for inflation which differ slightly from central bank to central bank, but all have the common denominator of being at or around 2%.

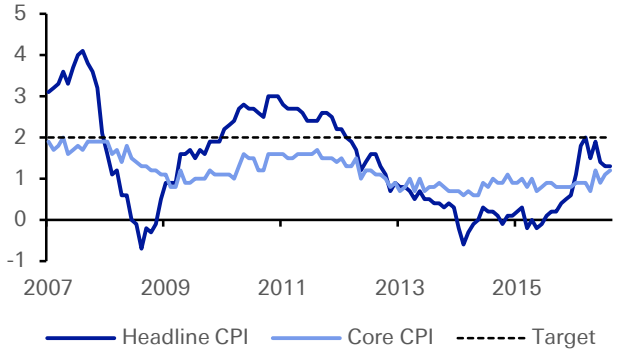
As the charts show, since the end of 2007, central banks have struggled to push prices back to their relative targets. In the case of the Fed, core PCE has come in below the Fed's target in 88% of the past 116 monthly readings. Using the headline reading and this only slightly improves to 72%. For the ECB (where in fairness the price stability target is 'below but close to' 2%), during the same time-frame the core has run below target in 99% of the months while the headline is at 67%. The numbers for the Bank of England are a little higher at 52% and 37% (largely due to repeated FX falls) while the BoJ has missed their target 90% and 86% of the time, respectively.

Figure 38: US headline and core PCE since 2007



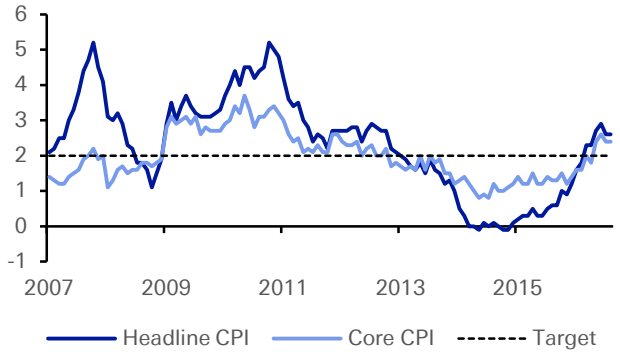
Source: Deutsche Bank, Bloomberg Finance LP, Federal Reserve

Figure 39: Eurozone headline and core CPI since 2007



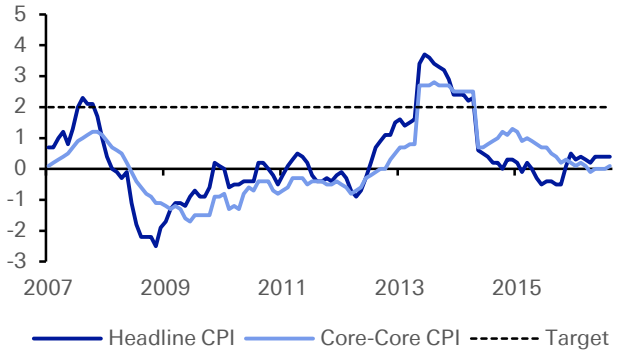
Source: Deutsche Bank, Bloomberg Finance LP, ECB

Figure 40: UK headline and core CPI since 2007



Source: Deutsche Bank, Bloomberg Finance LP, Bank of England

Figure 41: Japan headline and core-core CPI since 2007



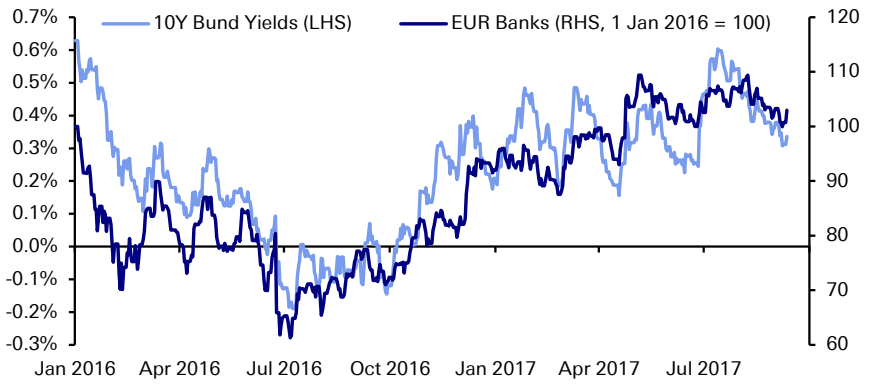
Source: Deutsche Bank, Bloomberg Finance LP, Bank of Japan

Notwithstanding some improvement in the inflationary backdrop over the last 12 months, the failure to stimulate prices back to pre-financial crisis levels or even closer to target central bank levels for what is essentially a full decade now is fairly incredible when you consider the phenomenal level of central bank and government stimulus. If we told ourselves nine years ago that financial markets were about to be injected with $32tn of QE and fiscal stimulus but that the simple average core inflation reading (on an unweighted basis) of the US, UK, Japan and Eurozone over that time nine years later was just 1.2% then you would have surely found that hard to believe. Even though we think that a fiat currency world removes all threat of longstanding deflation, it's hard to be confident that the authorities have yet found the tools to hit their inflation targets.

As such, if we don't see inflation bounce back and continue to see it well below target, could that set off any crises? With labour's power still weak and with technology possibly impacting this further in the years ahead this is not an impossible outcome. If the result of this is further QE, then the recent peak QE of 2016 provides us with worries about the plumbing of the financial system if such a scenario occurs.

Perhaps the biggest concern would be the impact on the perception of the stability and profitability of the banking sector, especially in Europe where banks are likely more vulnerable and are a bigger influence on lending to the economy than say in the US. Figure 42 shows the strong relationship between 10 year Bund Yields and the Euro Stoxx bank equity price index. As negative rates and peak QE percolated through the system in H1 2016, European bank equity prices slumped. Although there was a strong reversal in the trend between November 2016 and March 2017 on hopes of an accelerated Central bank stimulus withdrawal program and on Mr Trump's expected fiscal agenda, bund yields have again fallen as doubts have arisen about the pace of both. Softer global inflation numbers than expected has also contributed.

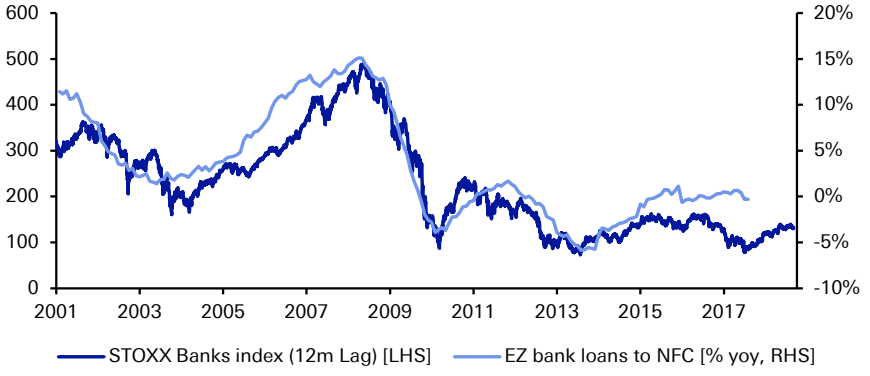
Figure 42: 10 year Bund Yields vs Euro STOXX banks equity index



Source: Deutsche Bank, Bloomberg Finance LP, Haver

The problem is that as Figure 43 shows, bank equity prices (12 month lagged) have been a reasonably reliable indicator of future lending (in this case Eurozone bank loans to non-financial corporates). Whilst the relationship isn't perfect, one can see a path to more problematic times ahead if central banks are forced into more QE again.

Figure 43: STOXX banks index (12m Lag) LHS vs. Eurozone bank loans to Non-Financial Corporations (% YoY) RHS



Source: Deutsche Bank, Bloomberg Finance LP, Haver

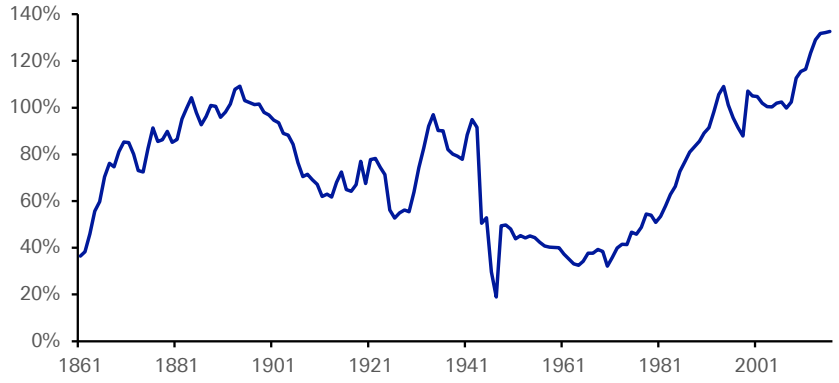
The vast majority of financial market commentators are discussing withdrawal from QE but, very few about the risks of it needing to be increased again. If central banks do end up conducting increased QE again, the risk is we again go back to negative rates and worries about the banking system and the plumbing of the financial system. Given that negative rates had never been seen on such a scale before the last couple of years, it's hard to be confident using history as our guide that a prolonged repeat of such an environment wouldn't eventually have serious negative consequences and lead to a crises somewhere in the financial system.

So although not our base case, given the recent inflation and Trump's fiscal challenges, it's not infeasible that markets could be blindsided by a return to more QE rather than less. If so, we worry that 2016 proved that QE has reached a tipping point where it was starting to do more damage than good. This could therefore be a potential source of the next crisis.

Italy: A crisis waiting to happen?

A country nearing an election and with high populist party support, with a generationally underperforming economy, a comparatively huge debt burden, and a fragile banking system which continues to have to deal with legacy toxic debt holdings ticks a number of boxes to us for the ingredients of a potential next financial crisis. Independently, Italy has been dealing with each of these issues for some time. Recently the country has been able to tolerate high debt levels with insulation from aggressive ECB QE and subsequent ultra-low global bond yields. Government dysfunction is also relatively well engrained with sixty-five governments having ruled since WWII, with parties united and subsequently separated in often short lived coalitions, albeit never including the then Italian Communist Party which has arguably been one of the main populist parties before the 5SM was established.

Figure 44: Italy Government Debt to GDP



Source: Deutsche Bank, Haver

However the next twelve months could see Italy arrive at a crucial juncture which will help dictate the medium-term road ahead. With an election looming, populist anti-euro support in Italy is hovering just above 45%. The timing of the election will also likely coincide with reduced ECB buying of BTPs and should Eurozone inflation rise (especially if Italian inflation remains weak), then the threat of rising BTP yields without a sustainable improvement in economic growth will likely test the limits of Italy's already elevated debt to GDP. Debt sustainability remains the biggest medium term problem and leaves Italy very exposed to a recession, in our view. Assuming limited tailwinds from structural growth, this places a huge burden on the need for cyclical growth. While the recent cycle has been strong, the fear is that this won't last forever and that Italy will be exposed when the global cycle rolls over.

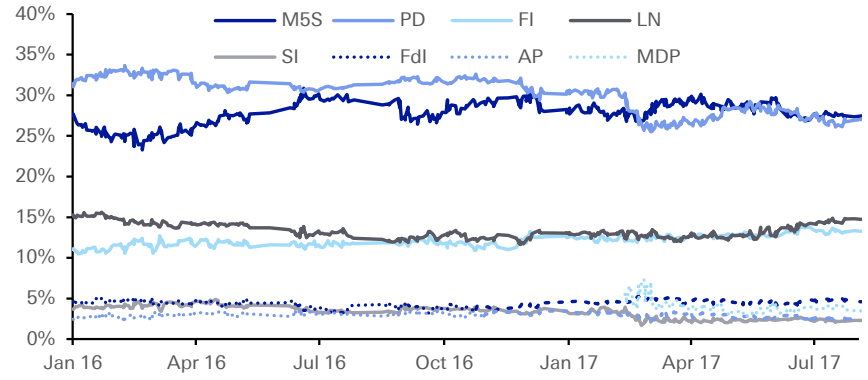
One unexpected factor that could challenge Italy's currently strong cycle economic performance is the appreciating euro exchange rate. Contrary to perceptions, Germany is much less sensitive to currency strength than Italy despite both economies being known as large exporters. This may reflect various structural features of the Italian economy, including a smaller import content of exports, signalled less extensive global supply chains. According to European Commission estimates, Italian exports are three times more sensitive to changes in the real effective exchange rate than Germany.

Meanwhile the NPL story might be improving and less of a concern than it once was but holdings of BTPs by local banks adds another dimension to the equation. Mixed together, the ingredients are there, but whether or not this is a recipe for disaster, only time will tell.

An unpredictable election looms….

A general election in Italy must be held by May 2018. Significantly, opinion polls continue to show a closely run race with very little difference between the two front runners. The average of the last 5 polls (Figure 45) show the anti-establishment 5 Star Movement (5SM) and former PM Renzi's Democratic Party (PD) as being neck and neck at 27% each. The far-right eurosceptic Northern League (LN), and centre-right Forza Italia (FI) parties lag behind with 15% and 13% respectively with the remaining smaller parties holding less than 5% each.

Figure 45: Italian polls – major parties



Source: Deutsche Bank. Multiple Sources. Data based on a rolling average of the last 5 polls.

As recent events have shown (Brexit, US election), debating the outcome of a national vote is both unpredictable and challenging. With the likelihood of an outright majority very low, the coalition math is further complicated by the uncertainty around the exact details of which electoral law Italy chooses to follow. At face value, a PD and FI coalition appears perhaps most viable, but one would also imagine that such a partnership would be short lived and unstable

The local elections in June proved a setback largely for the 5SM which failed to make the second round in any of the major cities contested. It should be noted too that the results were not necessarily positive for the PD. That said, while a useful litmus test, the elections are influenced by local issues and individual personalities to a large degree. Indeed recent polling would also suggest that the results have made little impact at a national level.

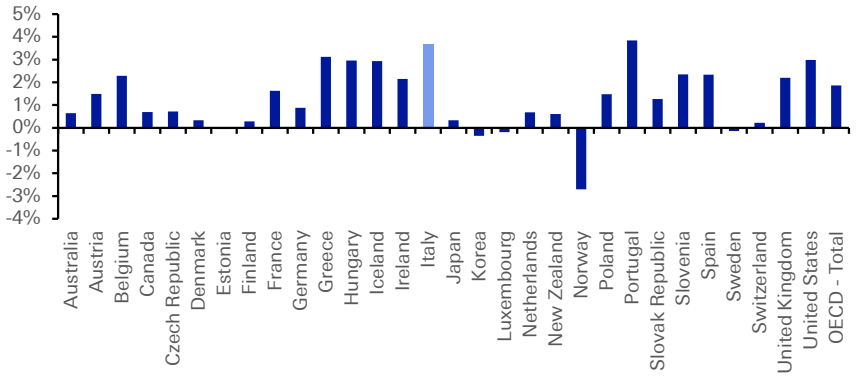
The most important question for markets remains not "when" but "how" the next election system will take place. An electoral system that would require a large coalition would be seen as positive by markets as it would likely penalise the 5SM. However this brings into question the counter-productivity of a muddle-through strategy. As our economists have previously noted, a heterogeneous, ineffectual government would struggle to boost the too low potential GDP growth and a continuation of Italy's deeply unsatisfactory economic performance would ultimately benefit Eurosceptic and populist parties. With that in mind, the longer Italy remains in a muddle-through, the greater the likelihood that Eurosceptic parties could gain an ample majority in the Italian parliament. 2018 might be too soon, but this theory could be tested in the medium term.

…while growth lags the Eurozone and debt hovers at unsustainable levels

Political uncertainty is just one piece of the puzzle. At 133%, Italy's debt to GDP is the second highest in the eurozone behind just Greece. Italy's deficit to GDP also hovers around -2.4%. The high debt burden means that the country

is also spending around 4% of GDP on paying interest on its debt load. This is double the OECD average and also the second highest in the eurozone. They top the list if you take the average of the last 6 years.

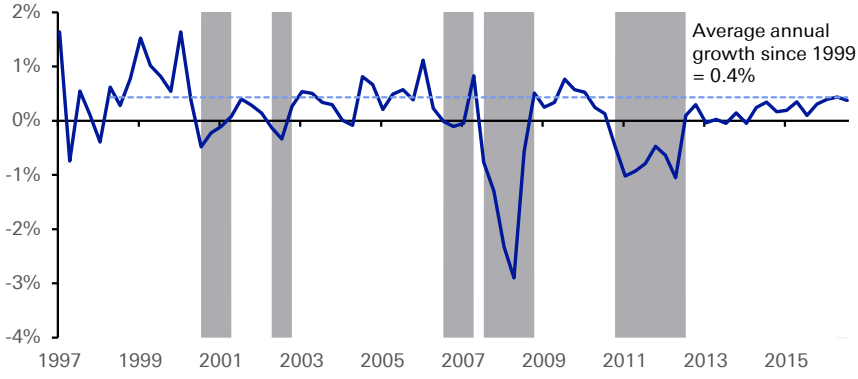
Figure 46: Net government interest costs



Source: Deutsche Bank, BIS

In reality most of these numbers have stayed relatively constant in recent years which is by and large a by-product of aggressive BTP buying by the ECB and historically low bond yields. However a consistently prudent approach towards fiscal deficits by Italy has also been a positive contributory factor. The question we find ourselves asking however is what happens when the ECB slows down the rate of purchases, bond markets start to reverse, and the cost of financing this debt load rises? Growing out of this debt burden would in theory be the most logical explanation, but evidence of Italy's post Euro adoption experience (see Figure 47) suggests this will be extremely hard. The other alternative is some form of debt restructuring and aggressive debt haircutting. We see this as obviously leading to a financial crisis.

Figure 47: Italy – real GDP Growth (QoQ) and recessions



Source: Deutsche Bank, Bloomberg Finance LP

However years of misallocating resources means that Italy's economic underperformance is structural in nature. Low labour force participation, high youth unemployment, poor levels of productivity and low investment are all common features. The end result of this is that Italy has suffered through 5 recessions since the implementation of the single currency back in the late 90s. While some of the soft data indicators suggest growth might be returning, which perhaps helps to keep things in check in the short term, structural reforms are needed for any medium to long term sustainability and it's hardly

an overnight fix despite some small steps being taken. An ambitious reform agenda may exist but without a stable pro-growth government, roadblocks will likely remain.

We would argue that debt sustainability by and large depends on the growth/interest rate differential. It is important to note that Italy has recently termed out debt somewhat mitigating near term financing concerns. At the same time, one would imagine that it would be difficult for the ECB to justify setting policy wholly independent of Italy which is a positive. The marginal cost of debt has also been supported by some signs of recent growth (despite being still low in absolute terms) and a heavy push for Eurozone integration by Angela Merkel which may help to alleviate pressure on Italy going forward although the devil will be in the detail on this.

Notwithstanding this, the risks remain. In their recent debt sustainability analysis report, the IMF highlighted that assuming the government reaches its structural balance target by 2019 and nominal GDP growth exceeds 2% annually, then public debt will decline and reach 120% of GDP in 2022. Keep in mind however that this figure matches the recession level of 2012-13 (123%) more or less and is well above the 2008-09 (102%) and 2007 (100%) recessions. And this also assumes a relatively 'best-case' and ambitious scenario. Indeed real output growth rates which are assumed to be lower by one standard deviation for the two years starting in 2018 along with a softer inflation picture results in a debt to GDP of 140%.

The concerns lie in a scenario where a heterogeneous and ineffectual government comes to power and the question therefore is how Italy will fare when the European business cycle next turns if we don't see debt levels come down. And will this just add more fuel to the fire for the euro sceptics and populist parties. Yes the short term picture could be manageable, but the medium and longer term road is long and winding.

Banks are the third side of the triangle…

The issue with economic growth is that growth requires a healthy banking system. Italy's domestic banks have suffered greatly over the last few years having been poorly managed and riddled by stories of fraud and scandal. However the headlines have been mostly dominated by the huge stock of NPLs which exist on the domestic banks' balance sheets. The Bank of Italy last reported that Italian Banks' NPL ratio stood at 17% and one of the highest in Europe. That being said, recent steps to address this have been positive. The rescues of Monte Paschi and the Veneto banks were crucial in forging a bit of a road ahead. That's not to say that the underlying issues have disappeared, but it is a step in the right direction.

Our banking analysts estimate that Italian banks still have €349bn of gross NPLs. Unsurprisingly 'significant' banks (those directly supervised by the ECB),hold the majority of these NPLs at around €267bn. However keep in mind that for these banks alone, strategies around easing the burden of NPLs has been discussed with the ECB and regulators, and in some cases we have already started to see work to address this. This is clearly especially important in the context also of a limited fiscal space for the broader economy. Our colleagues note that the number that is perhaps more relevant is €55bn. This is the 'grey area' number of net NPLs (net of write-downs) at banks excluding those that are about to receive state aid and the seven largest by market cap. In context this is around 3% of Italy's total GDP.

So while clearly not insignificant, in relative terms as a percentage of GDP this is a bit more palatable, and is perhaps less of a concern to us than it once was given some of the recent moves to shore up confidence. Another concern is

Italian banks' holdings of Italian sovereign bonds. Based on the latest Bank of Italy data, domestic Italian banks held in total €393bn of securities issued by the General Government. Of this €279bn are BTPs with the remainder primarily made up of BOTs and CTZs (bills), and CCTs (floating rate notes). By our estimates, this means that the banks hold about 20% of outstanding Italian government debt. Since QE started this has been a prudent move for banks, but what happens when the tide turns and the inevitable sell-off starts. It's another factor to consider. If there are ever any doubts about the Government's willingness or ability to pay, the banks will be seriously exposed to a financial crisis.

The reason we don't include an EU/Euro break up as one of our potential crisis triggers is largely because Italy is perhaps the first line of defense to such a scenario. If Italy's problems don't escalate dramatically in the quarters and years ahead, the EU/Euro's survival in its current form is much more likely. So we can assume that if Italy does create a crisis it will likely risk triggering an existential crisis for the economic area as a whole.

A China Crisis?

China has been consistently talked about for years as being the source of the next financial crisis. Rapid credit expansion due to an insatiable demand for debt fuelled growth, compounded by a hugely active shadow banking system, as well as an ever expanding property bubble fuelled fears for economists that China could inevitably make a hard landing and send shockwaves through the world's financial markets. However the economy has seemingly defied the odds. At the expense of massive leveraging, China has by and large kept up with the government's growth targets.

That said, future growth cannot forever rely on debt and investment alone. A slow and complex transition from manufacturing to services and investment to consumption needs to take place in the context of also containing the rapid growth of credit in our view. A consistent growth profile in the long run may also require a transition away or lower focus on quantitative targets to one which focuses more on the quality and sustainability of economic growth. To do this successfully, losses need to be recognized in the context of underperforming SOEs and zombie enterprises. Market forces need to be adopted and take on a firmer role. Remember, we were given a brief taster of what to potentially expect two years ago when the Chinese stock market collapsed 40% in the space of two months and capital outflows surged.

China will continue to go through change for some time. Much of this can be contained with acknowledgment that the economy will slow in the short term. But tackling the excessive build-up of non-financial debt which is exaggerated through the lending of shadow credit is not to be underestimated. At what stage is this finally unsustainable? The IMF warned in a recent report that they expect China to do whatever it takes to attain the 2020 GDP target and that the cost of this will be a further rise in credit to GDP to nearly 300% by 2022. They also made the point that had it not been for this credit splurge in recent years, real GDP growth would have been around 5.5% between 2012 and 2016 rather than the 7.25% recorded. This has also had huge implications for the global economy post GFC.

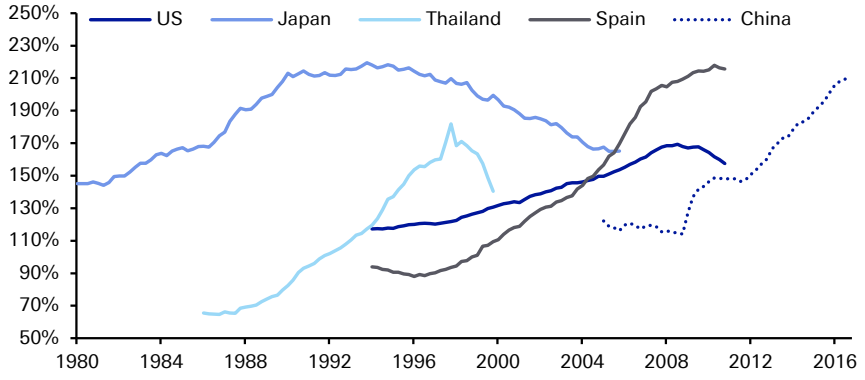
Perhaps the most striking take away from the IMF's latest report was their analysis that in 43 global cases of credit booms in which the credit to GDP ratio increased by more than 30 percentage points over a 5-year period, only 5 cases ended without a major growth slowdown or financial crisis immediately afterwards. The IMF also caveated that these 5 cases, considering country specific factors, provided little comfort. If that wasn't enough, the fund also points out that all credit booms that began when the ratios were above 100% ended badly.

The warning signs are there and the fundamental vulnerabilities remain. The greater issue might be 'when' rather than 'if' the credit bubble pops. The burden has seemingly been passed from government to government and with another leadership reshuffle due at the end of the year we'll see if the problems again fail to be fully addressed. China isn't faced with a new story but you could argue that the relevant stress indicators are now at levels where global history suggests there are no smooth rebalancings.

How does China compare to other countries and previous crises?

Figure 48 provides a simple but striking snapshot of what China is faced with using the growth of non-financial debt in other countries with similar credit explosions and subsequent busts. Can China escape what other countries couldn't?

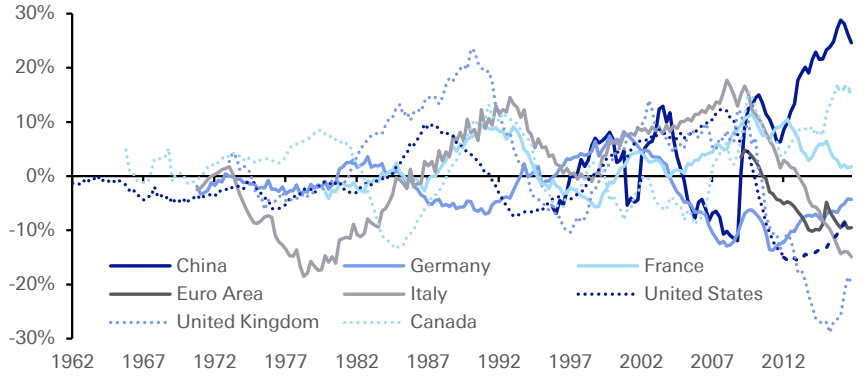
Figure 48: Non-financial debt (% of GDP) leading up to key financial crises vs. current trend for China



Source: Deutsche Bank, Haver

Putting this data in some perspective, China's credit to GDP gap (which the BIS defines as the difference between the private credit to GDP ratio and its long-run trend) currently stands at 24.6%.

Figure 49: China's Credit gap vs. G7



Source: Deutsche Bank, Haver

In the context of the G7, the credit gap for the likes of the US (-7.7%), Germany (-4.3%), UK (-19.6%) and the Eurozone (-9.5%) all turned negative just after the financial crisis of 10 years ago. Borio and Lowe (2002) in a paper entitled "Asset prices, financial and monetary stability: exploring the nexus" argue that a credit gap of over 4% is a good predictor of financial crisis.

Credit growth in China has averaged 20% on an annual basis over the last 7 to 8 years, far outstripping the pace of GDP growth. These numbers are clearly unsustainable and China faces a huge task either moderating or bringing this ratio down to a more sustainable rate. At face value, an obvious solution is to stop making loans to inefficient and failing enterprises. These loans have a longer term impact of dragging down productivity and prevents new and better companies from entering the market. By proactively recognizing losses in the financial system, allowing for corporate restructuring and burden sharing, this would in theory be a case of swapping out short term pain for longer term gain.

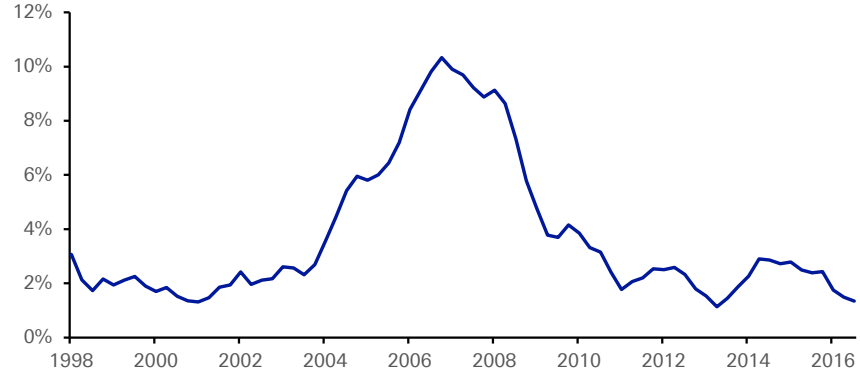
A big issue though is that this credit expansion has been compounded by the huge growth in shadow banking. It's worth noting that shadow banking in China takes place in the context of a system which remains dominated by large state-controlled banks and which various regulation and guidance is a prominent feature. However the nature of this is that the constraints in the system have given rise to a large shadow banking industry which has grown to meet the insatiable demand for credit. In theory this is an efficient system. Shadow banks allocate capital more efficiently to those sectors in need or not well served and in doing so help to fuel growth and create employment.

The rapid rise of what is a largely opaque industry is however a concern. Moody's recently estimated China's shadow financing sector to be worth $8.5tn. The most alarming aspect of China's shadow banking industry however is the country's rapid build-up of wealth-management products, which draw parallels with western banks' exposures in the subprime crisis of ten years ago. These products offer banks a highly lucrative and loosely regulated channel for using funds, while for customers the products promise far higher returns than the low rates on deposits, but also with an implicit guarantee from government backed banks. Essentially the instruments circumvent the traditional deposit lending restrictions. While China's banking regulator has already started a crackdown on restricting and clamping down off balance sheet lending, the sheer size of the industry means that the risk of a collapse in the sector would leave huge damaging effects.

Could a current account deficit be around the corner?

One interesting dynamic that China faces is the possibility of a current account deficit in the near future following years (in this instance with data going back to 1998) of running a surplus. As we have noted elsewhere in this document the build-up of a surplus to over 10% of GDP back in 2007 was perhaps a contributor to the GFC alongside all the other surplus countries as this money was recycled into safe debt thus lowering yields and making debt accumulation more attractive. However several years of massive domestic credit expansion and a huge bubble forming in the property market means that this surplus has now shrunk to just over 1% of GDP today with the wealth effect clearly having a damaging impact on savings, while also boosting demand for foreign goods and services.

Figure 50: China's current account surplus since 1988



Source: Deutsche Bank, Haver

As we've noted in a separate section, the issue here is in more of a global context with regards to contributing to global imbalances. Huge cross border flows fund the status quo which in turn makes it more difficult for domestic policy makers to control their own economy. In the case of China, this could

mean the PBoC having a perhaps less influential role than it once had. An eventual deficit could leave China more exposed to the whims of international markets and investors.

The prospect of the property market bubble bursting is very real

One of the most obvious consequences of the huge expansion in credit is the exponential rise in property prices. The urbanisation of China in recent years has led to mass migration from inland China to the larger Tier 1 cities, predominately located along the coast. Shanghai and Shenzhen are among the cities to have seen exponential growth in prices.

China's government now appears to have accepted that a bubble has formed, addressing it during the 2017 work plan. Data certainly lends a more than strong case to there being a bubble. The ratio of property wealth change to disposable income in 2016 reached new highs for tier 1 and tier 2 cities. This has even spread to tier 3 cities (Figure 51). The share of new mortgages in new renminbi loans also hit new highs in 2016. Indeed mortgages accounted for as much as 51% of new bank loans in the second half of last year.

Figure 51: Ratio of property wealth change to disposable income

	2011	2012	2013	2014	2015	2016
Tier 1 (4)	0.5	0.3	3.1	0.1	2.6	**3.7**
Top tier 2 (15)	0.3	0.0	0.9	-0.4	0.4	**2.1**
Bottom tier 2 (18)	0.4	0.0	0.6	-0.6	-0.3	0.5
Satellite tier 3 (24)	0.4	-0.2	0.5	-0.4	0.0	**1.2**
Non-satellite tier 3 (32)	0.8	-1.1	0.3	-1.7	-0.7	-0.2

Source: Deutsche Bank

There are two obvious consequences of this house price bubble. One is that it is a huge tax revenue driver for the local governments. Our economists have previously noted that the property and construction sectors accounted for 33% and 15% of tax revenue growth for local governments from 2010 to 2015, while the manufacturing sector contributed just 9%. Local governments also heavily rely on land sales which was equivalent to 49% of tax revenue in 2015. SOE's, corporates, financers, homeowners (particularly in tier 1 cities) and developers are all other obvious beneficiaries.

On the other hand the wealth redistribution effect is likely to be huge. The rural population, homeowners outside of the big cities and the young are all obvious candidates to be impacted negatively. This throws up the longer term issue of income disparity. A delicate balancing act now exists whereby a huge positive tax revenue driver for the government needs to be managed in the context of massive wealth redistribution which would in theory have greater implications further down the line. In the near term however the macro implications could be damaging if China is subsequently forced to tighten prematurely. Not necessarily to combat the property bubble (although that is still clearly possible), but perhaps through inflationary pressures, capital outflows or a depreciating renminbi. Previous lessons learned from the US and Japan would suggest that this could have a cataclysmic effect on China's property bubble.

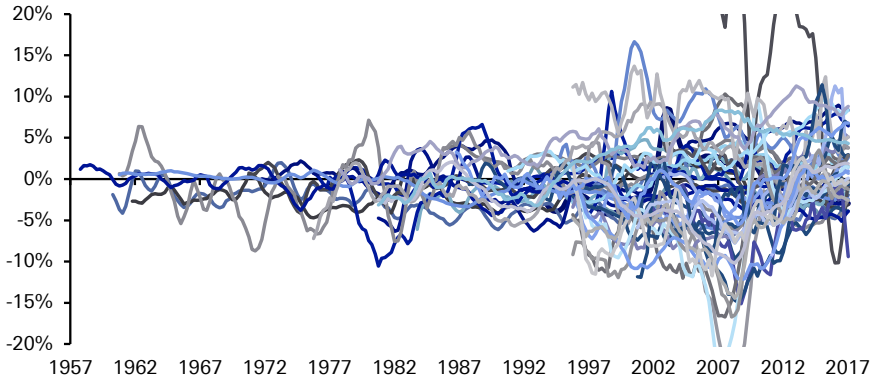
Overall if China does have a crisis it would be easy with hindsight to see why. However we'd also accept that the same could have been said at many points over the last decade. However the imbalances continue to grow and the risks mount.

Global imbalances still elevated

In this globalised world where capital is free to roam across borders, regional and domestic imbalances are inherently more likely as opportunities are global. If an investor in one country believes that country A is a good place to invest, it's likely that other investors in other countries will also share that view. As such flows are very often travelling in the same direction. The reciprocal to this is also true.

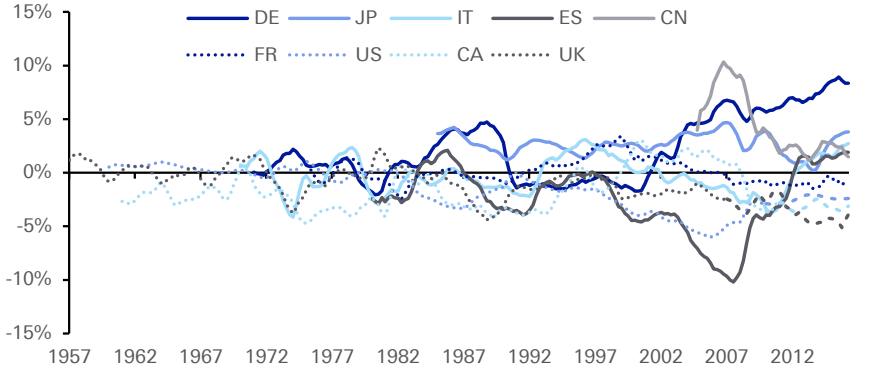
Figure 52 below shows the current account position through time of 43 (G20 including EU27) of the largest economies that we have data for. Although many of the countries only have data stretching back 20-30 years the trend of the last 50 years is clear for those with a longer data history. During the Bretton Woods system large current account positions in either direction were difficult to maintain without seeing large inflows/outflows of Gold which would have been inflationary/deflationary and thus destructive to the domestic economy. We also show the same data for the G7 (Figure 53) where the graph is less messy but with the same trends.

Figure 52: G20 (including EU) Current Account Balances (Net, % of GDP)



Source: Deutsche Bank, Haver, Global Financial Data

Figure 53: G7 and China, Spain - Current Account Balances (Net, % of GDP)



Source: Deutsche Bank, Haver, Global Financial Data

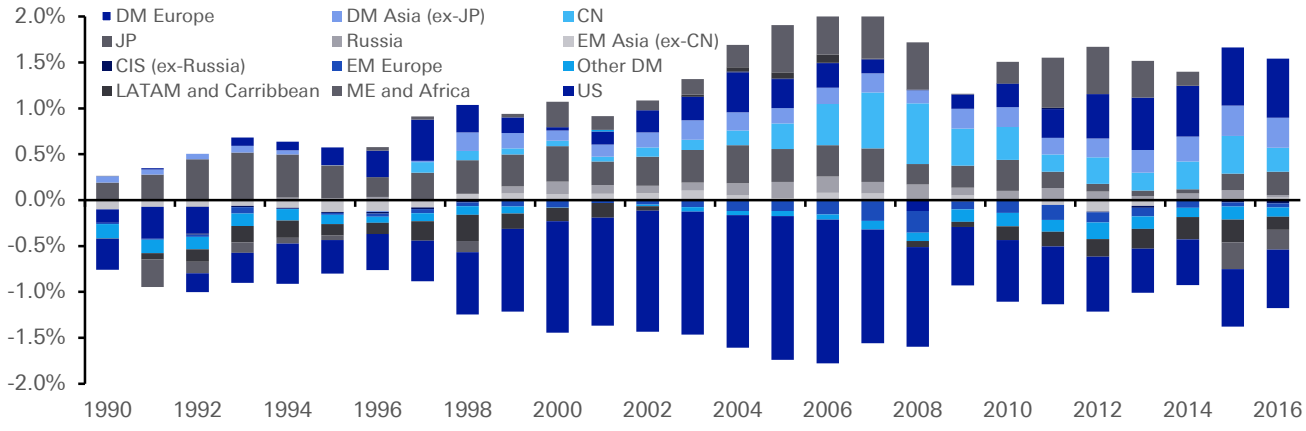
However once the shackles were broken in the early 1970s, and the long march of global financial liberalisation began, suddenly the consequences of current account imbalances were cushioned by flexible exchange rates and fiat money. Larger current account imbalances across the globe were therefore

allowed to build which gave policy makers more short-term flexibility but arguably left them more vulnerable to the whims of international capital flows over the medium to longer term.

As we discussed in the main section, the EM crises of the late 1990s seemed to take global current account imbalances to the next level as those who suffered most in this period vowed to ensure they operated with surpluses from that point on to protect themselves from a repeat of the extreme stresses of the period. As such Figure 52 and Figure 53 show that the last 20 years have seen these imbalances hit extreme levels. China's huge current account surplus (c.10% in 2007) was perhaps a contributor to the GFC (alongside all the other surplus countries) as their excess savings were largely channeled into safe US assets like US treasuries thus lowering global interest rates and leading to a huge global credit expansion. At the time, China didn't allow its currency to appreciate to correct the imbalances thus encouraging these excesses to continue for longer than they should have done.

Although China's surplus has dramatically reduced post the GFC, it's not obvious from Figure 52 that overall global imbalances have reduced much since the crisis. Figure 54 shows the entirety of the globe's current account imbalances cumulatively (stacked) by groupings as a percentage of global GDP and shows that although the imbalances are off their 2006/2007 peaks, they remain elevated. So if current account imbalances were a contributor to unstable markets leading up to the GFC and the Euro Sovereign crisis in 2010-2012 then they equally could be a cause today given that the overall numbers are similar.

Figure 54: Global imbalances – Current account balances (% of global GDP) – Legend ordered from largest surplus (DM Europe) to largest deficit (US) as of 2016

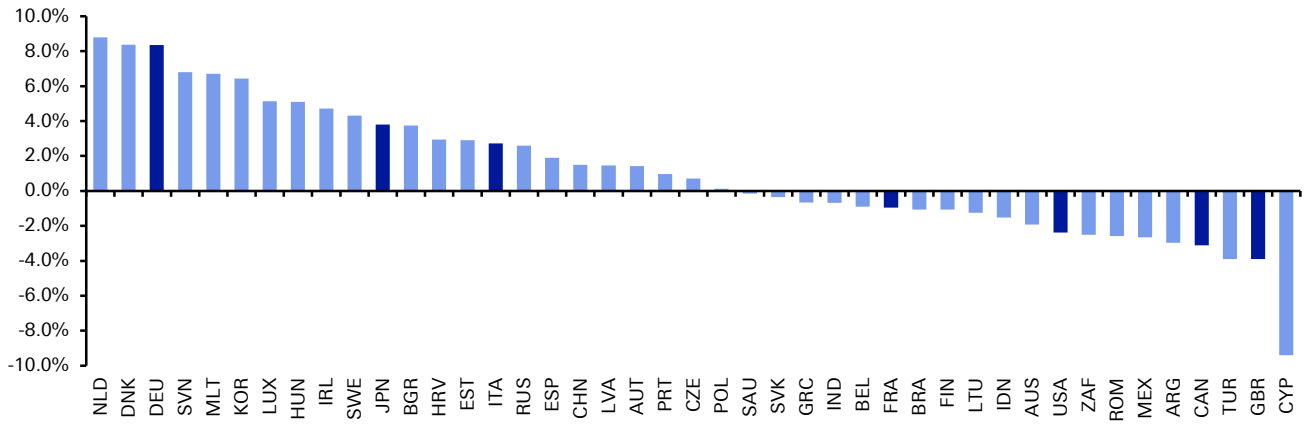


Source: Deutsche Bank, Haver (IMF data)

It's clear from Figure 52 - Figure 54 that we live in a world where huge cross border flows are essential to fund the status quo. As such this surely makes the financial system more crisis prone as domestic policy makers have less control of their own economy. If sentiment changes in the global financial system, flows can reverse at the touch of a button and the current global landscape makes this more possible.

Figure 55 shows today's current account position for all G20 countries (including EU27 countries) in our sample.

Figure 55: Current account balances (most recent figures, % of GDP) – ordered from largest surplus (left) to largest deficit (right) with G7 countries shaded



Source: Deutsche Bank, Haver
Notes: G7 Countries shaded darker

Of the largest global economies, Germany's current account surplus stands out. In volume it is close to $290bn and significantly ahead of China - the second largest at around $170bn - in spite of having an economy only a third the size of China's. This obviously is a consequence of a huge excess of savings over domestic investment. There is some debate as to whether this has resulted from a long standing grand bargain between unions and workers to ensure Germany is competitive on the global arena or whether it merely reflects a high level of savings required to offset the upcoming sober demographic that Germany faces. Indeed consumer spending in Germany is 53% of GDP versus 65% in the UK and 69% in the US.

So a huge 8% plus surplus with the rest of the world for such a large economy means that others are forced to borrow and consume. The Euro Sovereign crisis was arguably partly caused by this phenomenon as the peripheral countries were generally the ones to over borrow as a result of Germany's lack of desire to do so. These deficits have now largely turned to surpluses mostly through austerity and painful adjustments.

So the problem now is not so much an internal European issue as the EU has moved to a current account surplus. So while countries like Germany are unwilling to encourage domestic consumption and continue to have an excess of savings over internal investments, other countries must borrow and consume to redress the global balance. This leaves the global economy exposed and continues to encourage borrowings outside of Germany.

Overall the period of current account imbalances has coincided with a period of more regular financial crises. As such we should be vigilant when these imbalances remain close to their pre-GFC highs albeit with changes in the composition.

The Rise of Populism

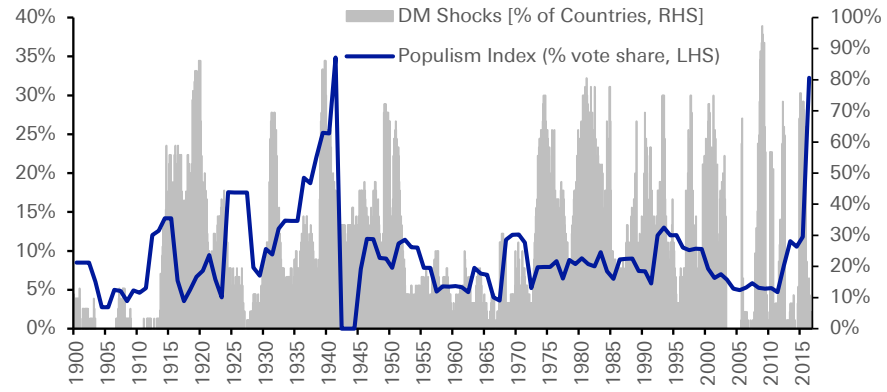
As has been well documented, post the GFC, populism has exploded across the globe. In the last 15 months alone we've seen a vote for Brexit (discussed elsewhere), a vote for Mr Trump and a market friendly but still anti-establishment vote in France. Within the next 9 months we'll also have elections in Italy (already discussed) where the anti-establishment "Five Star Movement" have been neck and neck with the ruling PD party in the opinion polls for the last 14 months. Whilst it will be difficult to meet their long standing pledge for Italy to leave the Euro, if they do manage to gain some foothold of power it will certainly increase the risk of a major destabilising event across the continent at some point over their tenure in office. A financial crisis is obviously a risk under such a scenario.

Outside of these countries populist movements have been commonplace in many major economies post GFC with the risk that at some point it leads to a break with the current world financial order. So far Brexit and Mr Trump have yet to cause such a scenario but there are still risks from both.

Figure 56 below shows an aggregated index of populism in seven large countries over the last century weighted by populist votes and population size. We include the lower house elections in France, Italy, Spain, United Kingdom, Japan and Germany in addition to presidential elections within the United States. While the definition of populism is inherently subjective, the criteria used were as follows:

- Parties that espouse communist policy positions.
- Parties that espouse nationalist tendencies with regards to immigration and militarism.
- Parties led by leaders with dominating, charismatic personalities rather than well-defined policy positions.
- Regarding Europe, generally parties that display euro-sceptic or anti-Nato tendencies.
- Anti-Corporate Progressive Presidential candidates in US Elections whose political ideologies fell outside the political mainstream were also included.

Figure 56: Populism index (% of vote across key countries, population weighted, LHS) and DM Financial Crises (RHS)



Source: Deutsche Bank, Author's calculations. Data collected from G7countries (ex Canada but including Spain)

Notes:
1. There is no German Election data between 1938 and 1949 as there was a dissolution of parliament after the Nazi party banned all other parties until the end of the war.
2. There is no Italian Election data between 1924 and 1946 as no democratic elections took place after Benito Mussolini banned other parties from taking part in elections.
3. There is no Spanish Election data between 1936 and 1977 due to the4 ascension of Franco to power as a Military Dictator until a Spanish Republic was re-established. There was also a lack of available data on the 1967/1971 general elections.

So while the consequence of the recent rise in populism hasn't yet destabilised financial markets, the level of uncertainty will surely remain high while such parties remain realistic power brokers in major national elections. Prior to the last decade, the only comparable rise in populism started in the 1920s and culminated in WWII. So although populism has proved unpredictable in recent years, the rise surely increases the risks to the current world order and could set off a financial crisis at some point soon.

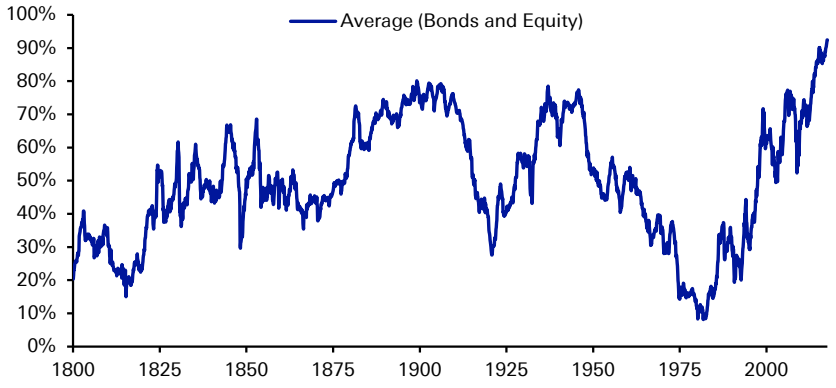
Where populism has already claimed victory in a national election, there are ongoing risks. We'll touch upon Brexit later but the Trump Presidency certainly contains risks to the current world order. Before we touch on the negatives we should stress that a successful tax reform and de-regulation agenda could improve US growth in the medium-term and actually reduce the risks of a crisis or reduce the impact of an external one. However there are also risks.

Indeed it's possible that Mr Trump could decide to force the military option with regards to North Korea which could de-stablise the region and cause great friction in its relations with China. The handling of such a situation is of greatest concern when assessing the impact on markets. Linked into this any trade spats could also be a shock to global growth if handled clumsily. In summary the usual international diplomacy that surrounds major tensions seems less likely to occur with Mr Trump. That surely increases the risks of a more extreme event.

Stretched Asset Prices succumbing to Gravity

In the last couple of annual long-term studies we have highlighted that we're in a period of very elevated global asset prices – possibly the most elevated in aggregate through history. Figure 57 updates our analysis looking at an equal weighted index of 15 DM government bond and 15 DM equity markets back to 1800. For bonds we simply look at where nominal yields are relative to history and arrange the data in percentiles. So a 100% reading would mean a bond market was at its lowest yield ever and 0% the highest it had ever been. For equities valuations are more challenging to calculate, especially back as far as we want to go. In the 2015 study ('Scaling the Peaks') we set out our current methodology but in short we create a long-term proxy for P/E ratios by looking at P/Nominal GDP and then look at the results relative to the long-term trend and again order in percentiles. Nominal GDP data extends back much further through history than earnings data. When we have tracked the two series where the data overlaps we have found it to be an excellent proxy. Not all the data in Figure 57 starts at 1800 but we have substantial history for most of the countries (especially for bonds).

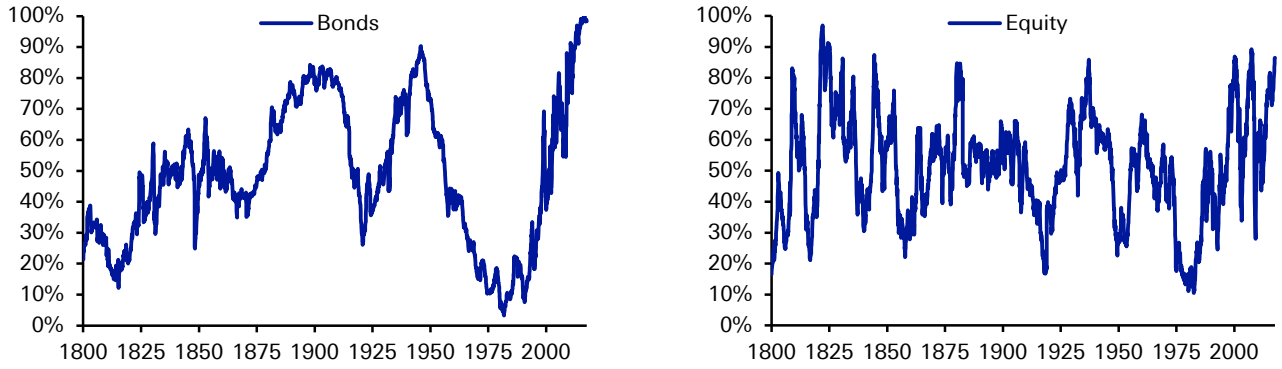
Figure 57: Aggregated 15 DM country average bond (nominal yields) and equity percentile valuations (100% = most expensive; 0% = cheapest)



Source: Deutsche Bank, Global Financial Data, Bloomberg Finance LP

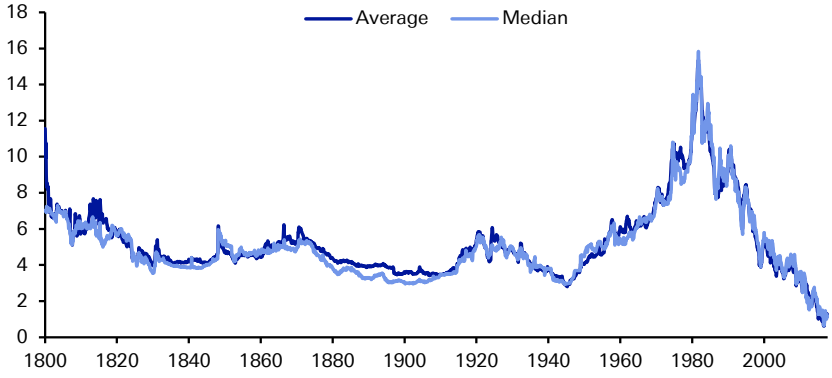
As can be seen, at an aggregate level, an equally weighted bond/equity portfolio has never been more expensive. Figure 58 shows that bonds are much closer to 100% than equities though and Figure 59 then looks at the raw data for bonds showing average G7 yields back to 1800.

Figure 58: Percentile Valuations of 15 DM Bond (left) and Equity (right) Markets back to 1800



Source: Deutsche Bank, Global Financial Data, Bloomberg Finance LP

Figure 59: Average G7 10 Year Government Bond Yields



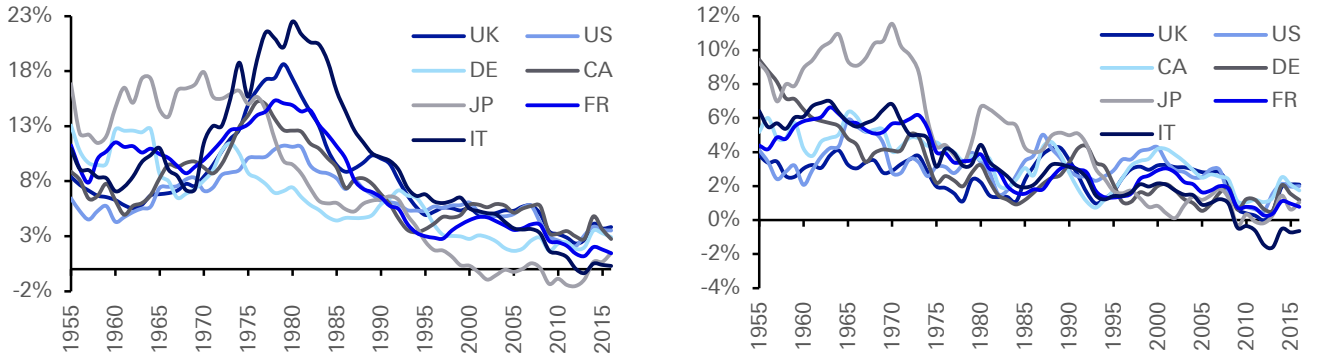
Source: Deutsche Bank, Global Financial Data, Bloomberg Finance LP

It's easier to be black and white in terms of bonds long-term value. In short there isn't any relative to history. For equities it's more difficult to assess partly because they are a real asset and therefore today could be a good time to buy if one felt that despite relatively high valuations, inflation may permanently increase (or better still real GDP growth) and thus lead to eventually permanently higher earnings notwithstanding any short-term negative implications of the inflationary transition. However our technique looks at valuations relative to what we know now and where we are relative to history.

For equities, current valuations are certainly stretched relative to nominal GDP through history. We have been more expensive but we are approaching the peaks of 2000 and 2007 and are in line with the most stretched valuations from the 1930s on this metric and higher than the 1929 crash point.

Given how weak nominal and real GDP has been post GFC (Figure 60), and how much of a downward trend both have been for several decades now, this shouldn't be a surprise.

Figure 60: Nominal GDP (left) and Real GDP (right) growth rates (Last 5Yr average YoY growth)



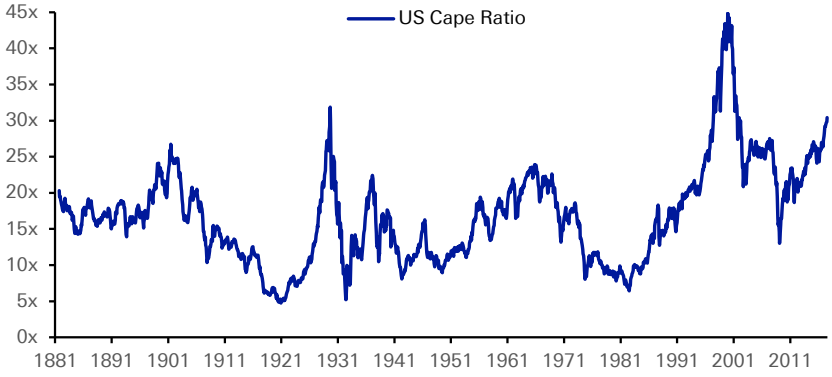
Source: Deutsche Bank, Haver, Global Financial Data

Nominal and real GDP growth rates have been trending down and unless equity returns slow relative to the past, then valuations on our measure will go up. Obviously if profits take up a bigger share of GDP for a period of time our method will look more stretched than traditional P/E ratios. However over the longer-term, this should be mean reverting as profits can't permanently outstrip nominal growth – especially at a global level. Currently there is some evidence that the US is one area where actual earnings have outstripped nominal growth in recent years for various reasons that include their large global players gaining excess overseas earnings (must be a zero sum game globally), a more shareholder friendly and focused culture and perhaps higher inequality and therefore more spoils to capital over labour.

However we'd repeat that history suggests all this is mean reverting over the medium to long term. If we look at more detail on the US which has the most developed history of equity data, including the longest series of earnings data through history we can see the longer term issues with equity market valuations.

Indeed the US CAPE ratio (Figure 61) has only been higher before the 2000 equity bubble bursting and was only slightly higher ahead of 1929 crash. CAPE analysis cyclically adjusts earnings by using the average of the last 10 years so you would have to believe the higher earnings of the last decade represent a new paradigm to not be concerned by this graph.

Figure 61: US CAPE (cyclically adjusted Price/Earnings) ratio



Source: Deutsche Bank, Global Financial Data

So while there are no obvious triggers for historically high global asset valuations to correct, while they remain this high there is always a risk of a sudden correction that could be destabilising to a financial system and global economy that seems to require such elevated asset prices.

Japan: A permanent stupor or…..?

The reality is that any article discussing whether Japan could potentially be the source of the next financial crisis would have looked similar to one you could have written for much of the last decade. As such it's easy to get complacent that as one hasn't happened to date, one can be permanently avoided. However if you took a snapshot of the nation's finances and demographics today with no previous knowledge of the nation's journey over the last 27 years since its asset bubble burst, it would be hard not to be very concerned.

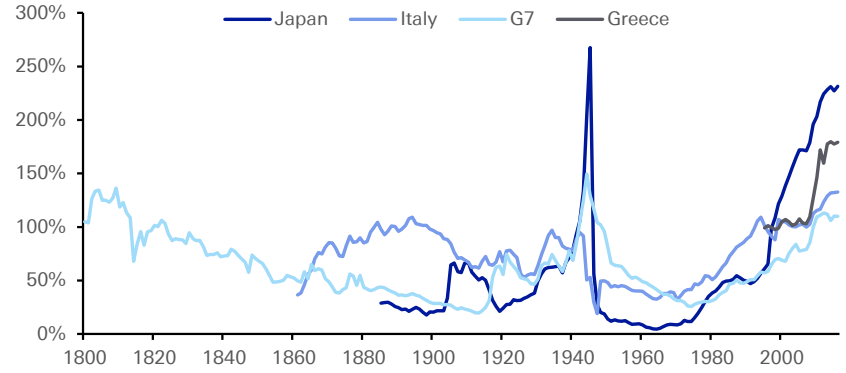
The country continues to face the challenge of trying to manage large budget deficits, large QE and the highest public debt ratio in the developed world at a time when the population is falling and ageing (Figure 63) with obviously fewer and fewer workers to pay the bills and more and more elderly to try to support.

Meanwhile the consensus remains split on Abenomics after a 4 year experiment so far. Stubbornly low inflation hasn't disappeared despite the odd green shoot emerging and growth, while showing some signs of stabilising, in absolute terms continues to make slow progress. All of these issues make Japan a still very relevant story however. Central banks, populism and China are among the topics that have taken over as the bigger focus for markets in recent times and while we wouldn't go as far as to say that markets have become complacent about Japan, fatigue does seem to have played a part.

Perspective through charts

The following charts best sum up Japan's dilemma. Figure 62 is Japan's public debt to GDP ratio which at the last count was hovering around 230%. We've shown this relative to the other G7 countries with the closest being Italy at just over 130% - which remember is a concern in itself as we noted earlier so this goes to show just how high these public debt levels are in Japan. The chart also includes Greece (currently 176%) which is really the only developed nation that even comes close to Japan and even then that gap is still pretty huge. Doubts about fiscal sustainability beyond 2017 are a well-known concern and without the necessary reforms it's hard to see this issue dissipating. Indeed the IMF flagged that without discretionary fiscal support, the fiscal stance would be contractionary in 2018-20 due to the expiry of the 2017 stimulus measures and the scheduled consumption tax hike.

Figure 62: Japan's government debt (% of GDP) vs. G7 + Greece

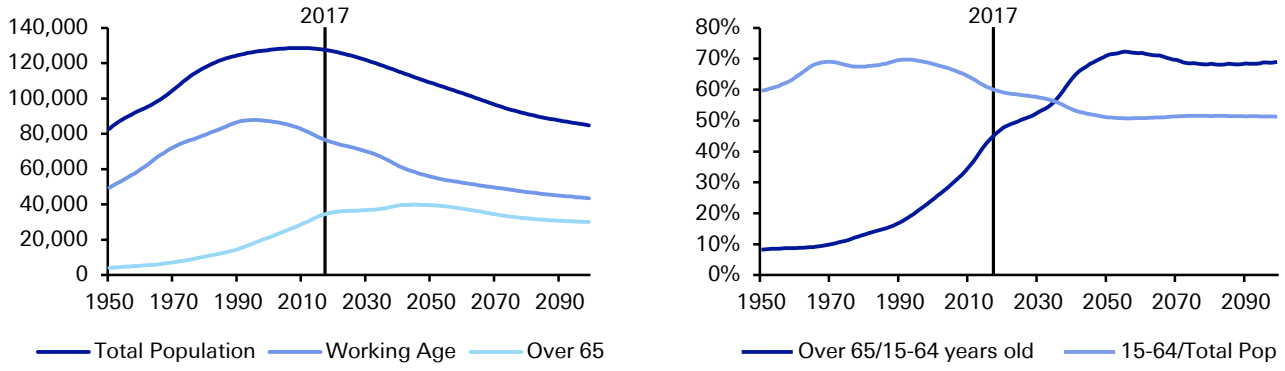


Source: Deutsche Bank, Haver, Global Financial Data

The next two charts show the demographic challenges that continue to plague Japan. Figure 63 LHS shows a simple chart of the depopulation that started in 2010, the decline in the traditional workforce age cohort (18-65 years) and the

growth of those over 65 years old. All these are absolute numbers whereas the RHS graph of Figure 63 then looks at the ratio of 15-64 year olds in the population relative to total population and then the number of over 65 year olds relative to the working aged 15-64 year olds.

Figure 63: Demographic snapshot of Japan (including UN forecasts) in '000

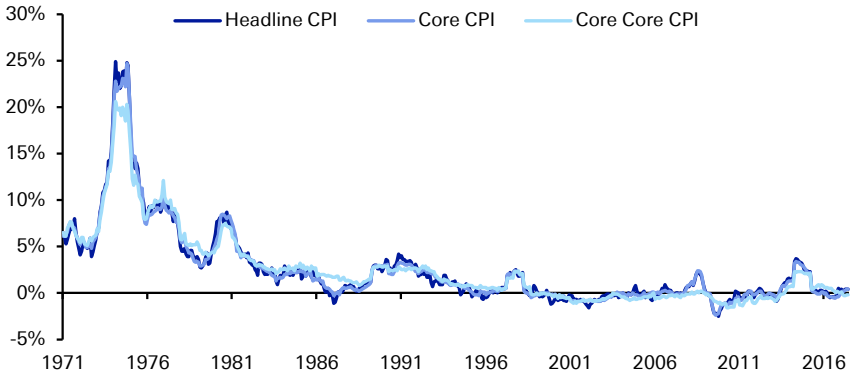


Source: Deutsche Bank, Haver (UN Population Data)

So the working age population peaked in 1995 and the overall population in 2009. The percentage of over 65 year olds in the population is on a rapidly upward path. It currently stands at 45% of the working age population and is expected to peak at 72% in 2055. We think it's almost impossible to see how Japan puts itself on a sustainable financial path (without an extreme debt or inflation reset) unless retirement ages are increased by decades rather than years and without them finding a way of quickly repopulating.

The depopulation and ageing trends have been blamed for the stubbornly moribund inflation levels. Figure 64 shows a history of the trend in inflation in Japan going back to 1970. While the early stages of Abenomics did show some early success in helping to support a temporary lift in inflation, since the mid-90s Japan has averaged around zero percent annual CPI at both the headline and various core measures. Demographics, but also two major financial crises, policy constraints and insufficient or failed policy attempts have all played a part. Backward looking inflation expectations and a deflationary mind-set are now all too common. Indeed following the most recent pushback, BoJ Governor Kuroda has now pushed the 2% inflation target back six times, with the latest target set at fiscal 2019.

Figure 64: Japan's inflation history



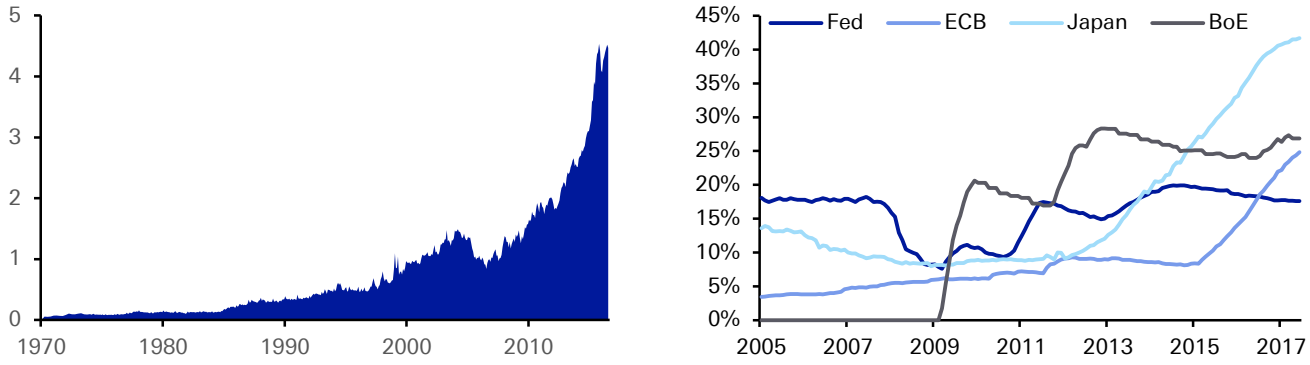
Source: Deutsche Bank, Haver

All that said, a counter argument is that Japan's population ageing is already fairly well progressed given that these trends have been going on for some 20 years or so and future healthcare and public pensions expenditures are already well accounted for. However much like some of the other topics we've presented in this report, you could argue that Japan is approaching another tipping point…

What has changed?

One important change now is that we also have a BoJ balance sheet which has grown to unprecedented and unique levels relative to history (see Figure 65 below). The BoJ now holds around 40% of outstanding JGBs which is raising the question about whether or not it will also be forced into tapering purchases and extending the qualitative approach of yield curve control which in effect was already a sort of stealth tapering. We talked about the consequences of a coordinated central bank policy tightening earlier in the report and when you balance this with addressing a huge public debt burden, tepid growth and non-existent inflation, then the consequences of a policy mistake would seem huge.

Figure 65: Bank of Japan – Total assets (USD tn, left) and Holdings of government securities as % of total outstanding (%, right)



Source: Deutsche Bank, Haver, Central Bank websites

On the other hand if QE actually rises again in the near future how can any of us really know the end game? It's incredible that the BoJ has gone from holding less than 10% of outstanding JGBs as recently as April 2012 to now holding over 40%. It's only that such an extreme economic problem exists that such an extreme policy response is being used. Surely it therefore makes sense to flag the crisis risks even if the status quo is stable for now.

The flip side of this argument is that risks are perhaps relatively contained given that most of Japan's debt is denominated in local currency and either held by the BoJ, or by the domestic sector, with nonresidents having just a limited exposure (12%). In theory this would lower future refinancing risk. In addition, the private sector in Japan benefits from a substantial buffer against government debt. Indeed Japan's ratio of financial assets held by the domestic private non-financial sector to government debt has been stable for the last couple of decades at around 300%, despite government debt rising substantially. This is roughly similar to the Eurozone and slightly below the US. By comparison Greece's ratio languishes below 0%. Japan also benefits from a high ratio of net financial assets to net disposable household income, particularly compared to other developed countries. So perhaps Japan's fiscal vulnerability isn't as bad as feared. However there is no denying that if it was normal for central banks to have to finance over 40% of the outstanding debt

of a country then everyone would have done it through history. It's a unique situation and we therefore have to flag the country's highly unusual finances and huge government debt as a big risk.

Political issues about to hit Japan?

One more immediate thing to watch is PM Abe's popularity. Abe's current term as leader of the ruling Liberal Democratic Party is due to end in September 2018 and approval ratings last month suggested a decline below 40%. Our economists in Japan highlighted at the time that a rating in the 30s is viewed as a caution signal for an administration's viability and that a drop into the 20s could be terminal. A subsequent cabinet reshuffle in early August didn't appear to particularly help Abe's case and our colleagues haven't ruled out the possibility of political turmoil within the next year. The question appears to be is there a viable alternative? Right now this would appear to be a challenge but it's certainly another situation to monitor.

Overall the best argument about why Japan won't cause a crisis is that all the above issues have been known about for years. We've had a lost generation of growth so the problems are deeply ingrained without there being the hint of a crisis in recent times. As such it's difficult to work out what the trigger will be to create such an event. However that doesn't prevent the problem being big and at some point the sustainability of the situation will surely manifest itself in either debt restructuring, much higher manufactured inflation or major monetisation of debt, in our view.

Brexit

Brexit is a complicated issue with many potential outcomes over the years ahead. Ultimately our expectation is that compromise will be reached and the UK and EU will establish a new relationship. However in this uncertain world the vote to leave in June 2016 throws up a potential crisis if negotiations completely break down. Through most of history, we tend to think compromise is always the most likely outcome when such differences exist and where there is the chance of mutually assured destruction. The extreme example being World War II when no-one really expected war, weeks and months before it arrived. How spectacularly wrong that assumption was. So it's worth highlighting how Brexit could go wrong and create a financial crisis.

Before we delve into this it's worth pointing out that if you wanted to look at the 'financial shock' impact from the vote then Sterling falling as much as 19% versus the Dollar at the recent lows certainly fits our criteria for a financial shock. However the real financial crisis could arise if the UK experiences a dramatic 'hard' Brexit with relations completely breaking down with the EU. This would not only have economic implications for the UK and the EU but also on geopolitics.

The UK is widely believed to have one of the best security services in the world, is one of the largest global contributors to NATO (vs. GDP) and has an influential army with bases all over Europe. If relations break down between the two there is a scenario where the UK withdraws its co-operation on these matters with the EU as retaliation. Clearly this is an extreme situation but it does show the high stakes of the current negotiations go beyond straight economics. Global geopolitics could be seriously damaged for years to come if such a scenario occurs and financial markets would surely respond to this. If this happens at the same time as a Trump America potentially turns its back on major global security and trade initiatives, then we could move to a very different world to that prevailing for the last 2-3 decades.

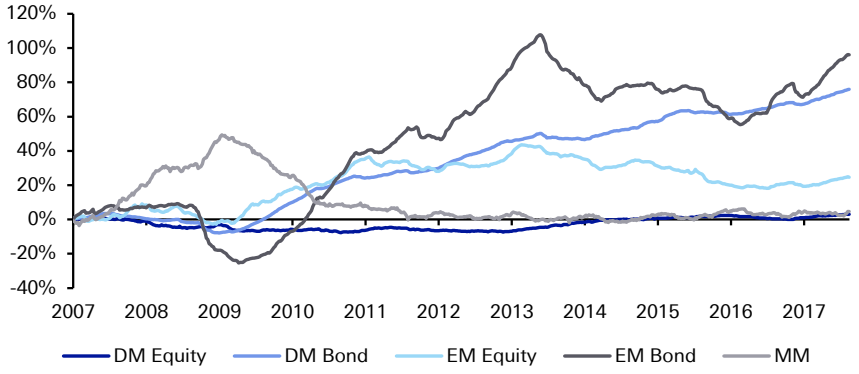
Also much of the EU's financial architecture operates through London and although worst case scenario planning is under way for many of the major players, it would be naïve to imagine that all eventualities could be planned for in such a short space of time. At worst this could have major impacts on funding to both companies and banks and on market liquidity.

At this stage it is almost impossible to model the outcome of Brexit and as stated at the top, we are relatively sanguine about the future relationship between the UK and Europe. However the UK's vote to leave has introduced a major risk to economic activity, the financial architecture of Europe and perhaps more concerning, the geo-politics and security of the region. As such we need to continue to keep this on our radar.

(A lack of) Financial Market Liquidity…and changing market structure

Another topic which has generated some debate in recent years is the decline in market liquidity. Traditional trading levels have dramatically reduced in most vanilla products since the GFC and the inventory levels of market makers have also fallen sharply. Fixed income seems the most vulnerable as it's the market that has seen a combination of large inflows, huge growth and reduced market making activity. If we first look at the flows into the asset class in recent years Figure 66 shows that both EM and DM bond funds have seen significant inflows in recent years. Equities and money market fund flows have been broadly flat for over a decade now.

Figure 66: Fund flows as a % of NAV (rebased to 2007)



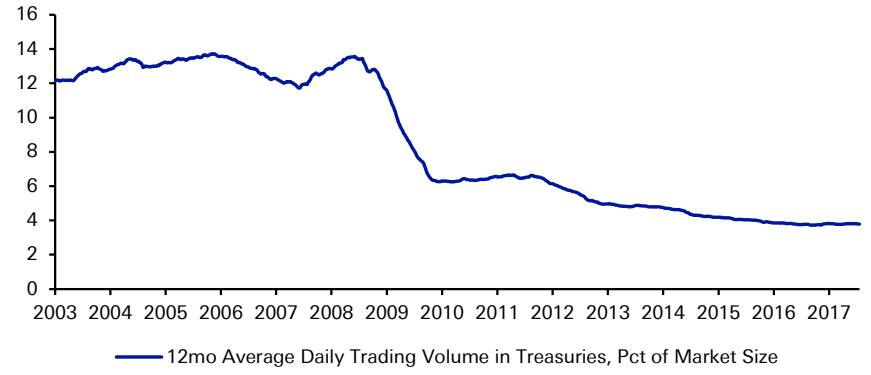
Source: Deutsche Bank, EPFR

Whilst this is not automatically a worry it would argue that if there was a change in the yield environment and returns suffered, bond funds would arguably be vulnerable to these 'return chasing' momentum flows. If this occurred at the same time as central banks started to reverse their substantial purchases it could lead to a sharp correction in prices that could encourage or exacerbate a crisis.

As alluded to earlier, the problem with any major shift from inflows to outflows is that trading volumes and dealer inventories have both taken a major shift down in recent years. The US market has more available data detailing this. First we'll look at the trend in arguably the world's most important market namely US Treasuries.

As Figure 67 shows, daily trading has dropped to just under 4% of the market size which is more or less the lowest level that we've seen in the post-crisis era and over a third of their pre-GFC levels.

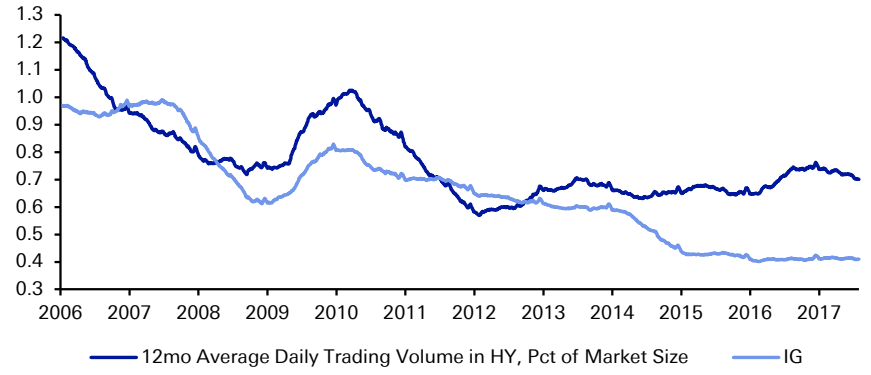
Figure 67: Average daily trading volume as % of market size in US Treasuries



Source: Deutsche Bank, US Treasury Department, FINRA

Moving to US credit, IG trading volumes for the last two and a half years have dropped to the lowest level in the last ten and a bit years for which we have data for. Interestingly HY has trailed off less but activity is still 50% below (relative to market size) where it was pre-crisis.

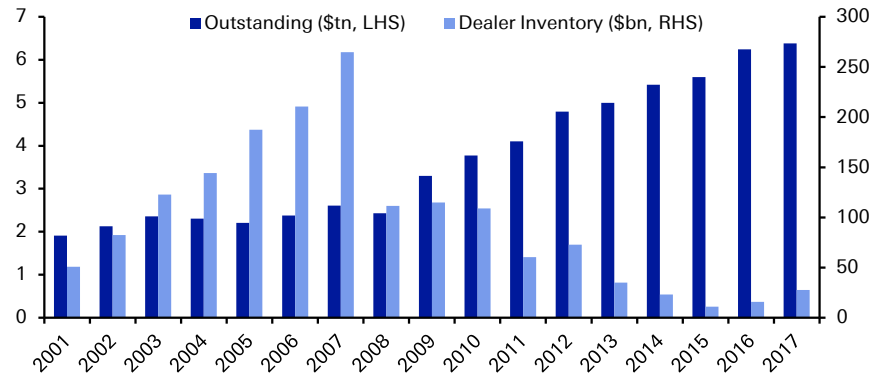
Figure 68: Average daily trading volume as % of market size in US HY and IG



Source: Deutsche Bank, US Treasury Department, FINRA

At the same time, regulation changes have encouraged dealers to run significantly lower inventory levels as Figure 69 shows.

Figure 69: US Dealer Inventory vs. Outstanding size of US IG and HY market



Note: The inventory series changed from 2013.
Source: Deutsche Bank, NY Fed, Bloomberg Finance LP

The concern is what would happen if the trading environment changed dramatically or if outflows suddenly surged. In fixed income we've lived through a long bull market and a long period where inflows have been strong and consistent.

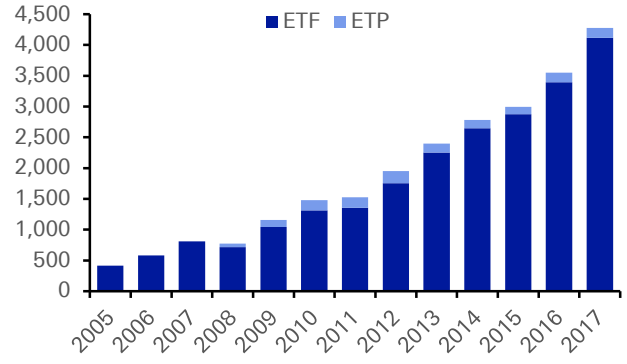
Events like the "taper tantrum" in 2013 and the energy/oil US credit sell-off in late 2015/early 2016 tested market liquidity but in the former, only for a brief but stressful period, and in the latter only in one sector – albeit an important one. Remember that the taper tantrum was purely a fear of an upcoming taper. The taper didn't actually happen at that point, partly because the market reaction persuaded the Fed to tread carefully. At the time the soft economic and still soft inflation data allowed them to do this. The scenario we are talking about is when we actually see an event (e.g. higher inflation or higher growth) that genuinely forces a retreat from fixed income.

The limited market liquidity has been a persistent worry for investors in recent years but it's fair to say that this concern seemed to be more heightened 2-3 years ago than it is now. Perhaps worry fatigue has set in as this hasn't yet become a major event in this cycle. However as we said above, flows have continued to be positive outside of temporary reversals. The new market structure has yet to be tested in a prolonged period of outflows. It's possible that a lack of liquidity would magnify an existing crisis rather than create one in its own right or perhaps turn a difficult macro situation into a crisis. It certainly merits close attention though.

ETFs – A help or a hindrance to markets going forward

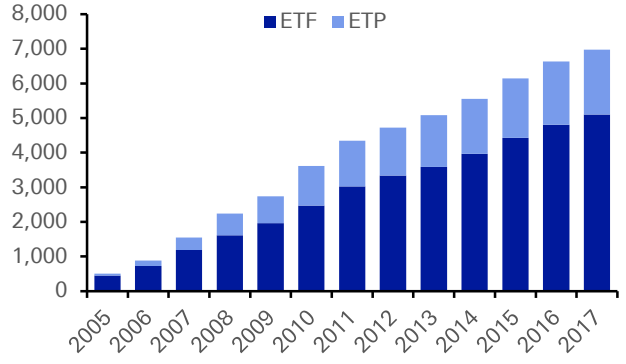
As traditional liquidity has dried up so trading in products like ETFs have surged. Indeed the growth has been extraordinary. Putting the numbers in perspective, including ETPs (which make up a much smaller percentage), the global AUM of exchange traded products (all asset classes) is now over $4tn. This compares to around $800bn or so in 2008. Around 5,000 separately traded ETFs and nearly 1,900 ETPs are now available which compares to nine years ago when there were 1,600 and 600, respectively. In percentage terms the AUM of ETFs and ETPs has averaged 22% growth annually since 2005 while the number of ETFs and ETPs have grown at 26%. Keep in mind that this includes the financial crisis impacted years of 2008/09.

Figure 70: Global ETFs and ETPs AUM in US$bn



Source: Deutsche Bank, ETFGI

Figure 71: Number of ETFs and ETPs



Source: Deutsche Bank, ETFGI

Low costs, tax efficiency, low volatility, transparency of pricing and holdings, liquidity and of course the 8-9 year bull market for risk assets in particular are all reasons which have helped fuel demand for these products. As the market has grown so has the investor base with the products appealing to both retail and institutional money.

Generally speaking, ETFs are physically backed if they are simple cash replications. A possible explanation for the lower trading volumes in markets could in part be attributed to the rise in ETFs. For the larger ETFs, typically volumes reflect shares in those products changing hands and no new shares being created which therefore means no need for an underlying transaction.

This leads into an interesting parallel debate, which is could ETFs distort or disconnect underlying company fundamentals from their valuation? While this is a bit more of an equity story, one argument is that passive investing naturally favours large caps when picking constituents based on factor style (for example momentum, growth etc). In theory this means that the biggest companies are getting bigger, regardless of fundamentals. The concern therefore being that these companies are perhaps more susceptible to overvaluation and the gap between the small/mid to large caps also widening. This could potentially mean that risks are amplified when you see a big market correction, which arguably ETFs haven't yet been tested with yet.

The most recent test for ETFs was around 18 months ago when the high yield market (particularly in the US) sold-off following the collapse in Oil prices. Trading volumes for the BlackRock iShares HYG and State Street JNK funds – the two biggest high yield ETFs – hit the highest on record. There appeared to be two schools of thought on this. One camp argued that the ETFs achieved one of their purposes in acting as a source of liquidity for the market. However the other camp argued that the managers of these ETFs were forced to sell underlying bonds into an illiquid market, compounding the selloff. There is another example back in August 2015 when the Dow Jones plummeted 1000 points in the opening minutes of trading. However ETFs were either intermittently trading or otherwise suspended. This episode actually called for a change in how some ETFs were traded.

In reality ETFs and ETPs have not yet been fully tested in a sustained bear market. So the real test could be when we see the next downturn and these products are faced with heavy redemptions. This will be particularly paramount for less liquid asset classes. The subject is certainly attracting more and more attention. The FT this year has run numerous stories suggesting that ETFs are fuelling an "unsustainable price bubble" and also that the products are "the

next crash" which "is hiding in plain sight". The emergence of more and more exotic niche ETFs only complicates the landscape. The products warrant close attention particularly in the context of their surge in popularity for retail investors and as with any market still somewhat in its infancy, the real test is probably still to come.

Future Returns based on Mean Reversion

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 is a US centric exercise given the long unbroken history available. However we continue to include EUR and GBP credit. In Figure 72 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 US 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.

Figure 72: 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%	-18.7%	-9.5%	-1.9%	-20.8%	-11.8%	-4.3%
	Equity (Trend Earnings/Average PE since 1958)	8.6%	6.8%	-10.1%	-3.8%	1.1%	-12.5%	-6.3%	-1.3%
	Treasury (10yr)	5.2%	3.4%	-3.8%	-0.8%	1.4%	-6.3%	-3.3%	-1.0%
	Treasury (30yr)	4.7%	1.6%	-7.0%	-2.8%	0.5%	-9.4%	-5.2%	-1.9%
	IG Corporate Bond	5.7%	2.6%	-5.4%	-1.4%	1.6%	-7.8%	-3.9%	-0.9%
	BBB Bond	6.7%	4.0%	-5.8%	-1.5%	1.7%	-8.2%	-4.0%	-0.7%
	Property	3.5%	0.5%	-11.9%	-6.5%	-2.1%	-14.2%	-8.8%	-4.5%
	Gold	1.9%	0.3%	-19.6%	-11.4%	-4.7%	-21.7%	-13.6%	-7.1%
	Oil	2.2%	0.1%	-1.9%	-0.2%	1.1%	-4.4%	-2.7%	-1.3%
High Yield	USD High Yield	8.6%	5.9%	-1.6%	1.4%	3.7%	-4.2%	-1.1%	1.2%
	Treasury (Duration Matched)	6.1%	3.4%	-1.9%	0.3%	2.0%	-4.4%	-2.2%	-0.5%
	EUR High Yield			-6.1%	-2.0%	1.1%	-8.5%	-4.4%	-1.3%
	Treasury (Duration Matched)			-5.4%	-2.2%	0.1%	-7.8%	-4.7%	-2.3%
iBoxx EUR	Corporate Bond			-5.2%	-1.8%	0.7%	-7.6%	-4.3%	-1.7%
	BBB Bond			-5.0%	-1.7%	0.8%	-7.4%	-4.2%	-1.7%
	Non-Financial Bond			-5.8%	-2.2%	0.5%	-8.2%	-4.6%	-1.9%
	Non-Financial BBB Bond			-5.3%	-2.0%	0.6%	-7.8%	-4.4%	-1.9%
	Bund (Duration Matched)			-5.4%	-2.2%	0.1%	-7.8%	-4.6%	-2.3%
iBoxx GBP	Corporate Bond			-7.6%	-2.9%	0.7%	-10.3%	-5.7%	-2.1%
	BBB Bond			-5.9%	-1.9%	1.3%	-8.6%	-4.6%	-1.6%
	Non-Financial Bond			-8.9%	-3.7%	0.3%	-11.5%	-6.4%	-2.5%
	Non-Financial BBB Bond			-7.0%	-2.6%	0.8%	-9.6%	-5.3%	-2.0%
	Gilt (Duration Matched)			-7.9%	-3.5%	-0.1%	-10.6%	-6.2%	-2.9%
iBoxx USD	Corporate Bond			-2.4%	0.4%	2.6%	-4.9%	-2.1%	0.1%
	BBB Bond			-1.9%	0.7%	2.7%	-4.5%	-1.8%	0.2%
	Non-Financial Bond			-3.3%	-0.1%	2.3%	-5.8%	-2.6%	-0.2%
	Non-Financial BBB Bond			-2.4%	0.4%	2.6%	-4.9%	-2.1%	0.1%
	Treasury (Duration Matched)			-3.8%	-0.8%	1.4%	-6.3%	-3.3%	-1.0%

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

The results generally look pretty bleak and investors may not necessarily agree with them. Our methodology has been fairly consistent through time and perhaps could be updated to reflect more 'modern thinking'. This might make the results less negative but it probably wouldn't change the conclusion that on a mean reversion basis, traditional assets are generally expensive in DM countries using the US as a proxy.

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 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.

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. Basically when we look at our long database of returns, performance generally seems to be superior when investors receive

higher 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.

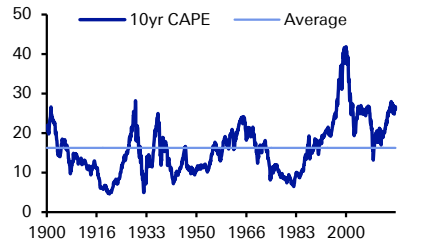
Overall this leaves us preferring method 1 over the very long-term but we've included both results in the exercise for those that think it's a slightly different market now to that seen prior to 1958 and the great dividend crossover.

Looking at the results of the analysis this year whether we use method 1 or method 2 mean reversion over the next decade would produce negative returns, albeit much lower based on method 1. In nominal terms method 2 would just about provide positive returns with mean reversion over the next decade. That said 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.

The biggest problem with valuations today is that earnings/profits in the US are at a very high share of GDP and PE ratios are stretched relative to history. If both eventually mean revert, our low (or even negative) 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.

Another issue is that as you see in Figure 73, PE ratios have been above average for most of the period since around 1990. Perhaps these higher valuations tie in with analysis from previous versions of this report that the post 1980- world has seen unique trends that have lasted for over a generation now. This has taken US equities from being at pretty much close to their lowest valuation through history around 1980 to being above their long-term average for almost the entire post 1990 period. Maybe the period going forward to 2050 will see a return to better short-medium term returns from mean reversion strategies, especially if what we discussed in last year's study comes to fruition. Basically we concluded that we were at the end of a 35 year super cycle of politics, asset prices, inflation and bond yields. If correct, extrapolation of the last 35 year trend will be dangerous and mean reversion back to longer-term trends much more relevant.

Figure 73: S&P 500 CAPE Ratio



Source: Deutsche Bank, GFD

We also accept that the US is the easiest market to test this analysis on as we have earnings and price data stretching back over a hundred years. However it's also widely acknowledged to have the highest PE ratio of virtually all developed markets. There are therefore limitations to restricting this exercise to one country.

Potential Treasury returns for both 10 year and 30 year Treasuries are negative on a real basis for all periods out to 10 years. For those that think such a negative outlook is highly unlikely, the long-term returns seen at the end of this document show that every decade between the 1940s-1970s saw negative real returns for the US (and many other) Government bond markets.

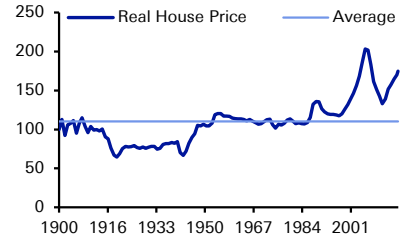
Future USD long-dated credit returns also look challenging based on this analysis but the extra carry gives them an advantage over Treasuries.

Extending this analysis to the iBoxx indices, we can see that real returns over 10 years would be negative across EUR and GBP but with the exception of overall non-financials, USD credit would just about scrape into positive territory. In terms of excess returns our analysis suggests that excess returns based on a 10 year mean reversion horizon would be positive across all currencies.

Looking now at HY, we can see the potential real returns for USD HY assuming mean reversion over the next decade has dropped again since last year's study at +1.2% p.a. (+3.7% p.a. in nominal terms). Therefore we would expect them to remain comfortably below long-term average levels. Even expected excess returns (+1.7% p.a.) are below the long-term average level by nearly 1% now but they are around 0.6% higher than the potential IG excess return. For EUR, HY expected real returns over the next decade are negative and therefore notably lower than for USD HY. However excess returns would still be positive at around +1% p.a. This analysis assumes long-term average levels of default but it's worth highlighting that defaults over the past decade have been consistently and significantly lower than long-term averages.

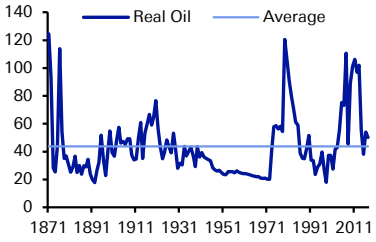
For property, using Robert Shiller's long-term data back to 1900, the asset class still appears expensive on a mean reversion basis. In nominal terms, our mean reversion suggests house prices could fall by just over 2% p.a. over the next decade, similar to what we showed in last year's study. We also remain mindful that property is probably tied to interest rates though so while yields remain ultra low, property will look expensive.

Figure 74: Real US House Price



Source: Deutsche Bank, Bloomberg Finance LP, Irrational Exuberance

Figure 75: Real Oil Price



Source: Deutsche Bank, GFD

Finally we look at commodities. In recent studies our mean reversion exercise has highlighted that both Oil and Gold were likely to have poor decades in both nominal and real terms. The re-pricing we've seen in these assets in recent years has helped to take some of the sting out of these potential negative returns. That said, in real terms both Oil and Gold are still expected to provide negative returns based on mean reversion over the next decade with the numbers slightly lower than in our study a year ago. Oil would at least see positive nominal returns over the next 10 years.

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.

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 3.1%).

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 reverting real earnings back to their long-term trend line. We then mean revert the current PE ratio back to its long-term average. Combining the reverted earnings and PE ratios we can 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 specifics 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 & International Asset Returns

Over the following pages we now look at the data section where we examine long-term US returns going back to the start of the 19th century (where possible). In addition we look at various international returns for equities and bonds back as far as we have data. For many countries this stretches back deep in the early 1900s and for some countries the data goes back over 200 years. We show returns in nominal and real terms and for the international section convert all returns into dollars for comparison sake. We also show returns annualised within each decade and also by 50 year buckets. Additionally we then detail returns from certain starting points, including the post 1971 period and the period between 1900 and the end of 1970 which corresponds to the analysis discussed earlier in this study. With these different starting points we can hopefully see cyclical, secular and very long-term trends.

First the US. Figure 76 and Figure 77 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 storing cash under the mattress has been a recipe for wealth erosion through history in all but the most exceptional international circumstances.

Over the entire sample period, US Equities outperform Corporate Bonds, which outperform Government Bonds, which outperform cash, which interestingly has generally outperformed the Commodities analysed in this section. Over the last 100 years (since end 1917, where we have data for the widest selection of assets), Equities outperform 10yr and 30yr Governments by around +5.2% p.a., Corporates by +4.2% p.a. and T-bills (cash proxy) by +6.8% p.a. (on a nominal basis). They also outperform Gold by 6.1% p.a., Oil by 7.7%, and US housing (prices only) by 6.5% p.a. Indeed in real terms, over the past 100 years all of the analysed commodity series with the exception of Gold have seen negative returns with the Commodity index down -1.4% p.a. - Gold and Housing have returned just +1.2% p.a. and +0.8% p.a. respectively in real terms. Over the same period Equities have provided +7.2% p.a., 10 year Treasuries +2.2% p.a. and Corporate Bonds +3.1% p.a. Over recent years, assets like housing and commodities have been used as a portfolio alternative to equities and bonds. History suggests that over the long run such a strategy is unlikely to produce superior results, especially relative to equities. Their lack of income make it difficult for them to compete with traditional assets. Buy-to-let housing would be an exception to this but there is no long-term time series available to analyse this.

Since 1800, US equities have only had two negative decades in nominal terms. The 1930s (-0.5% p.a.) and the 2000s (-0.9% p.a.). There have been three in real terms (1910s: -2.8%, 1970s: -1.5%, 2000s: -3.4%).

In nominal terms three of the best five decades for equities since 1800 have occurred in the last four decades (including this current decade not yet complete). However this period also included the worst decade (the 2000s).

Interestingly 10 year Treasuries and corporate bonds have never seen a negative return decade in nominal terms. However in real terms 6 out of the 12 decades since 1900 have seen a negative return from 10 year Treasuries, including four successive decades from the 1940s. After this the last 4 decades have seen stunningly positive real returns for bonds though with each decade seeing average annual returns between +2.4%-7.3% above inflation. That said with each decade we have seen these annualized returns decline and as we

have highlighted in previous versions of this note - as well as in the mean reversion section of this report - we can't help thinking that we're setting ourselves up for a return to a few negative real return decades ahead in bonds as we venture out towards 2050.

International Returns

Fixed income is the asset class for which we have the longest dated data series globally. There is definitely a survivor bias in fixed income though. Although the majority of the analysed countries with data back to 1900 in our study have provided positive real returns over this period there have been some notable exceptions with France (-1.2% p.a.), Italy (-1.9% p.a.) and Japan (-0.6% p.a.) all seeing negative real returns. Germany would be the worst if we had reliable data through the hyperinflation period in the 1920s. So this shows that negative real returns in bonds are a real possibility over even very long periods of time.

For equities we only really have comprehensive returns data for a critical mass of countries post WWII and if we look at returns over the last 50 years most developed markets see real annualised returns between +5-6% p.a. The only real notable laggard has been Italy (+1.7% p.a.), although Canada, Japan and Spain have all provided annualised real returns of less than +5%. Since 1980, the period we have previously identified as being the start of a secular global bull market, virtually every country has a higher return for equities and bonds than their long-term average. A notable exception has been Japan as it obviously went through its demographic boom and bust earlier than others.

Since the Euro was introduced in 1999, there is little doubt that equity returns in Europe have been disappointing. However this period did coincide with the global equity market bubble so returns are best compared with the US and UK (both +3.5% p.a. real adjusted) for context. Germany is marginally better (+3.7% p.a.) but Greece (-7.1% p.a.) and Portugal (-1.1% p.a.) have all failed to see positive real total returns (including dividends) since the single currency came into existence nearly 18 years ago. Italy (+0.6% p.a.), Spain (+2.3% p.a.) and Ireland (+2.0% p.a.) also come out of the post Euro world with below trend returns. Such poor returns for the weakest Euro economies' equity markets, especially those still in negative territory after nearly 18 years, is a worrying statistic for the supporters of the single currency era.

Government bond returns since the Euro commenced are strong across the board due to the themes explored in previous reports, but investors also have central banks to thank for this in the weakest Euro area countries. Without their intervention it's possible we would have seen sovereign defaults over and above the haircuts that investors took in Greece. This would have wiped out returns in fixed income that as history shows are hard to get back over even the very long-term.

We also include tables using similar time frames to show long-term nominal and real GDP for a host of DM and EM countries. We've also converted into dollars to allow some comparison through time.

The full data is shown in the pages ahead covering nominal and real returns and also includes a shorter history for various EM countries. For all returns we also show nominal returns through time in dollar terms. For visual ease we have shaded the periods where negative returns have been seen.

Figure 76: 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	Commodities (CRB Index)
last 5yrs (2013-2017)	13.77%	4.15%	3.49%	5.27%	1.09%	2.80%	5.53%	0.64%	0.19%	5.78%	-5.39%	-4.44%	-11.37%	-9.16%	-9.14%
last 10yrs (2008-2017)	7.55%	7.60%	6.88%	8.15%	3.98%	5.46%	7.75%	2.93%	0.26%	0.95%	4.30%	-0.46%	-6.27%	-5.14%	-6.53%
last 15yrs (2003-2017)	9.28%	7.71%	7.07%	8.20%	4.03%	5.58%	8.75%	2.98%	1.18%	2.74%	9.04%	9.80%	3.22%	2.21%	-0.42%
last 25yrs (1993-2017)	9.31%	8.29%	7.99%	8.63%	5.67%	7.19%	7.66%	4.94%	2.45%	3.72%	5.50%	4.19%	3.86%	0.98%	2.37%
last 50yrs (1968-2017)	9.90%	8.54%	8.15%	8.99%	7.15%	7.23%			4.89%	5.01%	7.42%	4.18%	5.75%	2.40%	2.63%
last 75yrs (1943-2017)	11.42%	6.12%	5.75%	6.62%	5.37%	5.15%			3.95%	4.96%	4.88%	4.36%	4.08%	1.65%	2.19%
last 100yrs (1918-2017)	10.32%	6.07%			5.14%	5.06%			3.50%	3.78%	4.20%	2.56%	2.63%	0.79%	1.44%
last 150yrs (1868-2017)	8.94%				4.77%				3.39%		2.59%	1.47%	2.22%	0.63%	
last 200yrs (1818-2017)	8.55%				4.93%						2.11%	1.17%			
since 1800	8.57%				5.16%						1.94%	0.79%			
since 1900	9.56%	5.73%			4.64%	4.68%			3.43%	3.50%	3.55%	2.33%	2.94%	1.65%	
since 1920	10.07%	6.19%	5.93%	6.71%	5.20%	5.16%			3.48%	3.69%	4.29%	2.85%	2.38%	0.67%	1.44%
since 1930	9.55%	6.13%	5.87%	6.64%	5.15%	5.06%			3.43%	4.04%	4.79%	3.24%	3.25%	1.48%	2.12%
1900-1970	8.99%	3.55%			2.91%	2.79%			2.52%	2.54%	0.84%	1.43%	1.03%	1.33%	
since 1971	10.43%	9.11%	8.63%	9.63%	7.31%	7.59%			4.80%	4.96%	7.79%	3.72%	5.89%	2.15%	2.74%
since 1980	11.52%	10.02%	9.60%	10.47%	7.93%	8.80%			4.41%	4.26%	2.42%	2.80%	0.74%	0.18%	0.68%
since 1986	10.46%	9.33%	8.93%	9.72%	6.78%	8.13%	8.58%	6.06%	3.27%	4.06%	4.33%	4.76%	2.01%	0.90%	1.46%
since 1999	5.68%	7.54%	7.11%	7.94%	4.58%	5.80%	6.83%	3.94%	1.75%	3.88%	8.12%	7.63%	7.76%	3.41%	2.00%
RETURNS BY DECADE															
1800-1809	11.09%				8.74%						0.00%	-1.62%			
1810-1819	4.91%				6.22%						0.00%	-4.63%			
1820-1829	6.94%				5.67%						0.00%	-1.63%			
1830-1839	5.34%				2.14%						0.67%	1.38%			
1840-1849	7.83%				7.76%				5.02%		-0.03%	-2.57%			
1850-1859	1.62%				5.25%				5.08%		0.00%	2.35%		5.70%	
1860-1869	18.34%				6.96%				5.04%		1.81%	1.90%	-12.73%	-1.80%	
1870-1879	7.73%				6.14%				4.11%		-1.78%	-2.05%	-14.26%	5.23%	
1880-1889	5.68%				5.50%				3.04%		0.00%	-1.66%	-0.70%	-5.09%	
1890-1899	5.37%				3.44%				2.33%		0.00%	-1.26%	4.88%	-1.21%	
1900-1909	9.92%	4.39%			1.64%	2.17%			3.04%	1.97%	0.00%	-3.55%	-1.43%	6.06%	
1910-1919	4.35%	2.62%			2.27%	2.52%			3.28%	3.15%	0.00%	3.34%	13.33%	7.19%	
1920-1929	14.78%	6.73%	6.52%	7.32%	5.65%	6.05%			3.88%	0.65%	0.00%	-0.48%	-4.98%	-6.18%	-4.33%
1930-1939	-0.47%	6.49%	7.48%	6.45%	4.11%	5.49%			0.58%	-1.21%	5.41%	-3.51%	-1.81%	-2.22%	-0.70%
1940-1949	8.99%	3.93%	2.92%	5.44%	2.59%	2.42%			0.48%	8.12%	1.47%	4.00%	0.28%	7.64%	5.90%
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%	0.62%
1960-1969	7.76%	0.57%	0.42%	0.89%	2.36%	0.51%			4.06%	1.85%	-0.01%	5.43%	0.78%	-2.96%	0.24%
1970-1979	5.77%	5.34%	5.02%	5.85%	6.08%	3.71%			6.48%	7.99%	30.70%	6.28%	28.04%	11.43%	10.48%
1980-1989	17.47%	13.72%	13.03%	14.44%	12.78%	12.64%			9.13%	6.94%	-2.37%	0.57%	-5.40%	-0.74%	-2.00%
1990-1999	18.21%	9.30%	8.84%	9.97%	7.98%	8.40%	11.21%	7.34%	4.95%	2.67%	-3.32%	-2.12%	1.67%	-6.31%	3.19%
2000-2009	-0.95%	8.88%	8.91%	8.63%	6.40%	7.03%	6.52%	6.17%	2.74%	3.95%	14.32%	13.96%	11.91%	6.67%	6.04%
2010-2017	12.68%	7.82%	7.23%	8.56%	3.94%	6.83%	7.77%	2.33%	0.15%	3.33%	1.85%	-1.23%	-5.57%	1.86%	-5.34%
RETURNS BY HALF CENTURY															
1800-1849	7.20%				6.08%						0.13%	-1.83%			
1850-1899	7.61%				5.46%				3.91%		0.00%	-0.16%		0.48%	
1900-1949	7.39%	4.82%			3.24%	3.72%			2.24%	2.49%	1.35%	-0.09%	0.89%	2.34%	
1950-1999	13.55%	5.69%	5.33%	6.22%	5.83%	4.84%			5.30%	4.46%	4.00%	3.17%	4.72%	-0.03%	2.42%
2000-2017	4.89%	8.41%	8.16%	8.60%	5.30%	6.94%	7.07%	4.44%	1.58%	3.67%	8.60%	6.94%	3.78%	4.50%	0.82%

Note: 2017 data to 31 Jul 2017. Source: Deutsche Bank, GFD

Figure 77: 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	Commodities (CRB Index)
last 5yrs (2013-2017)	12.55%	3.04%	2.38%	4.14%	0.01%	1.69%	4.40%	-0.44%	-0.89%	4.65%	-6.41%	-5.46%	-12.33%	-10.14%	-10.12%
last 10yrs (2008-2017)	6.02%	6.07%	5.36%	6.61%	2.50%	3.96%	6.22%	1.47%	-1.17%	-0.48%	2.81%	-1.87%	-7.61%	-6.49%	-7.86%
last 15yrs (2003-2017)	7.16%	5.61%	4.99%	6.10%	2.01%	3.53%	6.63%	0.98%	-0.79%	0.74%	6.92%	7.67%	1.21%	0.23%	-2.35%
last 25yrs (1993-2017)	6.97%	5.97%	5.68%	6.31%	3.41%	4.90%	5.36%	2.70%	0.26%	1.51%	3.25%	1.97%	1.64%	-1.18%	0.19%
last 50yrs (1968-2017)	5.65%	4.34%	3.97%	4.78%	3.01%	3.08%			0.84%	0.95%	3.26%	0.15%	1.66%	-1.56%	-1.34%
last 75yrs (1943-2017)	7.53%	2.41%	2.05%	2.90%	1.69%	1.47%			0.32%	1.29%	1.22%	0.71%	0.44%	-1.90%	-1.38%
last 100yrs (1918-2017)	7.19%	3.06%			2.16%	2.08%			0.56%	0.83%	1.25%	-0.35%	-0.28%	-2.07%	-1.44%
last 150yrs (1868-2017)	6.62%				2.54%				1.20%		0.41%	-0.68%	0.05%	-1.51%	
last 200yrs (1818-2017)	6.65%				3.09%						0.32%	-0.60%			
since 1800	6.78%				3.43%						0.26%	-0.87%			
since 1900	6.36%	2.64%			1.58%	1.62%			0.40%	0.47%	0.52%	-0.66%	-0.07%	-1.32%	
since 1920	7.24%	3.46%	3.20%	3.96%	2.49%	2.45%			0.81%	1.02%	1.60%	0.20%	-0.26%	-1.92%	-1.17%
since 1930	6.30%	2.98%	2.72%	3.47%	2.03%	1.94%			0.36%	0.95%	1.68%	0.17%	0.19%	-1.53%	-0.91%
1900-1970	6.43%	1.12%			0.50%	0.37%			0.12%	0.13%	-1.53%	-0.96%	-1.35%	-1.06%	
since 1971	6.25%	4.98%	4.52%	5.48%	3.25%	3.52%			0.84%	0.99%	3.71%	-0.21%	1.88%	-1.71%	-1.15%
since 1980	8.18%	6.73%	6.32%	7.16%	4.70%	5.54%			1.28%	1.14%	-0.65%	-0.27%	-2.28%	-2.82%	-2.33%
since 1986	7.72%	6.63%	6.23%	7.01%	4.14%	5.45%	5.90%	3.44%	0.72%	1.49%	1.75%	2.17%	-0.51%	-1.59%	-1.05%
since 1999	3.51%	5.33%	4.91%	5.72%	2.43%	3.62%	4.63%	1.80%	-0.35%	1.74%	5.89%	5.42%	5.54%	1.29%	-0.10%
RETURNS BY DECADE															
1800-1809	11.09%				8.74%						0.00%	-1.62%			
1810-1819	4.56%				5.87%						-0.34%	-4.96%			
1820-1829	9.05%				7.76%						1.98%	0.31%			
1830-1839	3.23%				0.10%						-1.35%	-0.65%			
1840-1849	10.82%				10.75%				7.94%		2.75%	0.13%			
1850-1859	0.07%				3.64%				3.47%		-1.53%	0.79%		4.08%	
1860-1869	13.58%				2.66%				0.81%		-2.29%	-2.20%	-16.24%	-5.75%	
1870-1879	10.20%				8.57%				6.50%		0.47%	0.19%	-12.30%	7.64%	
1880-1889	5.68%				5.50%				3.04%		0.00%	-1.66%	-0.70%	-5.09%	
1890-1899	5.23%				3.30%				2.19%		-0.13%	-1.39%	4.74%	-1.34%	
1900-1909	7.36%	1.95%			-0.73%	-0.22%			0.63%	-0.41%	-2.34%	-5.80%	-3.73%	3.58%	
1910-1919	-2.78%	-4.39%			-4.72%	-4.49%			-3.78%	-3.90%	-6.84%	-3.72%	5.59%	-0.14%	
1920-1929	15.87%	7.74%	7.53%	8.34%	6.65%	7.06%			4.87%	1.61%	0.95%	0.46%	-4.08%	-5.29%	-3.42%
1930-1939	1.60%	8.70%	9.72%	8.67%	6.27%	7.69%			2.67%	0.85%	7.60%	-1.50%	0.24%	-0.19%	1.37%
1940-1949	3.45%	-1.36%	-2.31%	0.08%	-2.63%	-2.79%			-4.63%	2.62%	-3.69%	-1.29%	-4.83%	2.17%	0.52%
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%	-1.57%
1960-1969	5.11%	-1.89%	-2.05%	-1.59%	-0.15%	-1.96%			1.51%	-0.65%	-2.47%	2.84%	-1.69%	-5.34%	-2.22%
1970-1979	-1.51%	-1.91%	-2.20%	-1.43%	-1.21%	-3.43%			-0.85%	0.56%	21.71%	-1.03%	19.23%	3.76%	2.88%
1980-1989	11.78%	8.22%	7.56%	8.90%	7.32%	7.19%			3.84%	1.76%	-7.10%	-4.30%	-9.98%	-5.54%	-6.75%
1990-1999	14.83%	6.18%	5.73%	6.82%	4.90%	5.30%	8.03%	4.27%	1.95%	-0.26%	-6.08%	-4.92%	-1.23%	-8.99%	0.24%
2000-2009	-3.42%	6.16%	6.19%	5.92%	3.75%	4.36%	3.86%	3.52%	0.18%	1.35%	11.46%	11.12%	9.12%	4.01%	3.39%
2010-2017	11.06%	6.27%	5.68%	7.00%	2.44%	5.29%	6.22%	0.86%	-1.29%	1.84%	0.39%	-2.65%	-6.92%	0.39%	-6.70%
RETURNS BY HALF CENTURY															
1800-1849	7.70%				6.58%						0.60%	-1.37%			
1850-1899	6.85%				4.72%				3.19%		-0.70%	-0.86%		-0.23%	
1900-1949	4.91%	2.40%			0.86%	1.33%			-0.11%	0.13%	-0.98%	-2.40%	-1.44%	-0.02%	
1950-1999	9.17%	1.62%	1.27%	2.12%	1.75%	0.79%			1.24%	0.43%	-0.01%	-0.81%	0.68%	-3.88%	-1.53%
2000-2017	2.76%	6.21%	5.97%	6.40%	3.17%	4.77%	4.90%	2.32%	-0.48%	1.57%	6.40%	4.77%	1.67%	2.38%	-1.22%

Note: 2017 data to 31 Jul 2017. Source: Deutsche Bank, GFD

Figure 78: Developed Market Nominal Annualised Equity and Bond Returns

										Returns by Decade																				
	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	1900-1970	Since 1971	Since 1999	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	2010-2017
EQUITY																														
Australia	8.5%	3.3%	9.7%	11.3%	11.9%	11.8%	12.1%	11.3%	8.3%										7.9%	13.6%	9.7%	15.4%	10.2%	10.1%	15.3%	14.0%	8.6%	17.7%	11.0%	8.9%	6.4%
Austria	8.8%	-0.5%	6.4%					7.4%	6.9%																		6.5%	16.3%	1.4%	7.4%	6.0%
Belgium	11.1%	2.8%	8.7%	9.8%				9.9%	4.2%																	3.4%	7.2%	20.6%	11.4%	1.8%	8.9%
Canada	6.9%	3.8%	8.7%	9.1%				9.4%	7.1%															8.4%	13.3%	10.0%	10.4%	12.2%	10.6%	5.6%	6.1%
Denmark	18.1%	8.6%	13.3%					13.2%	11.1%																		7.9%	23.8%	11.1%	6.7%	15.8%
France	11.4%	3.7%	8.4%	10.5%	11.3%	10.5%	10.6%	10.4%	5.7%											5.6%	8.1%	16.9%	-1.5%	20.7%	24.0%	4.5%	6.8%	21.9%	14.3%	-0.3%	8.2%
Germany	10.7%	4.6%	8.3%	8.0%	5.7%	5.5%	3.7%	8.3%	5.2%								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%	10.2%
Greece	-0.6%	-15.1%	3.7%						-5.1%																			36.2%	38.3%	-7.2%	-9.9%
Ireland	16.3%	1.8%	9.6%						3.8%																				14.4%	-2.8%	12.8%
Italy	10.9%	-0.4%	7.3%	7.8%				8.3%	2.3%														6.5%	30.4%	23.5%	3.7%	-3.0%	28.0%	12.6%	-1.5%	4.7%
Japan	15.6%	2.9%	2.2%	7.3%	10.7%	10.4%	12.9%	6.7%	3.7%										5.3%	6.7%	13.9%	-1.2%	14.2%	15.9%	33.9%	13.0%	12.3%	21.3%	-4.2%	-5.1%	9.7%
Netherlands	14.6%	6.0%	9.7%	10.7%				11.0%	5.0%																	6.1%	4.4%	21.5%	19.4%	-1.6%	11.3%
Norway	10.0%	4.6%																													8.7%
Portugal	4.0%	-3.7%	6.8%						0.8%																				11.1%	0.6%	-0.3%
Spain	9.5%	-1.1%	10.6%	11.5%				10.4%	4.5%																13.3%	19.1%	-1.2%	27.4%	18.7%	4.3%	2.5%
Sweden	12.4%	7.7%	12.5%	14.0%	9.8%	9.3%	6.0%	14.5%	8.2%									7.9%	9.1%	5.7%	1.9%	3.5%	-0.2%	10.5%	16.3%	8.1%	6.7%	32.4%	19.0%	1.3%	10.9%
Switzerland	10.4%	4.1%	8.8%	7.8%				7.9%	4.5%																		2.0%	10.6%	16.0%	1.1%	7.9%
UK	9.0%	5.7%	8.0%	11.8%	10.2%	8.7%	6.6%	12.0%	5.6%	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%	8.4%
US	13.8%	7.5%	9.3%	9.9%	10.3%	9.6%	9.0%	10.4%	5.7%	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%	12.7%
BOND																														
Australia	3.8%	6.9%	7.5%	8.9%	7.0%	6.1%	4.0%	9.4%	5.9%							5.2%	5.1%	5.2%	4.0%	2.1%	1.8%	5.3%	7.2%	5.1%	3.1%	4.2%	6.9%	12.4%	12.9%	6.7%	6.6%
Austria	2.9%	5.5%	6.3%	7.4%				7.4%	4.9%														-0.7%	8.2%	7.9%	6.2%	8.1%	8.7%	8.5%	5.8%	5.3%
Belgium	3.4%	5.7%	6.6%	7.9%	6.5%	5.6%	4.0%	8.1%	5.0%					3.8%	6.1%	5.0%	5.2%	4.9%	3.4%	2.9%	-1.2%	8.4%	3.9%	4.9%	4.3%	4.4%	6.3%	12.0%	10.4%	6.0%	5.3%
Canada	1.1%	3.9%	6.6%	8.1%	6.2%	5.4%	3.6%	8.2%	4.9%							5.0%	6.3%	6.5%	3.3%	2.5%	1.6%	5.8%	5.2%	3.5%	1.5%	3.7%	6.8%	13.4%	10.7%	6.8%	3.7%
Denmark	2.2%	5.3%	6.8%	10.1%	7.8%	7.1%	4.9%	10.5%	4.9%	4.1%	4.4%	8.9%	4.1%	3.6%	5.1%	4.7%	5.9%	5.0%	3.3%	3.7%	1.1%	6.6%	6.0%	8.3%	4.5%	4.1%	10.1%	18.9%	11.2%	6.1%	4.8%
France	3.7%	5.5%	6.5%	8.2%	6.6%	5.6%	3.7%	8.6%	4.8%	-24.2%	6.0%	11.9%	3.9%	0.4%	6.8%	5.1%	6.0%	4.5%	4.3%	3.1%	-1.0%	8.1%	3.8%	2.8%	5.4%	4.3%	6.1%	14.7%	10.1%	5.9%	4.9%
Germany	2.1%	5.1%	5.9%	7.0%				7.2%	4.6%														7.3%	-17.3%	5.9%	5.8%	8.1%	8.2%	8.5%	5.8%	4.5%
Ireland	8.1%	7.2%	7.7%	9.1%	7.2%	6.0%	3.3%	10.3%	5.7%								3.8%	2.7%	2.9%	1.4%	-0.5%	6.6%	3.8%	7.2%	4.6%	3.4%	5.5%	18.4%	10.6%	5.1%	8.2%
Italy	6.4%	5.7%	8.7%	9.7%	7.1%	6.4%	4.0%	10.3%	4.9%		12.4%	10.5%	7.4%	18.6%	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%	5.5%
Japan	1.7%	2.1%	3.1%	5.6%	6.2%	5.9%	6.2%	5.5%	2.1%									6.8%	5.2%	6.3%	1.1%	8.1%	5.1%	3.8%	8.2%	11.3%	6.8%	9.2%	7.2%	1.8%	2.0%
Netherlands	2.5%	5.4%	6.1%	7.2%	4.1%	3.8%	1.5%	7.4%	4.7%	-1.4%	-3.3%	9.0%	3.2%	5.6%	5.8%	2.5%	6.1%	6.3%	2.6%	2.8%	0.4%	5.9%	4.3%	4.6%	0.2%	-7.7%	7.5%	9.6%	8.7%	5.9%	4.8%
Norway	2.4%	5.2%	6.6%	7.8%	6.1%	5.6%	4.2%	7.9%	5.0%				4.9%	4.1%	3.4%	3.7%	6.8%	4.9%	1.7%	3.8%	0.2%	6.9%	4.2%	13.4%	-3.6%	4.8%	4.4%	13.1%	11.0%	5.5%	4.9%
Portugal	10.2%	7.5%	9.7%	10.2%	7.7%	7.4%	5.4%	10.6%	6.0%				10.8%	8.8%	12.2%	3.9%	12.6%	7.9%	-5.5%	7.8%	1.6%	9.3%	10.1%	2.7%	3.9%	3.0%	1.6%	19.5%	17.8%	5.9%	7.8%
Spain	8.0%	6.5%	7.6%	9.3%	6.9%	6.7%	4.8%	9.8%	5.5%	3.4%	-18.4%	15.7%	11.6%	-2.7%	12.2%	3.7%	0.0%	14.4%	5.4%	8.8%	3.3%	5.4%	6.2%	3.3%	2.8%	4.8%	6.5%	16.4%	12.1%	5.6%	6.5%
Sweden	2.2%	4.2%	6.2%	7.8%	5.7%	5.5%	3.9%	7.9%	4.3%							5.2%	5.8%	5.0%	3.1%	3.1%	3.4%	5.9%	4.1%	3.9%	2.5%	3.8%	6.1%	11.7%	11.9%	5.6%	3.6%
Switzerland	1.5%	3.6%	4.1%	4.5%	4.3%	4.0%	3.6%	4.6%	3.3%											3.6%	1.5%	6.0%	4.2%	4.1%	2.7%	2.9%	5.8%	3.9%	5.9%	4.3%	2.8%
UK	2.6%	5.2%	6.9%	8.7%	6.1%	5.1%	2.3%	9.5%	5.1%	6.1%	4.1%	7.2%	3.3%	3.8%	3.3%	2.8%	3.8%	2.7%	2.9%	1.3%	-1.0%	5.2%	7.1%	2.0%	0.9%	1.6%	8.2%	14.1%	12.1%	6.0%	5.1%
US	1.1%	4.0%	5.7%	7.2%	5.1%	4.6%	2.9%	7.3%	4.6%	8.7%	6.2%	5.7%	2.1%	7.8%	5.3%	7.0%	6.1%	5.5%	3.4%	1.6%	2.3%	5.6%	4.1%	2.6%	0.4%	2.4%	6.1%	12.8%	8.0%	6.4%	3.9%

Note: 2016 data to 31 Jul 2017. Source: Deutsche Bank, GFD

Figure 79: Developed Market Real Annualised Equity and Bond Returns

	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	1900-1970	Since 1971	Since 1999	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	2010-2017
EQUITY																															
Australia	6.7%	1.1%	7.0%	5.8%	7.5%	7.7%	9.0%	5.7%	5.6%										9.5%	12.3%	4.2%	14.6%	11.3%	4.5%	8.4%	11.2%	-1.4%	8.6%	8.6%	5.6%	4.3%
Austria	7.6%	-2.1%	4.5%					4.1%	5.1%																		0.5%	12.2%	-1.0%	5.5%	4.3%
Belgium	10.1%	1.2%	6.7%	6.0%				6.1%	2.3%																	0.6%	0.1%	15.2%	9.1%	-0.3%	7.1%
Canada	5.3%	2.2%	6.8%	4.9%				5.1%	5.1%															3.7%	10.6%	7.1%	2.7%	5.6%	8.3%	3.5%	4.4%
Denmark	17.4%	7.1%	11.3%					8.6%	9.2%																		-1.6%	16.3%	8.8%	4.7%	14.4%
France	10.9%	2.6%	6.8%	5.9%	3.6%	3.3%	1.7%	5.9%	4.1%											5.3%	-3.3%	8.3%	-4.3%	-8.8%	17.4%	0.6%	-2.2%	14.1%	12.2%	-2.1%	7.1%
Germany	10.0%	3.4%	6.6%	5.2%	-19.1%	-16.8%	-28.9%	5.6%	3.7%								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%	8.9%
Greece	-0.1%	-15.8%	0.3%						-7.1%																			14.3%	25.4%	-10.1%	-10.4%
Ireland	16.0%	1.5%	7.6%						2.0%																				11.8%	-5.2%	12.3%
Italy	10.9%	-1.6%	5.1%	1.7%				1.9%	0.6%														6.1%	-12.8%	18.9%	0.0%	-14.1%	15.9%	8.3%	-3.7%	3.6%
Japan	14.3%	2.6%	2.1%	4.6%	3.2%	3.5%	3.1%	4.2%	3.7%										-1.3%	3.1%	4.3%	2.6%	10.4%	-24.8%	29.5%	7.1%	3.1%	18.6%	-5.2%	-4.7%	9.0%
Netherlands	13.6%	4.5%	7.6%	7.2%				7.5%	3.0%																	2.0%	-2.6%	18.3%	16.6%	-3.7%	9.6%
Norway	7.6%	2.5%																													6.7%
Portugal	3.6%	-4.7%	4.2%						-1.1%																				5.1%	-1.9%	-1.5%
Spain	9.5%	-2.1%	8.0%	4.7%				3.6%	2.3%																7.1%	12.6%	-13.9%	16.0%	14.1%	1.3%	1.5%
Sweden	11.4%	6.4%	10.8%	9.1%	6.3%	5.6%	3.1%	9.6%	6.6%									8.5%	8.3%	4.7%	-8.2%	8.4%	-0.9%	6.5%	11.3%	4.1%	-2.0%	23.0%	15.6%	-0.6%	9.8%
Switzerland	10.6%	4.1%	8.2%	5.3%				5.5%	4.0%																		-2.8%	7.0%	13.6%	0.2%	8.1%
UK	7.8%	3.4%	5.7%	5.9%	6.3%	4.9%	4.1%	6.2%	3.5%	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%	6.3%
US	12.6%	6.0%	7.0%	5.7%	7.2%	6.4%	6.4%	6.3%	3.5%	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%	11.1%
BOND																															
Australia	2.1%	4.6%	4.9%	3.5%	2.8%	2.2%	1.1%	3.9%	3.2%								5.0%	4.9%	5.6%	1.0%	-3.3%	4.6%	8.3%	-0.2%	-3.1%	1.7%	-2.9%	3.8%	10.4%	3.5%	4.5%
Austria	1.8%	3.9%	4.4%	4.1%				4.1%	3.1%																3.0%	2.7%	2.0%	4.8%	5.9%	3.9%	3.5%
Belgium	2.5%	4.0%	4.7%	4.1%		0.6%	-1.8%	4.3%	3.1%					4.9%	5.9%	3.5%	1.4%	4.0%	0.1%	-0.1%			4.6%	-6.9%	2.2%	1.6%	-0.8%	6.9%	8.2%	3.9%	3.6%
Canada	-0.3%	2.3%	4.7%	4.0%	3.3%	2.3%	1.1%	4.0%	2.9%							9.8%	8.1%	6.2%	4.6%	-1.5%	-4.5%	6.7%	7.1%	-1.0%	-0.9%	1.0%	-0.7%	6.8%	8.4%	4.6%	2.0%
Denmark	1.6%	3.9%	5.0%	5.5%	3.8%	3.1%	1.3%	6.0%	3.1%	-1.7%	-15.8%	18.3%	4.4%	3.9%	3.7%	4.2%	6.1%	5.6%	3.4%	2.6%	-7.3%	7.6%	4.0%	3.7%	0.6%	-1.4%	0.5%	11.7%	9.0%	4.1%	3.5%
France	3.3%	4.4%	4.9%	3.7%	-0.8%	-1.2%	-4.7%	4.2%	3.2%						6.3%	4.3%	5.6%	4.7%	4.6%	2.7%	-11.5%	0.1%	0.8%	-22.4%	-0.2%	0.4%	-2.8%	7.3%	8.2%	4.0%	3.8%
Germany	1.4%	3.9%	4.3%	4.3%				4.4%	3.1%														9.3%	-20.4%	3.6%	3.4%	3.0%	5.3%	6.1%	4.1%	3.2%
Ireland	7.8%	6.9%	5.9%	3.3%				4.6%	3.9%														3.1%	1.9%	0.9%	-0.9%	-6.7%	8.8%	8.0%	2.5%	7.7%
Italy	6.3%	4.5%	6.4%	3.4%	-2.0%	-1.9%	-5.5%	3.8%	3.1%								10.7%	7.1%	6.1%	4.3%	-8.7%	-5.2%	5.5%	-29.8%	-0.6%	1.3%	-5.6%	6.3%	9.9%	3.4%	4.4%
Japan	0.6%	1.8%	3.0%	2.9%	-0.9%	-0.6%	-3.0%	3.0%	2.0%									10.3%	-1.4%	2.7%	-7.3%	12.3%	1.6%	-32.6%	4.7%	5.4%	-1.9%	6.7%	6.2%	2.1%	1.4%
Netherlands	1.6%	3.9%	4.1%	3.7%	1.0%	0.7%	-1.4%	4.0%	2.8%	-2.3%	-2.0%	10.8%	3.0%	7.0%	5.5%	2.6%	5.8%	8.3%	3.4%	0.8%	-6.2%	8.1%	5.8%	-3.0%	-3.4%	-11.2%	0.3%	6.7%	6.2%	3.6%	3.2%
Norway	0.1%	3.1%	4.5%	3.0%	2.7%	1.9%	1.0%	3.3%	3.0%				4.1%	3.1%	2.1%	4.6%	6.9%	5.2%	0.9%	2.9%	-10.2%	11.7%	3.1%	9.0%	-8.2%	1.2%	-3.7%	4.6%	8.3%	3.5%	3.0%
Portugal	9.7%	6.4%	7.1%	1.2%				1.4%	3.9%															-4.6%	3.0%	-1.3%	-13.9%	2.4%	11.4%	3.3%	6.4%
Spain	8.0%	5.4%	5.0%	2.7%	0.8%	1.3%	0.3%	3.0%	3.3%		-20.3%	20.9%	7.4%	0.0%	10.8%	3.5%	-0.7%	14.3%	6.3%	7.6%	-0.7%	4.8%	1.3%	-5.7%	-2.9%	-0.9%	-7.1%	6.1%	7.8%	2.6%	5.4%
Sweden	1.3%	2.9%	4.7%	3.1%	2.3%	1.9%	1.0%	3.3%	2.8%							4.3%	5.8%	5.5%	2.3%	2.1%	-6.8%	11.0%	3.4%	0.2%	-1.9%	0.0%	-2.5%	3.8%	8.6%	3.7%	2.5%
Switzerland	1.7%	3.6%	3.5%	2.2%	2.4%	1.8%	1.5%	2.3%	2.8%											2.4%	-6.9%	9.5%	5.5%	-0.4%	1.5%	-0.3%	0.8%	0.6%	3.7%	3.3%	3.0%
UK	1.4%	3.0%	4.7%	3.0%	2.3%	1.4%	-0.1%	3.8%	3.0%	2.7%	5.0%	9.7%	2.7%	5.9%	3.3%	2.3%	4.3%	3.1%	2.9%	0.5%	-8.1%	8.4%	6.6%	-0.8%	-3.1%	-2.0%	-4.3%	6.7%	8.4%	4.0%	3.0%
US	0.0%	2.5%	3.4%	3.0%	2.2%	1.6%	0.5%	3.3%	2.4%	8.7%	5.9%	7.8%	0.1%	10.8%	3.6%	2.7%	8.6%	5.5%	3.3%	-0.7%	-4.7%	6.6%	6.3%	-2.6%	-1.8%	-0.2%	-1.2%	7.3%	4.9%	3.7%	2.4%

Note: 2016 data to 31 Jul 2017. Source: Deutsche Bank, GFD

Figure 80: Developed Market USD Annualised Equity and Bond Returns

	Returns by Decade																													
	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	1900-1970	Since 1971	Since 1999	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	2010-2017
EQUITY																														
Australia	2.9%	2.4%	10.3%	10.5%	10.7%	10.7%	10.9%	10.5%	9.9%										8.0%	13.6%	6.9%	18.5%	5.5%	6.4%	15.3%	14.0%	8.5%	13.8%	9.0%	12.4%	4.9%
Austria	6.4%	-2.6%	6.3%					9.2%	7.0%																		14.6%	16.8%	0.0%	11.3%	3.6%
Belgium	8.7%	0.7%	8.6%	10.6%				10.8%	4.2%																	3.4%	13.5%	17.8%	10.1%	5.4%	6.3%
Canada	2.1%	1.5%	8.8%	8.8%				8.9%	8.2%															8.5%	15.1%	8.7%	9.5%	12.3%	8.1%	9.0%	3.9%
Denmark	15.6%	6.4%	13.3%					13.6%	11.2%																		11.5%	21.3%	9.8%	10.5%	13.1%
France	9.0%	1.6%	8.4%	10.2%	6.4%	6.2%	3.6%	10.4%	5.7%											5.7%	0.3%	7.5%	-6.9%	-1.7%	19.9%	3.2%	10.3%	17.6%	12.9%	3.3%	5.7%
Germany	8.4%	2.4%	8.3%	9.9%	-20.8%	-17.5%	-31.8%	10.2%	5.2%								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%	7.6%
Greece	-2.8%	-16.8%	2.5%						-5.3%																			17.5%	28.5%	-4.2%	-12.0%
Ireland	13.8%	-0.3%	9.2%						3.8%																				12.2%	0.7%	10.2%
Italy	8.6%	-2.4%	6.9%	5.8%				6.1%	2.4%														6.1%	-7.6%	23.6%	3.6%	-5.4%	22.3%	8.0%	2.1%	2.3%
Japan	10.2%	3.0%	2.7%	9.9%	6.3%	6.7%	4.9%	9.4%	3.8%										0.5%	6.7%	14.0%	-1.4%	6.1%	-25.6%	33.9%	13.0%	16.9%	27.7%	-0.9%	-4.2%	7.3%
Netherlands	12.2%	3.8%	9.6%	12.2%				12.6%	5.0%																	6.5%	11.3%	21.4%	17.7%	1.9%	8.7%
Norway	2.7%	0.7%																													4.6%
Portugal	1.8%	-5.6%	6.2%						0.9%																					7.9%	4.2%	-2.6%
Spain	7.1%	-3.2%	9.7%	9.9%				8.8%	4.5%																3.8%	17.3%	-0.7%	21.2%	13.9%	8.0%	0.1%
Sweden	7.6%	5.4%	11.9%	13.0%	8.7%	8.6%	5.5%	13.4%	8.2%									7.9%	9.2%	5.7%	-0.5%	6.0%	-1.5%	8.2%	16.3%	8.1%	9.1%	27.2%	15.4%	3.0%	9.3%
Switzerland	9.2%	5.7%	10.7%	11.0%				11.3%	6.4%																		12.7%	11.0%	15.6%	5.6%	8.8%
UK	4.6%	1.5%	7.4%	10.5%	8.8%	7.5%	5.5%	10.6%	4.3%	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%	5.7%
US	13.8%	7.5%	9.3%	9.9%	10.3%	9.6%	9.0%	10.4%	5.7%	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%	12.7%
BOND																														
Australia	-1.5%	5.9%	8.2%	8.2%	5.8%	5.1%	2.9%	8.6%	7.4%							7.2%	3.2%	5.1%	4.1%	2.1%	-0.8%	8.1%	2.6%	1.5%	3.1%	4.2%	6.8%	8.7%	10.9%	10.1%	5.1%
Austria	0.7%	3.4%	6.2%	9.1%				9.3%	4.9%														2.3%	-17.4%	7.9%	6.3%	16.3%	9.2%	7.0%	9.6%	2.8%
Belgium	1.2%	3.5%	6.5%	8.7%	4.8%	3.9%	0.7%	9.0%	5.1%					3.6%	6.3%	4.9%	5.2%	4.9%	3.4%	2.9%	-8.3%	-3.7%	5.8%	-0.3%	4.3%	4.5%	12.6%	9.4%	9.2%	9.8%	2.8%
Canada	-3.4%	1.6%	6.6%	7.8%	5.9%	5.2%	3.5%	7.7%	6.0%							8.0%	3.3%	6.6%	3.2%	2.3%	0.9%	6.5%	4.1%	3.6%	3.2%	2.4%	5.9%	13.5%	8.2%	10.2%	1.5%
Denmark	0.0%	3.1%	6.8%	10.5%	7.1%	6.6%	3.8%	10.9%	5.0%			10.5%	6.8%	4.2%	5.7%	6.5%	3.9%	5.0%	3.2%	3.7%	-2.1%	10.2%	2.5%	5.2%	4.5%	3.2%	13.9%	16.5%	10.0%	9.9%	2.3%
France	1.5%	3.3%	6.5%	7.9%	1.8%	1.5%	-2.9%	8.6%	4.8%		3.7%	12.2%	4.0%	0.3%	7.1%	5.0%	6.0%	4.5%	4.4%	3.1%	-8.2%	-0.6%	-1.9%	-16.3%	1.9%	3.0%	9.6%	10.7%	8.8%	9.7%	2.5%
Germany	-0.1%	2.9%	5.8%	8.9%				9.0%	4.6%														13.0%	-37.6%	5.9%	7.1%	16.7%	8.4%	7.0%	9.6%	2.0%
Ireland	1.3%	3.5%	0.0%	0.6%	-8.3%	-7.0%	-12.7%	2.3%	2.8%								3.7%	2.7%	2.9%	1.3%	-1.3%	7.4%	6.9%	-0.2%	-18.3%	-57.5%	-1.2%	6.4%	-3.4%	2.0%	3.6%
Italy	4.1%	3.5%	8.2%	7.6%	1.6%	1.4%	-2.7%	8.0%	5.0%			11.8%	7.5%	18.1%	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%	3.0%
Japan	-3.1%	2.2%	3.7%	8.1%	2.1%	2.4%	-1.2%	8.2%	2.2%									5.2%	0.4%	6.3%	1.2%	7.9%	-2.4%	-33.4%	8.2%	11.3%	11.2%	14.9%	11.0%	2.8%	-0.1%
Netherlands	0.3%	3.2%	6.0%	8.6%	4.3%	4.1%	1.0%	8.9%	4.8%	0.1%	-3.9%	9.3%	3.2%	5.5%	6.2%	2.3%	5.8%	6.3%	2.6%	2.7%	-0.3%	6.8%	7.3%	-2.5%	0.3%	-7.3%	14.7%	9.6%	7.3%	9.6%	2.3%
Norway	-4.4%	1.3%	6.0%	7.6%	5.2%	5.0%	3.2%	7.7%	4.8%				7.5%	4.7%	3.9%	5.4%	4.7%	4.9%	1.8%	3.7%	-2.6%	9.9%	2.5%	8.0%	-3.6%	4.8%	8.4%	9.8%	8.8%	9.0%	0.9%
Portugal	7.8%	5.3%	9.1%	6.3%	2.8%	3.1%	1.0%	6.5%	6.0%				13.3%	8.5%	12.2%	3.7%	12.7%	7.9%	-8.9%	10.5%	-8.8%	-10.0%	7.7%	2.3%	3.8%	3.1%	-3.9%	7.2%	14.4%	9.7%	5.3%
Spain	5.6%	4.3%	6.7%	7.8%	3.1%	4.0%	1.4%	8.1%	5.6%			16.7%	11.7%	-2.6%	12.3%	3.3%	-0.5%	13.9%	3.5%	10.9%	3.9%	1.6%	3.2%	-5.7%	-5.9%	3.2%	7.1%	10.7%	7.6%	9.4%	4.0%
Sweden	-2.1%	2.0%	5.7%	6.8%	4.7%	4.8%	3.4%	6.9%	4.4%							4.8%	5.7%	5.0%	3.2%	3.1%	1.0%	8.5%	2.8%	1.8%	2.5%	3.9%	8.5%	7.3%	8.4%	7.5%	2.0%
Switzerland	0.4%	5.2%	5.9%	7.7%	5.9%	5.5%	3.9%	8.0%	5.2%											3.7%	0.7%	6.9%	5.7%	4.5%	2.7%	2.9%	16.9%	4.3%	5.6%	8.9%	3.7%
UK	-1.6%	1.0%	6.4%	7.4%	4.7%	4.0%	1.3%	8.1%	3.8%	6.1%	4.4%	8.0%	3.3%	3.7%	3.4%	4.8%	1.9%	2.7%	3.0%	1.2%	-3.5%	8.0%	4.9%	-1.5%	0.9%	0.0%	7.3%	10.6%	12.2%	6.0%	2.5%
US	1.1%	4.0%	5.7%	7.2%	5.1%	4.6%	2.9%	7.3%	4.6%	8.7%	6.2%	5.7%	2.1%	7.8%	5.3%	7.0%	6.1%	5.5%	3.4%	1.6%	2.3%	5.6%	4.1%	2.6%	0.4%	2.4%	6.1%	12.8%	8.0%	6.4%	3.9%

Note: 2016 data to 31 Jul 2017. Source: Deutsche Bank, GFD

Figure 81: Emerging Market Nominal Annualised Equity and Bond Returns

	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	1900-1970	Since 1971	Since 1999	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	2010-2017
EQUITY																															
India	12.6%	6.3%	12.0%						15.1%																				21.1%	15.2%	9.9%
Korea	5.8%	4.8%	9.3%	18.7%				17.6%	11.3%																	40.7%	29.2%	4.6%	9.9%	6.5%
Malaysia	3.4%	4.3%	7.0%						9.0%																		12.8%	5.6%	7.8%	6.5%
Mexico	4.9%	7.4%	15.9%						16.1%																			35.9%	18.3%	7.7%
Philippines	9.3%	9.7%	9.1%						9.0%																			9.3%	5.1%	13.6%
South Africa	9.7%	10.2%	14.5%	16.3%				17.4%	15.8%																	16.0%	24.1%	13.9%	14.7%	12.2%
Taiwan	11.7%	6.4%	8.7%						6.6%																			3.9%	0.9%	8.2%
Thailand	4.0%	7.6%	5.1%						11.4%																		27.3%	-2.4%	8.7%	10.9%
BOND																															
India	8.5%	6.8%	9.5%	7.7%	6.4%	5.5%	4.0%	7.8%	8.2%	3.5%	6.5%	5.4%	5.6%	4.6%	4.6%	4.5%	4.4%	4.2%	3.4%	2.3%	-0.3%	5.6%	7.7%	6.0%	3.0%	4.2%	4.9%	4.4%	14.1%	8.5%	6.9%
Korea	3.9%	6.5%	9.4%	16.4%				15.2%	7.0%																	28.5%	27.2%	22.1%	15.7%	8.4%	6.4%
Malaysia	2.8%	3.9%	5.7%	7.1%				7.3%	5.1%																		11.3%	9.0%	7.6%	5.5%	4.0%
Mexico	3.5%	7.3%							11.8%																				14.5%	6.8%
Philippines	3.1%	7.4%							13.7%																				16.3%	8.0%
South Africa	5.4%	8.1%	13.6%	12.0%	8.4%	7.5%	4.3%	12.5%	13.4%								5.3%	5.4%	3.9%	4.0%	1.6%	5.5%	6.3%	3.3%	5.3%	4.9%	7.4%	11.0%	22.1%	12.1%	8.2%
Taiwan	1.4%	2.8%							4.1%																				6.9%	1.5%
Thailand	4.9%	6.3%	9.0%						6.9%																			13.6%	13.7%	7.9%	4.8%

Note: 2016 data to 31 Jul 2017. Source: Deutsche Bank, GFD

Figure 82: Emerging Market Real Annualised Equity and Bond Returns

	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	1900-1970	Since 1971	Since 1999	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	2010-2017
EQUITY																															
India	7.0%	-1.4%	4.7%						8.5%																			10.6%	8.6%	3.0%
Korea	4.6%	2.6%	6.0%	10.9%				10.4%	8.7%																	22.3%	20.3%	-0.9%	6.5%	4.7%
Malaysia	0.9%	1.9%	4.3%						6.6%																		9.0%	1.7%	5.5%	4.1%
Mexico	1.4%	3.4%	7.0%						10.8%																			13.7%	12.7%	3.9%
Philippines	7.6%	6.0%	3.8%						4.6%																			0.5%	-0.2%	10.5%
South Africa	4.3%	4.4%	7.8%	6.8%				7.5%	9.8%																	5.4%	8.3%	4.2%	8.1%	6.7%
Taiwan	11.1%	5.5%	7.2%						5.7%																			1.0%	0.0%	7.1%
Thailand	4.7%	6.5%	2.4%						9.5%																		21.1%	-6.9%	6.1%	10.0%
BOND																															
India	3.1%	-0.9%	2.4%	0.2%	1.0%	0.6%	1.1%	0.0%	2.1%									3.2%	3.8%	1.3%	-5.3%	5.0%	11.1%	-3.6%	1.6%	-1.6%	-2.6%	-4.0%	4.2%	2.3%	0.2%
Korea	2.7%	4.3%	6.0%	8.9%				8.1%	4.4%																	13.4%	10.5%	13.6%	9.6%	5.1%	4.5%
Malaysia	0.4%	1.5%	3.0%	3.7%				3.6%	2.8%																		5.4%	5.4%	3.6%	3.2%	1.7%
Mexico	0.0%	3.3%							6.7%																				9.1%	3.1%
Philippines	1.5%	3.8%							9.1%																				10.5%	5.0%
South Africa	0.2%	2.4%	7.0%	2.8%	2.8%	2.5%	2.1%	3.0%	7.5%											5.2%	-3.5%	5.1%	6.7%	-1.4%	1.6%	2.2%	-2.4%	-3.2%	11.7%	5.7%	3.0%
Taiwan	0.8%	1.9%							3.2%																				5.9%	0.5%
Thailand	5.7%	5.2%	6.3%						5.2%																			8.1%	8.5%	5.3%	4.0%

Note: 2016 data to 31 Jul 2017. Source: Deutsche Bank, GFD

Figure 83: Emerging Market USD Annualised Equity and Bond Returns

	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	1900-1970	Since 1971	Since 1999	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	2010-2017
EQUITY																															
India	9.1%	1.2%	8.5%						12.6%																				10.2%	14.5%	5.5%
Korea	4.7%	2.9%	7.8%	15.4%				14.5%	11.8%																	34.3%	24.9%	-0.7%	9.6%	7.1%
Malaysia	-3.4%	1.7%	5.0%						8.3%																		10.4%	2.1%	8.9%	3.5%
Mexico	-1.7%	2.3%	8.1%						12.5%																			19.8%	14.5%	3.6%
Philippines	4.9%	7.5%	6.0%						7.5%																			2.3%	3.6%	12.4%
South Africa	0.4%	3.2%	8.0%	9.7%				10.4%	11.0%																	14.3%	11.0%	4.2%	12.6%	4.3%
Taiwan	10.9%	7.2%	7.9%						7.0%																			2.0%	0.7%	9.0%
Thailand	2.2%	6.5%	4.0%						11.9%																		24.3%	-6.0%	10.0%	10.9%
BOND																															
India	5.2%	1.7%	6.1%	3.2%	3.2%	2.8%	2.7%	3.0%	5.9%				6.9%	3.8%	5.0%	4.1%	2.3%	2.7%	2.9%	2.3%	2.8%	3.5%	5.7%	2.2%	2.9%	-0.5%	4.3%	-3.2%	3.8%	7.8%	2.6%
Korea	2.8%	4.6%	7.8%	13.2%				12.2%	7.4%																	7.3%	21.4%	18.0%	9.9%	8.1%	6.9%
Malaysia	-3.9%	1.3%	3.7%	6.4%				6.6%	4.4%																		15.1%	6.7%	3.9%	6.6%	1.2%
Mexico	-3.0%	2.2%							8.4%																					10.9%	2.8%
Philippines	-1.1%	5.2%							12.1%																					14.6%	6.9%
South Africa	-3.5%	1.2%	7.2%	5.6%	4.7%	4.4%	3.5%	5.8%	8.7%								3.4%	5.4%	4.0%	3.9%	-1.1%	8.3%	4.1%	-0.2%	5.3%	4.9%	5.9%	-0.7%	11.7%	10.1%	0.7%
Taiwan	0.6%	3.5%							4.5%																					6.7%	2.2%
Thailand	3.1%	5.2%	7.9%						7.4%																			10.9%	9.5%	9.1%	4.9%

Note: 2016 data to 31 Jul 2017. Source: Deutsche Bank, GFD

Figure 84: Developed Market Nominal and Real GDP Growth for Different Time Horizons

	GDP Growth by Decade																														
	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	1900-1970	Since 1971	Since 1999	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	2010-2016
Nominal GDP																															
Australia	3.2%	4.7%	5.8%	8.6%				8.5%	5.8%																15.6%	13.8%	11.9%	4.9%	7.2%	4.2%
Austria	2.6%	2.4%	3.4%	5.9%		15.6%	22.7%	5.6%	3.4%									0.8%	2.5%	11.5%					13.4%	8.6%	10.9%	6.3%	4.8%	3.5%	2.9%
Belgium	2.4%	2.4%	3.6%	6.0%		7.3%	8.3%	5.7%	3.4%					0.0%	4.5%	4.0%	1.4%	1.0%	1.2%	1.8%				21.7%	4.6%	8.0%	11.0%	6.6%	4.7%	3.6%	2.8%
Canada	3.5%	3.4%	4.6%	7.1%	6.5%	6.9%	6.9%	7.0%	4.6%									4.2%	2.3%	8.5%	8.7%	4.1%	-0.9%	11.9%	8.3%	8.4%	13.0%	8.6%	4.3%	4.4%	4.3%
Denmark	2.2%	2.0%	3.4%	6.8%	6.5%	6.6%	6.6%	6.5%	3.1%			-1.8%	2.2%	2.8%	4.4%	3.2%	1.7%	1.6%	3.2%	4.2%	12.3%	0.4%	3.4%	8.8%	7.1%	10.0%	14.0%	8.2%	4.5%	3.5%	2.4%
France	1.7%	1.5%	2.9%	6.8%		9.5%	11.6%	6.5%	2.9%			2.5%	1.0%	1.2%	2.4%	3.6%	-1.0%	1.8%	1.7%	2.1%			4.3%	32.5%	11.7%	10.1%	13.9%	9.6%	3.7%	3.3%	2.0%
Germany	3.2%	2.5%	2.7%	4.9%		34.7%	59.3%	4.6%	2.7%							3.7%	3.6%	3.2%	3.4%	3.4%						10.0%	8.8%	4.8%	4.7%	1.8%	3.5%
Greece	-1.6%	-2.7%	4.7%	11.9%	51.7%	44.3%	71.0%	11.7%	2.7%					-0.1%	7.4%	1.5%	4.0%	4.5%	2.1%	2.4%	23.7%	18.8%	5.4%	2088.2%	14.5%	10.6%	20.6%	20.3%	13.2%	7.8%	-3.6%
Ireland	10.7%	4.0%	8.3%	11.2%	7.4%	6.8%	4.1%	11.1%	7.1%								0.6%	0.2%	1.3%	-0.5%	9.9%				5.2%	9.0%	18.4%	12.4%	11.1%	6.3%	7.0%
Italy	1.0%	0.5%	3.1%	9.0%	11.7%	11.1%	12.7%	8.6%	2.4%								1.3%	1.2%	1.0%	3.6%	15.1%	7.2%	1.6%	47.0%	9.9%	8.8%	19.5%	14.6%	6.6%	3.0%	1.0%
Japan	2.7%	0.6%	0.5%	5.0%	11.6%	11.0%	15.7%	4.3%	0.3%										9.3%	5.0%	15.1%	0.5%	6.7%	58.8%	15.1%	17.1%	13.0%	6.1%	2.1%	-0.7%	1.8%
Netherlands	2.4%	1.7%	4.1%	6.3%	6.3%	6.2%	6.5%	5.8%	3.7%		1.1%	0.5%	2.4%	-0.9%	1.7%	3.3%	1.3%	1.8%	1.2%	3.0%	11.4%	1.6%	-2.2%	13.1%	7.9%	10.5%	13.1%	4.3%	6.1%	4.1%	2.1%
Norway	1.3%	3.2%	5.6%	8.2%	6.8%	7.0%	6.3%	8.1%	5.4%					1.1%	5.0%	3.6%	2.1%	1.5%	3.3%	2.1%	16.8%	-3.5%	3.7%	8.1%	8.9%	8.4%	14.4%	10.3%	5.5%	7.3%	3.1%
Portugal	2.5%	0.8%	4.5%	11.1%	8.0%	7.1%	4.4%	11.3%	3.1%									3.2%	2.0%	1.4%	7.0%	-0.9%	1.4%	7.6%	5.6%	8.4%	16.0%	23.7%	11.1%	3.9%	1.0%
Spain	2.1%	0.7%	4.7%	9.8%	9.7%	8.7%	8.2%	9.6%	4.1%							-0.2%	4.4%	0.3%	1.1%	2.3%	7.4%	3.6%	1.7%	13.3%	15.4%	13.8%	19.5%	13.5%	7.8%	6.1%	0.9%
Sweden	4.3%	3.4%	4.2%	7.3%	6.8%	6.7%	6.3%	7.2%	4.1%	5.9%	4.9%	0.1%	2.6%	1.2%	3.8%	2.3%	3.4%	1.2%	4.2%	3.0%	13.4%	-1.8%	3.7%	8.1%	8.9%	9.1%	11.7%	11.4%	4.8%	4.1%	4.1%
Switzerland	1.1%	1.5%	2.2%	4.6%		4.8%	5.2%	4.3%	2.3%							2.1%	2.5%	0.9%	4.1%	3.5%			-1.0%	7.5%	6.2%	9.1%	6.9%	7.6%	2.7%	3.2%	1.4%
UK	3.7%	2.8%	4.2%	8.0%	6.3%	6.1%	4.9%	7.9%	3.9%	3.2%	0.2%	0.2%	3.1%	0.0%	2.9%	3.5%	1.7%	2.1%	2.5%	1.3%	10.3%	-2.0%	2.3%	7.6%	7.1%	7.3%	16.0%	10.7%	5.2%	4.2%	3.4%
US	3.8%	2.9%	4.4%	6.4%	6.0%	6.1%	6.0%	6.3%	4.0%	1.8%	4.2%	1.8%	7.9%	1.3%	6.1%	6.4%	1.7%	3.9%	3.4%	6.7%	9.7%	2.2%	-1.1%	11.2%	6.9%	7.0%	10.1%	7.8%	5.6%	3.9%	3.8%
Real GDP																															
Australia	2.5%	2.6%	3.3%	3.2%				3.1%	3.0%																		3.3%	3.3%	3.1%	3.2%	2.6%
Austria	0.9%	0.8%	1.6%	2.4%		3.3%	3.8%	2.4%	1.6%									1.5%	2.6%	9.8%					10.7%	3.2%	5.2%	1.8%	2.2%	1.8%	1.2%
Belgium	1.0%	0.9%	2.2%	2.5%	2.3%	2.1%	1.9%	2.3%	1.6%									2.4%	1.8%	2.0%	-1.4%	4.6%	0.6%	0.0%	2.0%	4.8%	3.5%	1.9%	3.4%	1.8%	1.2%
Canada	2.2%	1.7%	2.6%	2.9%	3.4%	3.7%	4.3%	2.8%	2.3%									3.5%	3.2%	5.9%	2.8%	4.6%	0.5%	5.9%	5.3%	5.2%	4.1%	2.9%	2.6%	2.1%	2.4%
Denmark	1.4%	0.5%	1.6%	1.8%	2.6%	2.6%	3.2%	1.7%	1.2%									2.1%	3.2%	3.3%	1.8%	3.7%	2.5%	1.9%	3.6%	5.5%	2.0%	1.4%	2.6%	1.1%	1.2%
France	0.9%	0.6%	1.5%	2.4%	2.7%	2.2%	2.3%	2.2%	1.4%									2.0%	2.4%	1.0%	-1.8%	7.0%	-1.1%	0.1%	5.0%	5.7%	4.5%	2.3%	1.9%	1.5%	1.1%
Germany	1.4%	1.1%	1.3%	2.2%		2.8%	3.5%	1.9%	1.3%									2.5%	3.4%	2.7%					8.7%	4.8%	3.1%	2.5%	1.5%	1.0%	1.8%
Greece	-0.8%	-3.0%	0.7%	1.9%	3.1%	3.2%	4.4%	1.5%	0.3%					-0.5%	4.0%	2.1%	1.9%	4.2%	0.5%	2.4%	4.3%	4.8%	3.8%	0.8%	7.4%	6.8%	5.4%	0.9%	1.6%	2.9%	-3.3%
Ireland	8.4%	3.8%	5.6%	4.9%				4.8%	5.1%																1.4%	4.5%	4.6%	3.0%	6.7%	4.3%	5.7%
Italy	0.0%	-0.6%	0.6%	2.0%	2.6%	2.5%	3.0%	1.7%	0.4%								1.0%	1.4%	1.3%	2.7%	0.0%	3.7%	1.5%	0.5%	6.4%	6.4%	4.0%	2.9%	1.3%	0.7%	-0.1%
Japan	-0.1%	-0.1%	0.7%	3.1%	3.6%	3.4%	4.0%	2.6%	0.6%									2.9%	3.0%	1.5%	4.5%	1.8%	4.9%	-4.1%	8.8%	10.7%	5.3%	5.4%	1.6%	0.5%	0.7%
Netherlands	1.4%	0.8%	2.0%	2.5%	2.9%	2.7%	3.0%	2.3%	1.6%									3.0%	2.0%	1.4%	2.4%	4.7%	1.0%	1.4%	3.9%	5.7%	3.9%	1.7%	3.1%	1.8%	1.0%
Norway	1.3%	1.0%	2.2%	2.8%	3.2%	3.1%	3.2%	2.8%	1.6%					2.0%	3.0%	3.2%	1.8%	1.7%	2.2%	1.9%	3.1%	3.4%	3.3%	2.6%	3.7%	4.7%	4.4%	2.8%	3.4%	2.0%	1.2%
Portugal	0.5%	-0.3%	0.5%	1.6%				1.4%	0.7%																3.5%	4.8%	2.7%	2.6%	1.1%	1.0%	-0.1%
Spain	1.5%	0.3%	2.2%	2.9%	2.9%	2.7%	2.7%	2.6%	2.0%							0.1%	3.2%	1.2%	1.3%	1.8%	0.9%	4.2%	-2.7%	2.2%	4.7%	7.9%	3.9%	2.8%	2.8%	2.9%	0.5%
Sweden	2.6%	1.6%	2.4%	2.4%	2.6%	2.4%	2.5%	2.3%	2.5%	0.6%	-0.3%	0.4%	0.7%	0.5%	0.6%	0.9%	1.5%	1.2%	2.4%	1.4%	1.1%	3.4%	3.5%	1.4%	2.8%	3.8%	2.4%	3.0%	1.6%	2.2%	2.6%
Switzerland	1.4%	1.4%	1.6%	1.6%	2.5%	2.3%	2.9%	1.4%	1.8%											2.8%	0.4%	5.0%	0.3%	2.6%	4.5%	4.7%	1.6%	1.2%	1.1%	2.1%	1.6%
UK	2.2%	1.0%	2.2%	2.3%	2.1%	2.1%	2.0%	2.2%	1.9%	1.5%	0.9%	2.5%	3.0%	1.5%	2.0%	1.8%	1.9%	2.4%	2.2%	1.0%	1.4%	0.7%	2.1%	1.6%	3.5%	3.4%	2.6%	2.6%	2.1%	1.8%	1.9%
US	2.3%	1.4%	2.4%	2.8%	3.2%	3.2%	3.5%	2.8%	2.0%	2.3%	3.7%	5.3%	6.1%	4.2%	4.2%	1.9%	6.6%	4.7%	4.3%	4.6%	2.3%	3.3%	0.9%	5.4%	4.3%	4.4%	3.3%	3.1%	3.4%	1.7%	2.1%

Source: Deutsche Bank, GFD

Figure 85: Developed Market Nominal and Real GDP Growth for Different Time Horizons in USD

										GDP Growth by Decade																			
	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	1900-1970	Since 1971	Since 1999	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	2010-2016
Nominal GDP																														
Australia	-2.1%	3.7%	6.4%	7.9%				7.7%	7.3%																15.6%	13.7%	8.1%	3.0%	10.6%	2.8%
Austria	0.4%	0.3%	3.4%	7.6%		5.2%	3.7%	7.5%	3.4%									0.9%	2.2%	11.6%					13.5%	8.7%	19.3%	6.8%	3.4%	7.2%	0.5%
Belgium	0.2%	0.3%	3.5%	6.8%		5.6%	4.9%	6.6%	3.5%					-0.1%	4.6%	3.9%	1.4%	1.0%	1.2%	1.8%				15.6%	4.6%	8.1%	17.5%	4.1%	3.5%	7.3%	0.4%
Canada	-1.1%	1.1%	4.7%	6.8%	6.3%	6.7%	6.9%	6.5%	5.7%									4.2%	2.2%	8.3%	7.9%	4.7%	-1.8%	11.9%	10.0%	7.1%	12.0%	8.7%	2.0%	7.8%	2.1%
Denmark	0.1%	0.0%	3.4%	7.2%	5.8%	6.1%	5.5%	6.9%	3.2%			-0.3%	4.7%	3.4%	5.0%	4.9%	-0.2%	1.6%	3.2%	4.2%	8.6%	3.8%	0.1%	5.7%	7.1%	9.1%	17.8%	6.0%	3.3%	7.3%	0.0%
France	-0.5%	-0.6%	2.9%	6.5%		5.3%	4.5%	6.5%	2.9%			2.8%	1.1%	1.1%	2.6%	3.5%	-1.0%	1.8%	1.8%	2.1%			-1.4%	7.9%	8.0%	8.7%	17.7%	5.7%	2.4%	7.0%	-0.4%
Germany	1.0%	0.4%	2.7%	6.8%		5.4%	4.7%	6.4%	2.7%							3.5%	3.5%	3.1%	3.4%	3.5%						11.3%	17.4%	5.0%	3.3%	5.4%	1.1%
Greece	-3.7%	-4.7%	3.5%	7.0%	6.3%	6.7%	7.0%	6.4%	2.6%					-0.2%	7.7%	1.5%	3.9%	4.5%	2.1%	2.4%	20.8%	-7.2%	-0.8%	16.9%	6.9%	10.6%	18.5%	3.8%	5.2%	11.3%	-5.9%
Ireland	8.3%	1.8%	7.9%	10.2%	6.2%			10.0%	7.2%												7.1%				5.2%	7.3%	17.1%	8.8%	9.0%	10.1%	4.4%
Italy	-1.2%	-1.5%	2.7%	6.9%	5.9%	5.9%	5.5%	6.4%	2.4%								0.6%	2.4%	0.4%	4.3%	4.8%	3.3%	1.2%	4.1%	9.9%	8.7%	16.5%	9.5%	2.2%	6.7%	-1.4%
Japan	-2.1%	0.7%	1.0%	7.5%	7.2%	7.3%	7.5%	6.9%	0.4%										4.3%	5.0%	15.2%	0.4%	-0.9%	1.9%	15.1%	17.1%	17.7%	11.7%	5.7%	0.3%	-0.4%
Netherlands	0.2%	-0.4%	4.0%	7.7%	6.6%	6.5%	6.0%	7.3%	3.8%		0.5%	0.8%	2.4%	-0.9%	2.1%	3.1%	1.0%	1.8%	1.2%	3.0%	10.6%	2.4%	0.6%	5.4%	8.0%	11.0%	20.6%	4.3%	4.7%	7.8%	-0.3%
Norway	-5.5%	-0.6%	5.1%	8.0%	5.8%	6.4%	5.4%	7.9%	5.2%					1.7%	5.5%	5.3%	0.2%	1.5%	3.4%	2.1%	13.5%	-0.7%	2.0%	3.0%	8.9%	8.4%	18.7%	7.1%	3.5%	10.9%	-0.8%
Portugal	0.3%	-1.3%	3.9%	7.3%	3.1%	2.8%	0.0%	7.1%	3.1%									3.2%	-1.7%	4.0%	-4.1%	-18.5%	-0.8%	7.2%	5.6%	8.5%	9.7%	10.9%	7.9%	7.6%	-1.3%
Spain	-0.1%	-1.4%	3.8%	8.3%	5.9%	6.0%	4.7%	7.9%	4.1%							-0.5%	3.9%	-0.2%	-0.8%	4.3%	8.1%	-0.2%	-1.2%	3.4%	5.7%	12.1%	20.2%	7.9%	3.4%	9.9%	-1.5%
Sweden	-0.1%	1.2%	3.6%	6.3%	5.7%	6.0%	5.8%	6.2%	4.2%			0.4%	2.5%	0.8%	4.2%	2.0%	3.3%	1.2%	4.3%	2.9%	10.8%	0.6%	2.4%	5.9%	8.9%	9.1%	14.1%	7.0%	1.5%	5.9%	2.6%
Switzerland	0.0%	3.2%	3.9%	7.7%		6.3%	5.5%	7.7%	4.2%							2.1%	2.4%	0.9%	4.1%	3.6%			0.4%	7.9%	6.2%	9.1%	18.1%	8.0%	2.4%	7.7%	2.3%
UK	-0.5%	-1.3%	3.6%	6.8%	4.9%	4.9%	3.8%	6.5%	2.7%	3.2%	0.3%	0.9%	3.0%	-0.1%	3.0%	5.4%	-0.2%	2.1%	2.6%	1.2%	7.5%	0.6%	0.2%	4.0%	7.1%	5.6%	15.1%	7.3%	5.3%	4.1%	0.9%
US	3.8%	2.9%	4.4%	6.4%	6.0%	6.1%	6.0%	6.3%	4.0%	1.8%	4.2%	1.8%	7.9%	1.3%	6.1%	6.4%	1.7%	3.9%	3.4%	6.7%	9.7%	2.2%	-1.1%	11.2%	6.9%	7.0%	10.1%	7.8%	5.6%	3.9%	3.8%
Real GDP																														
Australia	-2.8%	1.6%	3.9%	2.6%				2.3%	4.5%																	3.2%	-0.1%	1.3%	6.4%	1.2%
Austria	-1.3%	-1.3%	1.5%	4.0%		-6.0%	-12.3%	4.2%	1.6%									1.7%	2.3%	9.9%					10.7%	3.2%	13.2%	2.3%	0.8%	5.5%	-1.2%
Belgium	-1.1%	-1.2%	2.1%	3.3%	0.7%	0.4%	-1.3%	3.2%	1.7%									2.4%	1.8%	2.0%	-8.4%	-7.1%	2.4%	-5.0%	2.0%	4.9%	9.6%	-0.5%	2.2%	5.5%	-1.1%
Canada	-2.4%	-0.5%	2.7%	2.6%	3.1%	3.5%	4.2%	2.4%	3.5%									3.6%	3.2%	5.8%	2.0%	5.2%	-0.5%	5.9%	7.0%	3.9%	3.2%	3.0%	0.3%	5.4%	0.2%
Denmark	-0.7%	-1.5%	1.6%	2.2%	1.9%	2.1%	2.2%	2.1%	1.3%									2.1%	3.2%	3.4%	-1.5%	7.3%	-0.8%	-1.1%	3.7%	4.6%	5.5%	-0.7%	1.4%	4.7%	-1.2%
France	-1.3%	-1.4%	1.5%	2.2%	-1.9%	-1.7%	-4.2%	2.2%	1.5%									2.0%	2.5%	1.0%	-8.9%	-1.6%	-6.5%	-18.5%	1.5%	4.4%	7.9%	-1.4%	0.7%	5.2%	-1.3%
Germany	-0.8%	-1.0%	1.2%	4.0%		-19.6%	-32.0%	3.7%	1.4%									2.5%	3.4%	2.7%					8.8%	6.1%	11.3%	2.7%	0.1%	4.6%	-0.6%
Greece	-2.9%	-5.0%	-0.5%	-2.6%	-27.7%	-23.6%	-34.7%	-3.2%	0.1%					-0.6%	4.2%	2.0%	1.8%	4.2%	0.5%	2.4%	1.8%	-18.1%	-2.3%	-94.6%	0.2%	6.8%	3.5%	-12.9%	-5.6%	6.3%	-5.5%
Ireland	6.1%	1.7%	5.3%	3.9%				3.8%	5.1%																1.4%	2.9%	3.4%	-0.3%	4.7%	8.0%	3.2%
Italy	-2.1%	-2.7%	0.2%	0.1%	-2.7%	-2.3%	-3.6%	-0.3%	0.4%								0.3%	2.6%	0.8%	3.4%	-8.9%	-0.1%	1.1%	-28.8%	6.4%	6.3%	1.5%	-1.7%	-2.9%	4.3%	-2.4%
Japan	-4.7%	0.0%	1.2%	5.6%	-0.5%	0.0%	-3.3%	5.2%	0.7%									1.3%	-1.7%	1.5%	4.6%	1.7%	-2.6%	-38.5%	8.8%	10.7%	9.6%	10.9%	5.1%	1.5%	-1.4%
Netherlands	-0.8%	-1.3%	1.9%	3.9%	3.2%	2.9%	2.4%	3.7%	1.7%									3.1%	2.0%	1.4%	1.7%	5.5%	3.8%	-5.5%	3.9%	6.1%	10.8%	1.7%	1.7%	5.4%	-1.3%
Norway	-5.5%	-2.7%	1.7%	2.6%	2.3%	2.4%	2.3%	2.6%	1.4%					2.5%	3.5%	4.9%	-0.1%	1.6%	2.3%	1.9%	0.2%	6.4%	1.6%	-2.3%	3.8%	4.7%	8.3%	-0.2%	1.4%	5.4%	-2.6%
Portugal	-1.7%	-2.3%	-0.1%	-2.0%				-2.4%	0.8%																3.5%	4.9%	-2.9%	-8.1%	-1.8%	4.7%	-2.4%
Spain	-0.7%	-1.8%	1.4%	1.4%	-0.7%	0.1%	-0.6%	1.1%	2.0%							-0.2%	2.7%	0.8%	-0.6%	3.8%	1.5%	0.5%	-5.5%	-6.7%	-4.1%	6.3%	4.5%	-2.3%	-1.3%	6.6%	-1.9%
Sweden	-1.7%	-0.6%	1.8%	1.5%	1.6%	1.8%	2.1%	1.3%	2.5%			0.7%	0.7%	0.2%	1.1%	0.6%	1.4%	1.2%	2.5%	1.3%	-1.2%	5.9%	2.2%	-0.7%	2.8%	3.8%	4.6%	-1.0%	-1.6%	3.9%	1.1%
Switzerland	0.3%	3.0%	3.4%	4.7%	4.0%	3.8%	3.2%	4.7%	3.7%											2.9%	-0.4%	5.9%	1.7%	3.0%	4.4%	4.6%	12.2%	1.5%	0.7%	6.5%	2.5%
UK	-2.0%	-3.0%	1.6%	1.1%	0.8%	0.9%	0.9%	0.9%	0.7%	1.5%	1.1%	3.3%	2.9%	1.4%	2.1%	3.7%	0.0%	2.4%	2.3%	0.9%	-1.2%	3.4%	0.0%	-1.9%	3.4%	1.8%	1.8%	-0.6%	2.1%	1.8%	-0.6%
US	2.3%	1.4%	2.4%	2.8%	3.2%	3.2%	3.5%	2.8%	2.0%	2.3%	3.7%	5.3%	6.1%	4.2%	4.2%	1.9%	6.6%	4.7%	4.3%	4.6%	2.3%	3.3%	0.9%	5.4%	4.3%	4.4%	3.3%	3.1%	3.4%	1.7%	2.1%

Source: Deutsche Bank, GFD

Figure 86: Emerging Market Nominal and Real GDP Growth for Different Time Horizons

	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	1900-1970	Since 1971	Since 1999	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	2010-2016
Nominal GDP																															
China	8.7%	12.1%	14.7%	13.0%				13.3%	12.6%																	3.1%	7.6%	15.1%	18.4%	14.2%	11.4%
India	11.2%	13.4%	13.0%	13.0%	9.2%	8.4%	5.2%	13.4%	12.7%									1.7%	1.1%	3.6%	6.2%	0.5%	-2.8%	13.0%	5.1%	11.4%	11.0%	15.6%	14.4%	11.9%	13.6%
Korea	4.4%	5.1%	7.8%	15.5%	23.9%			14.6%	6.7%													0.0%				25.7%	31.1%	17.3%	13.2%	7.7%	5.1%
Malaysia	6.5%	7.2%	8.9%	10.3%				10.5%	7.9%																4.7%	7.3%	15.3%	8.2%	11.7%	8.9%	7.7%
Mexico	7.0%	6.6%	11.8%	24.4%	16.4%	15.1%	8.7%	25.4%	8.4%											8.4%	6.4%	-0.1%	4.8%	16.0%	15.2%	10.9%	22.7%	68.3%	23.9%	8.0%	7.5%
Philippines	8.4%	8.7%	9.9%	13.4%				13.4%	9.2%																7.1%	10.4%	20.1%	16.6%	12.0%	9.6%	8.8%
South Africa	6.9%	7.7%	10.3%	13.1%	9.9%			13.2%	9.9%													1.7%	4.1%	9.6%	8.1%	9.8%	15.8%	17.6%	12.4%	11.5%	7.6%
Taiwan	3.5%	2.7%	4.7%	10.0%	23.8%			9.6%	3.3%												10.9%	3.1%	5.7%	211.5%	33.4%	14.4%	19.8%	12.7%	9.2%	2.7%	3.9%
Thailand	4.9%	5.4%	6.9%	10.4%				10.3%	6.3%																8.0%	10.4%	15.8%	12.8%	9.8%	7.1%	5.9%
Real GDP																															
China	7.2%	8.4%	9.6%	10.0%				10.1%	9.2%																	2.2%	7.3%	9.7%	16.1%	10.2%	8.1%
India	7.2%	7.2%	6.7%	5.5%	3.6%			5.6%	7.1%												0.3%	0.2%	0.8%	0.5%	3.9%	4.0%	2.8%	5.9%	5.2%	6.8%	7.5%
Korea	2.8%	3.0%	4.7%	7.2%	4.4%			6.9%	4.4%													1.3%	3.8%	-2.9%	4.6%	4.0%	10.4%	8.7%	7.0%	4.7%	3.3%
Malaysia	4.9%	4.6%	6.1%	6.7%				6.7%	6.0%																	6.8%	7.9%	5.7%	7.2%	6.6%	5.3%
Mexico	2.3%	2.2%	2.7%	3.2%	3.3%	3.1%	3.1%	3.0%	2.5%											3.2%	0.7%	0.9%	1.9%	1.8%	6.3%	7.1%	4.7%	1.8%	3.9%	2.0%	3.0%
Philippines	6.7%	5.6%	4.7%	4.1%				4.1%	5.0%																6.5%	4.7%	5.8%	1.9%	2.6%	4.5%	6.2%
South Africa	1.2%	1.5%	2.8%	2.5%	3.4%			2.4%	2.8%													1.3%	4.5%	4.4%	4.7%	5.3%	3.3%	2.0%	1.6%	3.5%	1.9%
Taiwan	2.1%	2.6%	4.3%	6.3%	5.4%			6.1%	3.7%												2.2%	4.5%	2.5%	-0.8%	9.4%	9.5%	10.2%	6.8%	6.4%	3.7%	3.5%
Thailand	3.2%	3.0%	6.1%	6.8%				6.7%	3.9%																3.9%	8.3%	7.3%	7.2%	11.0%	4.3%	3.6%

Source: Deutsche Bank, GFD

Figure 87: Emerging Market Nominal and Real GDP Growth for Different Time Horizons in USD

GDP Growth by Decade

	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	1900-1970	Since 1971	Since 1999	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	2010-2016
Nominal GDP																															
China	7.0%	13.0%	14.0%	10.7%				10.9%	13.9%																	3.1%	13.1%	2.6%	11.9%	16.5%	11.6%
India	7.8%	8.0%	9.5%	8.3%	5.9%	5.6%	3.9%	8.4%	10.2%									0.3%	0.6%	3.7%	9.6%	-1.5%	-4.6%	9.0%	5.0%	6.4%	10.3%	7.2%	4.2%	11.2%	9.1%
Korea	3.4%	3.2%	6.3%	12.3%	8.5%			11.6%	7.1%													-0.3%				4.9%	25.2%	13.4%	7.6%	7.4%	5.6%
Malaysia	-0.4%	4.5%	6.7%	9.6%				9.8%	7.2%																4.6%	7.2%	19.3%	6.0%	8.0%	10.0%	4.7%
Mexico	0.3%	1.5%	4.3%	7.6%	6.3%	2.1%	-1.2%	7.4%	5.1%											8.7%	-35.4%	-0.6%	-4.9%	10.9%	11.0%	10.9%	15.5%	4.4%	9.3%	4.6%	3.4%
Philippines	4.0%	6.5%	6.8%	7.7%				8.5%	7.7%																7.1%	3.3%	13.2%	4.6%	4.9%	8.0%	7.6%
South Africa	-2.2%	0.9%	4.0%	6.7%	6.2%			6.4%	5.3%													4.4%	1.9%	5.9%	8.0%	9.8%	14.1%	5.2%	2.9%	9.5%	0.1%
Taiwan	2.7%	3.4%	4.0%	10.6%	8.3%			10.3%	3.7%												11.1%	2.8%	-1.8%	6.3%	7.2%	15.6%	21.1%	16.4%	7.2%	2.6%	4.6%
Thailand	3.1%	4.3%	5.8%	9.3%				9.3%	6.7%																8.9%	10.5%	16.3%	10.1%	5.8%	8.4%	5.9%
Real GDP																															
China	5.5%	9.3%	8.9%	7.9%				7.8%	10.4%																	2.2%	12.8%	-2.2%	9.8%	12.3%	8.3%
India	4.0%	2.1%	3.4%	1.1%	0.4%			0.9%	4.8%												3.5%	-1.8%	-1.1%	-3.0%	3.9%	-0.6%	2.3%	-1.8%	-4.3%	6.1%	3.2%
Korea	1.7%	1.2%	3.2%	4.2%	-8.6%			4.0%	4.8%													1.0%	-3.6%	-43.2%	-30.0%	-13.2%	5.4%	5.1%	1.7%	4.4%	3.8%
Malaysia	-1.9%	2.0%	4.0%	6.0%				5.9%	5.4%																	6.7%	11.6%	3.5%	3.6%	7.7%	2.4%
Mexico	-4.1%	-2.7%	-4.2%	-10.7%	-5.7%	-8.5%	-6.3%	-11.7%	-0.6%											3.5%	-38.9%	0.4%	-7.5%	-2.7%	2.4%	7.1%	-1.4%	-36.8%	-8.3%	-1.3%	-0.9%
Philippines	2.3%	3.5%	1.8%	-1.1%				-0.4%	3.6%																6.5%	-2.1%	-0.3%	-8.6%	-3.9%	3.0%	5.1%
South Africa	-7.4%	-4.9%	-3.0%	-3.3%	-0.1%			-3.8%	-1.5%													4.0%	2.4%	0.8%	4.7%	5.4%	1.9%	-8.8%	-7.0%	1.6%	-5.2%
Taiwan	1.3%	3.4%	3.6%	6.9%	-7.7%			6.7%	4.1%												2.4%	4.1%	-4.8%	-66.2%	-12.1%	10.6%	11.3%	10.3%	4.5%	3.5%	4.2%
Thailand	1.4%	1.9%	5.0%	5.8%				5.7%	4.4%																4.8%	8.3%	7.7%	4.7%	6.9%	5.5%	3.6%

Source: Deutsche Bank, GFD

Figure 88: Developed Market Nominal and Real GDP Growth for Different Time Horizons

	GDP Growth by Decade																														
	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	1900-1970	Since 1971	Since 1999	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	2010-2017
Nominal GDP																															
Australia	3.2%	4.7%	5.8%	8.6%				8.5%	5.8%																15.6%	13.8%	11.9%	4.9%	7.2%	4.2%
Austria	2.6%	2.4%	3.4%	5.9%		15.6%	22.7%	5.6%	3.4%									0.8%	2.5%	11.5%					13.4%	8.6%	10.9%	6.3%	4.8%	3.5%	2.9%
Belgium	2.4%	2.4%	3.6%	6.0%		7.3%	8.3%	5.7%	3.4%					0.0%	4.5%	4.0%	1.4%	1.0%	1.2%	1.8%				21.7%	4.6%	8.0%	11.0%	6.6%	4.7%	3.6%	2.8%
Canada	3.5%	3.4%	4.6%	7.1%	6.5%	6.9%	6.9%	7.0%	4.6%									4.2%	2.3%	8.5%	8.7%	4.1%	-0.9%	11.9%	8.3%	8.4%	13.0%	8.6%	4.3%	4.4%	4.3%
Denmark	2.2%	2.0%	3.4%	6.8%	6.5%	6.6%	6.6%	6.5%	3.1%			-1.8%	2.2%	2.8%	4.4%	3.2%	1.7%	1.6%	3.2%	4.2%	12.3%	0.4%	3.4%	8.8%	7.1%	10.0%	14.0%	8.2%	4.5%	3.5%	2.4%
France	1.7%	1.5%	2.9%	6.8%		9.5%	11.6%	6.5%	2.9%			2.5%	1.0%	1.2%	2.4%	3.6%	-1.0%	1.8%	1.7%	2.1%			4.3%	32.5%	11.7%	10.1%	13.9%	9.6%	3.7%	3.3%	2.0%
Germany	3.2%	2.5%	2.7%	4.9%		34.7%	59.3%	4.6%	2.7%							3.7%	3.6%	3.2%	3.4%	3.4%						10.0%	8.8%	4.8%	4.7%	1.8%	3.5%
Greece	-1.6%	-2.7%	4.7%	11.9%	51.7%	44.3%	71.0%	11.7%	2.7%					-0.1%	7.4%	1.5%	4.0%	4.5%	2.1%	2.4%	23.7%	18.8%	5.4%	2088.2%	14.5%	10.6%	20.6%	20.3%	13.2%	7.8%	-3.6%
Ireland	10.7%	4.0%	8.3%	11.2%	7.4%	6.8%	4.1%	11.1%	7.1%								0.6%	0.2%	1.3%	-0.5%	9.9%				5.2%	9.0%	18.4%	12.4%	11.1%	6.3%	7.0%
Italy	1.0%	0.5%	3.1%	9.0%	11.7%	11.1%	12.7%	8.6%	2.4%								1.3%	1.2%	1.0%	3.6%	15.1%	7.2%	1.6%	47.0%	9.9%	8.8%	19.5%	14.6%	6.6%	3.0%	1.0%
Japan	2.7%	0.6%	0.5%	5.0%	11.6%	11.0%	15.7%	4.3%	0.3%										9.3%	5.0%	15.1%	0.5%	6.7%	58.8%	15.1%	17.1%	13.0%	6.1%	2.1%	-0.7%	1.8%
Netherlands	2.4%	1.7%	4.1%	6.3%	6.3%	6.2%	6.5%	5.8%	3.7%		1.1%	0.5%	2.4%	-0.9%	1.7%	3.3%	1.3%	1.8%	1.2%	3.0%	11.4%	1.6%	-2.2%	13.1%	7.9%	10.5%	13.1%	4.3%	6.1%	4.1%	2.1%
Norway	1.3%	3.2%	5.6%	8.2%	6.8%	7.0%	6.3%	8.1%	5.4%					1.1%	5.0%	3.6%	2.1%	1.5%	3.3%	2.1%	16.8%	-3.5%	3.7%	8.1%	8.9%	8.4%	14.4%	10.3%	5.5%	7.3%	3.1%
Portugal	2.5%	0.8%	4.5%	11.1%	8.0%	7.1%	4.4%	11.3%	3.1%									3.2%	2.0%	1.4%	7.0%	-0.9%	1.4%	7.6%	5.6%	8.4%	16.0%	23.7%	11.1%	3.9%	1.0%
Spain	2.1%	0.7%	4.7%	9.8%	9.7%	8.7%	8.2%	9.6%	4.1%							-0.2%	4.4%	0.3%	1.1%	2.3%	7.4%	3.6%	1.7%	13.3%	15.4%	13.8%	19.5%	13.5%	7.8%	6.1%	0.9%
Sweden	4.3%	3.4%	4.2%	7.3%	6.8%	6.7%	6.3%	7.2%	4.1%	5.9%	4.9%	0.1%	2.6%	1.2%	3.8%	2.3%	3.4%	1.2%	4.2%	3.0%	13.4%	-1.8%	3.7%	8.1%	8.9%	9.1%	11.7%	11.4%	4.8%	4.1%	4.1%
Switzerland	1.1%	1.5%	2.2%	4.6%		4.8%	5.2%	4.3%	2.3%							2.1%	2.5%	0.9%	4.1%	3.5%			-1.0%	7.5%	6.2%	9.1%	6.9%	7.6%	2.7%	3.2%	1.4%
UK	3.7%	2.8%	4.2%	8.0%	6.3%	6.1%	4.9%	7.9%	3.9%	3.2%	0.2%	0.2%	3.1%	0.0%	2.9%	3.5%	1.7%	2.1%	2.5%	1.3%	10.3%	-2.0%	2.3%	7.6%	7.1%	7.3%	16.0%	10.7%	5.2%	4.2%	3.4%
US	3.8%	2.9%	4.4%	6.4%	6.0%	6.1%	6.0%	6.3%	4.0%	1.8%	4.2%	1.8%	7.9%	1.3%	6.1%	6.4%	1.7%	3.9%	3.4%	6.7%	9.7%	2.2%	-1.1%	11.2%	6.9%	7.0%	10.1%	7.8%	5.6%	3.9%	3.8%
Real GDP																															
Australia	2.5%	2.6%	3.3%	3.2%				3.1%	3.0%																		3.3%	3.3%	3.1%	3.2%	2.6%
Austria	0.9%	0.8%	1.6%	2.4%		3.3%	3.8%	2.4%	1.6%									1.5%	2.6%	9.8%					10.7%	3.2%	5.2%	1.8%	2.2%	1.8%	1.2%
Belgium	1.0%	0.9%	2.2%	2.5%	2.3%	2.1%	1.9%	2.3%	1.6%									2.4%	1.8%	2.0%	-1.4%	4.6%	0.6%	0.0%	2.0%	4.8%	3.5%	1.9%	3.4%	1.8%	1.2%
Canada	2.2%	1.7%	2.6%	2.9%	3.4%	3.7%	4.3%	2.8%	2.3%									3.5%	3.2%	5.9%	2.8%	4.6%	0.5%	5.9%	5.3%	5.2%	4.1%	2.9%	2.6%	2.1%	2.4%
Denmark	1.4%	0.5%	1.6%	1.8%	2.6%	2.6%	3.2%	1.7%	1.2%									2.1%	3.2%	3.3%	1.8%	3.7%	2.5%	1.9%	3.6%	5.5%	2.0%	1.4%	2.6%	1.1%	1.2%
France	0.9%	0.6%	1.5%	2.4%	2.7%	2.2%	2.3%	2.2%	1.4%									2.0%	2.4%	1.0%	-1.8%	7.0%	-1.1%	0.1%	5.0%	5.7%	4.5%	2.3%	1.9%	1.5%	1.1%
Germany	1.4%	1.1%	1.3%	2.2%		2.8%	3.5%	1.9%	1.3%									2.5%	3.4%	2.7%					8.7%	4.8%	3.1%	2.5%	1.5%	1.0%	1.8%
Greece	-0.8%	-3.0%	0.7%	1.9%	3.1%	3.2%	4.4%	1.5%	0.3%					-0.5%	4.0%	2.1%	1.9%	4.2%	0.5%	2.4%	4.3%	4.8%	3.8%	0.8%	7.4%	6.8%	5.4%	0.9%	1.6%	2.9%	-3.3%
Ireland	8.4%	3.8%	5.6%	4.9%				4.8%	5.1%																1.4%	4.5%	4.6%	3.0%	6.7%	4.3%	5.7%
Italy	0.0%	-0.6%	0.6%	2.0%	2.6%	2.5%	3.0%	1.7%	0.4%								1.0%	1.4%	1.3%	2.7%	0.0%	3.7%	1.5%	0.5%	6.4%	6.4%	4.0%	2.9%	1.3%	0.7%	-0.1%
Japan	-0.1%	-0.1%	0.7%	3.1%	3.6%	3.4%	4.0%	2.6%	0.6%									2.9%	3.0%	1.5%	4.5%	1.8%	4.9%	-4.1%	8.8%	10.7%	5.3%	5.4%	1.6%	0.5%	0.7%
Netherlands	1.4%	0.8%	2.0%	2.5%	2.9%	2.7%	3.0%	2.3%	1.6%									3.0%	2.0%	1.4%	2.4%	4.7%	1.0%	1.4%	3.9%	5.7%	3.9%	1.7%	3.1%	1.8%	1.0%
Norway	1.3%	1.0%	2.2%	2.8%	3.2%	3.1%	3.2%	2.8%	1.6%					2.0%	3.0%	3.2%	1.8%	1.7%	2.2%	1.9%	3.1%	3.4%	3.3%	2.6%	3.7%	4.7%	4.4%	2.8%	3.4%	2.0%	1.2%
Portugal	0.5%	-0.3%	0.5%	1.6%				1.4%	0.7%																3.5%	4.8%	2.7%	2.6%	1.1%	1.0%	-0.1%
Spain	1.5%	0.3%	2.2%	2.9%	2.9%	2.7%	2.7%	2.6%	2.0%							0.1%	3.2%	1.2%	1.3%	1.8%	0.9%	4.2%	-2.7%	2.2%	4.7%	7.9%	3.9%	2.8%	2.8%	2.9%	0.5%
Sweden	2.6%	1.6%	2.4%	2.4%	2.6%	2.4%	2.5%	2.3%	2.5%	0.6%	-0.3%	0.4%	0.7%	0.5%	0.6%	0.9%	1.5%	1.2%	2.4%	1.4%	1.1%	3.4%	3.5%	1.4%	2.8%	3.8%	2.4%	3.0%	1.6%	2.2%	2.6%
Switzerland	1.4%	1.4%	1.6%	1.6%	2.5%	2.3%	2.9%	1.4%	1.8%											2.8%	0.4%	5.0%	0.3%	2.6%	4.5%	4.7%	1.6%	1.2%	1.1%	2.1%	1.6%
UK	2.2%	1.0%	2.2%	2.3%	2.1%	2.1%	2.0%	2.2%	1.9%	1.5%	0.9%	2.5%	3.0%	1.5%	2.0%	1.8%	1.9%	2.4%	2.2%	1.0%	1.4%	0.7%	2.1%	1.6%	3.5%	3.4%	2.6%	2.6%	2.1%	1.8%	1.9%
US	2.3%	1.4%	2.4%	2.8%	3.2%	3.2%	3.5%	2.8%	2.0%	2.3%	3.7%	5.3%	6.1%	4.2%	4.2%	1.9%	6.6%	4.7%	4.3%	4.6%	2.3%	3.3%	0.9%	5.4%	4.3%	4.4%	3.3%	3.1%	3.4%	1.7%	2.1%

Source: Deutsche Bank, GFD

Figure 89: Developed Market Nominal and Real GDP Growth for Different Time Horizons in USD

										GDP Growth by Decade																				
	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	1900-1970	Since 1971	Since 1999	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	2010-2017
Nominal GDP																														
Australia	-2.1%	3.7%	6.4%	7.9%				7.7%	7.3%																15.6%	13.7%	8.1%	3.0%	10.6%	2.8%
Austria	0.4%	0.3%	3.4%	7.6%		5.2%	3.7%	7.5%	3.4%									0.9%	2.2%	11.6%					13.5%	8.7%	19.3%	6.8%	3.4%	7.2%	0.5%
Belgium	0.2%	0.3%	3.5%	6.8%		5.6%	4.9%	6.6%	3.5%					-0.1%	4.6%	3.9%	1.4%	1.0%	1.2%	1.8%				15.6%	4.6%	8.1%	17.5%	4.1%	3.5%	7.3%	0.4%
Canada	-1.1%	1.1%	4.7%	6.8%	6.3%	6.7%	6.9%	6.5%	5.7%									4.2%	2.2%	8.3%	7.9%	4.7%	-1.8%	11.9%	10.0%	7.1%	12.0%	8.7%	2.0%	7.8%	2.1%
Denmark	0.1%	0.0%	3.4%	7.2%	5.8%	6.1%	5.5%	6.9%	3.2%			-0.3%	4.7%	3.4%	5.0%	4.9%	-0.2%	1.6%	3.2%	4.2%	8.6%	3.8%	0.1%	5.7%	7.1%	9.1%	17.8%	6.0%	3.3%	7.3%	0.0%
France	-0.5%	-0.6%	2.9%	6.5%		5.3%	4.5%	6.5%	2.9%			2.8%	1.1%	1.1%	2.6%	3.5%	-1.0%	1.8%	1.8%	2.1%			-1.4%	7.9%	8.0%	8.7%	17.7%	5.7%	2.4%	7.0%	-0.4%
Germany	1.0%	0.4%	2.7%	6.8%		5.4%	4.7%	6.4%	2.7%							3.5%	3.5%	3.1%	3.4%	3.5%						11.3%	17.4%	5.0%	3.3%	5.4%	1.1%
Greece	-3.7%	-4.7%	3.5%	7.0%	6.3%	6.7%	7.0%	6.4%	2.6%					-0.2%	7.7%	1.5%	3.9%	4.5%	2.1%	2.4%	20.8%	-7.2%	-0.8%	16.9%	6.9%	10.6%	18.5%	3.8%	5.2%	11.3%	-5.9%
Ireland	8.3%	1.8%	7.9%	10.2%	6.2%			10.0%	7.2%												7.1%				5.2%	7.3%	17.1%	8.8%	9.0%	10.1%	4.4%
Italy	-1.2%	-1.5%	2.7%	6.9%	5.9%	5.9%	5.5%	6.4%	2.4%								0.6%	2.4%	0.4%	4.3%	4.8%	3.3%	1.2%	4.1%	9.9%	8.7%	16.5%	9.5%	2.2%	6.7%	-1.4%
Japan	-2.1%	0.7%	1.0%	7.5%	7.2%	7.3%	7.5%	6.9%	0.4%										4.3%	5.0%	15.2%	0.4%	-0.9%	1.9%	15.1%	17.1%	17.7%	11.7%	5.7%	0.3%	-0.4%
Netherlands	0.2%	-0.4%	4.0%	7.7%	6.6%	6.5%	6.0%	7.3%	3.8%		0.5%	0.8%	2.4%	-0.9%	2.1%	3.1%	1.0%	1.8%	1.2%	3.0%	10.6%	2.4%	0.6%	5.4%	8.0%	11.0%	20.6%	4.3%	4.7%	7.8%	-0.3%
Norway	-5.5%	-0.6%	5.1%	8.0%	5.8%	6.4%	5.4%	7.9%	5.2%					1.7%	5.5%	5.3%	0.2%	1.5%	3.4%	2.1%	13.5%	-0.7%	2.0%	3.0%	8.9%	8.4%	18.7%	7.1%	3.5%	10.9%	-0.8%
Portugal	0.3%	-1.3%	3.9%	7.3%	3.1%	2.8%	0.0%	7.1%	3.1%									3.2%	-1.7%	4.0%	-4.1%	-18.5%	-0.8%	7.2%	5.6%	8.5%	9.7%	10.9%	7.9%	7.6%	-1.3%
Spain	-0.1%	-1.4%	3.8%	8.3%	5.9%	6.0%	4.7%	7.9%	4.1%							-0.5%	3.9%	-0.2%	-0.8%	4.3%	8.1%	-0.2%	-1.2%	3.4%	5.7%	12.1%	20.2%	7.9%	3.4%	9.9%	-1.5%
Sweden	-0.1%	1.2%	3.6%	6.3%	5.7%	6.0%	5.8%	6.2%	4.2%			0.4%	2.5%	0.8%	4.2%	2.0%	3.3%	1.2%	4.3%	2.9%	10.8%	0.6%	2.4%	5.9%	8.9%	9.1%	14.1%	7.0%	1.5%	5.9%	2.6%
Switzerland	0.0%	3.2%	3.9%	7.7%		6.3%	5.5%	7.7%	4.2%							2.1%	2.4%	0.9%	4.1%	3.6%			0.4%	7.9%	6.2%	9.1%	18.1%	8.0%	2.4%	7.7%	2.3%
UK	-0.5%	-1.3%	3.6%	6.8%	4.9%	4.9%	3.8%	6.5%	2.7%	3.2%	0.3%	0.9%	3.0%	-0.1%	3.0%	5.4%	-0.2%	2.1%	2.6%	1.2%	7.5%	0.6%	0.2%	4.0%	7.1%	5.6%	15.1%	7.3%	5.3%	4.1%	0.9%
US	3.8%	2.9%	4.4%	6.4%	6.0%	6.1%	6.0%	6.3%	4.0%	1.8%	4.2%	1.8%	7.9%	1.3%	6.1%	6.4%	1.7%	3.9%	3.4%	6.7%	9.7%	2.2%	-1.1%	11.2%	6.9%	7.0%	10.1%	7.8%	5.6%	3.9%	3.8%
Real GDP																														
Australia	-2.8%	1.6%	3.9%	2.6%				2.3%	4.5%																	3.2%	-0.1%	1.3%	6.4%	1.2%
Austria	-1.3%	-1.3%	1.5%	4.0%		-6.0%	-12.3%	4.2%	1.6%									1.7%	2.3%	9.9%					10.7%	3.2%	13.2%	2.3%	0.8%	5.5%	-1.2%
Belgium	-1.1%	-1.2%	2.1%	3.3%	0.7%	0.4%	-1.3%	3.2%	1.7%									2.4%	1.8%	2.0%	-8.4%	-7.1%	2.4%	-5.0%	2.0%	4.9%	9.6%	-0.5%	2.2%	5.5%	-1.1%
Canada	-2.4%	-0.5%	2.7%	2.6%	3.1%	3.5%	4.2%	2.4%	3.5%									3.6%	3.2%	5.8%	2.0%	5.2%	-0.5%	5.9%	7.0%	3.9%	3.2%	3.0%	0.3%	5.4%	0.2%
Denmark	-0.7%	-1.5%	1.6%	2.2%	1.9%	2.1%	2.2%	2.1%	1.3%									2.1%	3.2%	3.4%	-1.5%	7.3%	-0.8%	-1.1%	3.7%	4.6%	5.5%	-0.7%	1.4%	4.7%	-1.2%
France	-1.3%	-1.4%	1.5%	2.2%	-1.9%	-1.7%	-4.2%	2.2%	1.5%									2.0%	2.5%	1.0%	-8.9%	-1.6%	-6.5%	-18.5%	1.5%	4.4%	7.9%	-1.4%	0.7%	5.2%	-1.3%
Germany	-0.8%	-1.0%	1.2%	4.0%		-19.6%	-32.0%	3.7%	1.4%									2.5%	3.4%	2.7%					8.8%	6.1%	11.3%	2.7%	0.1%	4.6%	-0.6%
Greece	-2.9%	-5.0%	-0.5%	-2.6%	-27.7%	-23.6%	-34.7%	-3.2%	0.1%					-0.6%	4.2%	2.0%	1.8%	4.2%	0.5%	2.4%	1.8%	-18.1%	-2.3%	-94.6%	0.2%	6.8%	3.5%	-12.9%	-5.6%	6.3%	-5.5%
Ireland	6.1%	1.7%	5.3%	3.9%				3.8%	5.1%																1.4%	2.9%	3.4%	-0.3%	4.7%	8.0%	3.2%
Italy	-2.1%	-2.7%	0.2%	0.1%	-2.7%	-2.3%	-3.6%	-0.3%	0.4%								0.3%	2.6%	0.8%	3.4%	-8.9%	-0.1%	1.1%	-28.8%	6.4%	6.3%	1.5%	-1.7%	-2.9%	4.3%	-2.4%
Japan	-4.7%	0.0%	1.2%	5.6%	-0.5%	0.0%	-3.3%	5.2%	0.7%									1.3%	-1.7%	1.5%	4.6%	1.7%	-2.6%	-38.5%	8.8%	10.7%	9.6%	10.9%	5.1%	1.5%	-1.4%
Netherlands	-0.8%	-1.3%	1.9%	3.9%	3.2%	2.9%	2.4%	3.7%	1.7%									3.1%	2.0%	1.4%	1.7%	5.5%	3.8%	-5.5%	3.9%	6.1%	10.8%	1.7%	1.7%	5.4%	-1.3%
Norway	-5.5%	-2.7%	1.7%	2.6%	2.3%	2.4%	2.3%	2.6%	1.4%					2.5%	3.5%	4.9%	-0.1%	1.6%	2.3%	1.9%	0.2%	6.4%	1.6%	-2.3%	3.8%	4.7%	8.3%	-0.2%	1.4%	5.4%	-2.6%
Portugal	-1.7%	-2.3%	-0.1%	-2.0%				-2.4%	0.8%																3.5%	4.9%	-2.9%	-8.1%	-1.8%	4.7%	-2.4%
Spain	-0.7%	-1.8%	1.4%	1.4%	-0.7%	0.1%	-0.6%	1.1%	2.0%							-0.2%	2.7%	0.8%	-0.6%	3.8%	1.5%	0.5%	-5.5%	-6.7%	-4.1%	6.3%	4.5%	-2.3%	-1.3%	6.6%	-1.9%
Sweden	-1.7%	-0.6%	1.8%	1.5%	1.6%	1.8%	2.1%	1.3%	2.5%			0.7%	0.7%	0.2%	1.1%	0.6%	1.4%	1.2%	2.5%	1.3%	-1.2%	5.9%	2.2%	-0.7%	2.8%	3.8%	4.6%	-1.0%	-1.6%	3.9%	1.1%
Switzerland	0.3%	3.0%	3.4%	4.7%	4.0%	3.8%	3.2%	4.7%	3.7%											2.9%	-0.4%	5.9%	1.7%	3.0%	4.4%	4.6%	12.2%	1.5%	0.7%	6.5%	2.5%
UK	-2.0%	-3.0%	1.6%	1.1%	0.8%	0.9%	0.9%	0.9%	0.7%	1.5%	1.1%	3.3%	2.9%	1.4%	2.1%	3.7%	0.0%	2.4%	2.3%	0.9%	-1.2%	3.4%	0.0%	-1.9%	3.4%	1.8%	1.8%	-0.6%	2.1%	1.8%	-0.6%
US	2.3%	1.4%	2.4%	2.8%	3.2%	3.2%	3.5%	2.8%	2.0%	2.3%	3.7%	5.3%	6.1%	4.2%	4.2%	1.9%	6.6%	4.7%	4.3%	4.6%	2.3%	3.3%	0.9%	5.4%	4.3%	4.4%	3.3%	3.1%	3.4%	1.7%	2.1%

Source: Deutsche Bank, GFD

Figure 90: Emerging Market Nominal and Real GDP Growth for Different Time Horizons

	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	1900-1970	Since 1971	Since 1999	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	2010-2017
Nominal GDP																															
China	8.7%	12.1%	14.7%	13.0%				13.3%	12.6%																	3.1%	7.6%	15.1%	18.4%	14.2%	11.4%
India	11.2%	13.4%	13.0%	13.0%	9.2%	8.4%	5.2%	13.4%	12.7%									1.7%	1.1%	3.6%	6.2%	0.5%	-2.8%	13.0%	5.1%	11.4%	11.0%	15.6%	14.4%	11.9%	13.6%
Korea	4.4%	5.1%	7.8%	15.5%	23.9%			14.6%	6.7%													0.0%				25.7%	31.1%	17.3%	13.2%	7.7%	5.1%
Malaysia	6.5%	7.2%	8.9%	10.3%				10.5%	7.9%																4.7%	7.3%	15.3%	8.2%	11.7%	8.9%	7.7%
Mexico	7.0%	6.6%	11.8%	24.4%	16.4%	15.1%	8.7%	25.4%	8.4%											8.4%	6.4%	-0.1%	4.8%	16.0%	15.2%	10.9%	22.7%	68.3%	23.9%	8.0%	7.5%
Philippines	8.4%	8.7%	9.9%	13.4%				13.4%	9.2%																7.1%	10.4%	20.1%	16.6%	12.0%	9.6%	8.8%
South Africa	6.9%	7.7%	10.3%	13.1%	9.9%			13.2%	9.9%													1.7%	4.1%	9.6%	8.1%	9.8%	15.8%	17.6%	12.4%	11.5%	7.6%
Taiwan	3.5%	2.7%	4.7%	10.0%	23.8%			9.6%	3.3%												10.9%	3.1%	5.7%	211.5%	33.4%	14.4%	19.8%	12.7%	9.2%	2.7%	3.9%
Thailand	4.9%	5.4%	6.9%	10.4%				10.3%	6.3%																8.0%	10.4%	15.8%	12.8%	9.8%	7.1%	5.9%
Real GDP																															
China	7.2%	8.4%	9.6%	10.0%				10.1%	9.2%																	2.2%	7.3%	9.7%	16.1%	10.2%	8.1%
India	7.2%	7.2%	6.7%	5.5%	3.6%			5.6%	7.1%												0.3%	0.2%	0.8%	0.5%	3.9%	4.0%	2.8%	5.9%	5.2%	6.8%	7.5%
Korea	2.8%	3.0%	4.7%	7.2%	4.4%			6.9%	4.4%													1.3%	3.8%	-2.9%	4.6%	4.0%	10.4%	8.7%	7.0%	4.7%	3.3%
Malaysia	4.9%	4.6%	6.1%	6.7%				6.7%	6.0%																	6.8%	7.9%	5.7%	7.2%	6.6%	5.3%
Mexico	2.3%	2.2%	2.7%	3.2%	3.3%	3.1%	3.1%	3.0%	2.5%											3.2%	0.7%	0.9%	1.9%	1.8%	6.3%	7.1%	4.7%	1.8%	3.9%	2.0%	3.0%
Philippines	6.7%	5.6%	4.7%	4.1%				4.1%	5.0%																6.5%	4.7%	5.8%	1.9%	2.6%	4.5%	6.2%
South Africa	1.2%	1.5%	2.8%	2.5%	3.4%			2.4%	2.8%													1.3%	4.5%	4.4%	4.7%	5.3%	3.3%	2.0%	1.6%	3.5%	1.9%
Taiwan	2.1%	2.6%	4.3%	6.3%	5.4%			6.1%	3.7%												2.2%	4.5%	2.5%	-0.8%	9.4%	9.5%	10.2%	6.8%	6.4%	3.7%	3.5%
Thailand	3.2%	3.0%	6.1%	6.8%				6.7%	3.9%																3.9%	8.3%	7.3%	7.2%	11.0%	4.3%	3.6%

Source: Deutsche Bank, GFD

Figure 91: Emerging Market Nominal and Real GDP Growth for Different Time Horizons in USD

GDP Growth by Decade

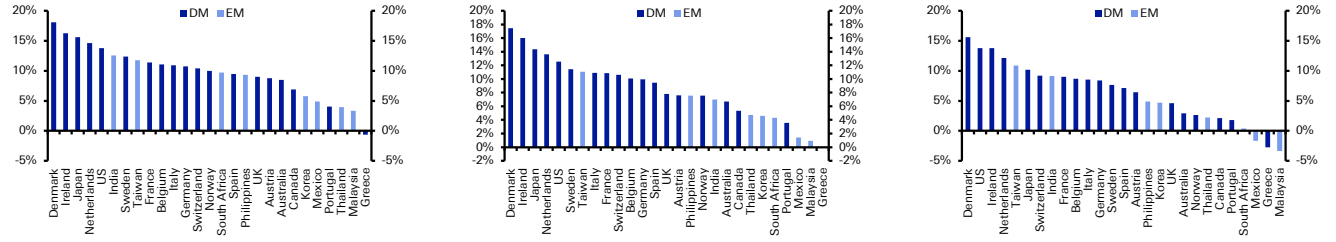
	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	1900-1970	Since 1971	Since 1999	1800-1809	1810-1819	1820-1829	1830-1839	1840-1849	1850-1859	1860-1869	1870-1879	1880-1889	1890-1899	1900-1909	1910-1919	1920-1929	1930-1939	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009	2010-2017
Nominal GDP																															
China	7.0%	13.0%	14.0%	10.7%				10.9%	13.9%																	3.1%	13.1%	2.6%	11.9%	16.5%	11.6%
India	7.8%	8.0%	9.5%	8.3%	5.9%	5.6%	3.9%	8.4%	10.2%									0.3%	0.6%	3.7%	9.6%	-1.5%	-4.6%	9.0%	5.0%	6.4%	10.3%	7.2%	4.2%	11.2%	9.1%
Korea	3.4%	3.2%	6.3%	12.3%	8.5%			11.6%	7.1%													-0.3%				4.9%	25.2%	13.4%	7.6%	7.4%	5.6%
Malaysia	-0.4%	4.5%	6.7%	9.6%				9.8%	7.2%																4.6%	7.2%	19.3%	6.0%	8.0%	10.0%	4.7%
Mexico	0.3%	1.5%	4.3%	7.6%	6.3%	2.1%	-1.2%	7.4%	5.1%											8.7%	-35.4%	-0.6%	-4.9%	10.9%	11.0%	10.9%	15.5%	4.4%	9.3%	4.6%	3.4%
Philippines	4.0%	6.5%	6.8%	7.7%				8.5%	7.7%																7.1%	3.3%	13.2%	4.6%	4.9%	8.0%	7.6%
South Africa	-2.2%	0.9%	4.0%	6.7%	6.2%			6.4%	5.3%													4.4%	1.9%	5.9%	8.0%	9.8%	14.1%	5.2%	2.9%	9.5%	0.1%
Taiwan	2.7%	3.4%	4.0%	10.6%	8.3%			10.3%	3.7%												11.1%	2.8%	-1.8%	6.3%	7.2%	15.6%	21.1%	16.4%	7.2%	2.6%	4.6%
Thailand	3.1%	4.3%	5.8%	9.3%				9.3%	6.7%																8.9%	10.5%	16.3%	10.1%	5.8%	8.4%	5.9%
Real GDP																															
China	5.5%	9.3%	8.9%	7.9%				7.8%	10.4%																	2.2%	12.8%	-2.2%	9.8%	12.3%	8.3%
India	4.0%	2.1%	3.4%	1.1%	0.4%			0.9%	4.8%												3.5%	-1.8%	-1.1%	-3.0%	3.9%	-0.6%	2.3%	-1.8%	-4.3%	6.1%	3.2%
Korea	1.7%	1.2%	3.2%	4.2%	-8.6%			4.0%	4.8%													1.0%	-3.6%	-43.2%	-30.0%	-13.2%	5.4%	5.1%	1.7%	4.4%	3.8%
Malaysia	-1.9%	2.0%	4.0%	6.0%				5.9%	5.4%																	6.7%	11.6%	3.5%	3.6%	7.7%	2.4%
Mexico	-4.1%	-2.7%	-4.2%	-10.7%	-5.7%	-8.5%	-6.3%	-11.7%	-0.6%											3.5%	-38.9%	0.4%	-7.5%	-2.7%	2.4%	7.1%	-1.4%	-36.8%	-8.3%	-1.3%	-0.9%
Philippines	2.3%	3.5%	1.8%	-1.1%				-0.4%	3.6%																6.5%	-2.1%	-0.3%	-8.6%	-3.9%	3.0%	5.1%
South Africa	-7.4%	-4.9%	-3.0%	-3.3%	-0.1%			-3.8%	-1.5%													4.0%	2.4%	0.8%	4.7%	5.4%	1.9%	-8.8%	-7.0%	1.6%	-5.2%
Taiwan	1.3%	3.4%	3.6%	6.9%	-7.7%			6.7%	4.1%												2.4%	4.1%	-4.8%	-66.2%	-12.1%	10.6%	11.3%	10.3%	4.5%	3.5%	4.2%
Thailand	1.4%	1.9%	5.0%	5.8%				5.7%	4.4%																4.8%	8.3%	7.7%	4.7%	6.9%	5.5%	3.6%

Source: Deutsche Bank, GFD

Long-Term Asset Returns in Charts

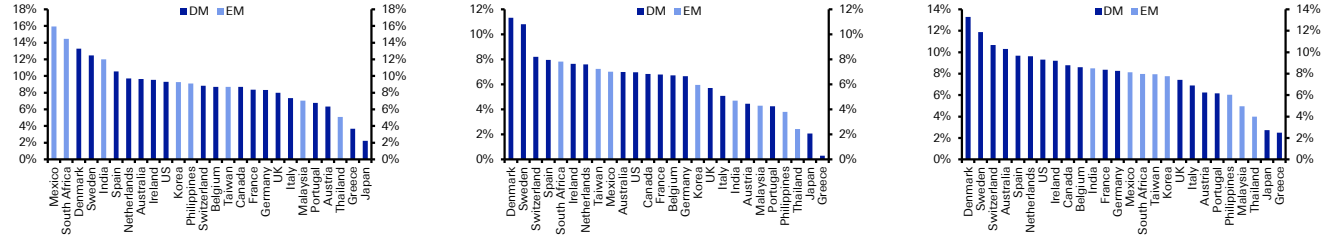
International equity return charts

Figure 92: Last 5 Years Annualised Equity Returns – Nominal (left), Real (middle), USD (right)



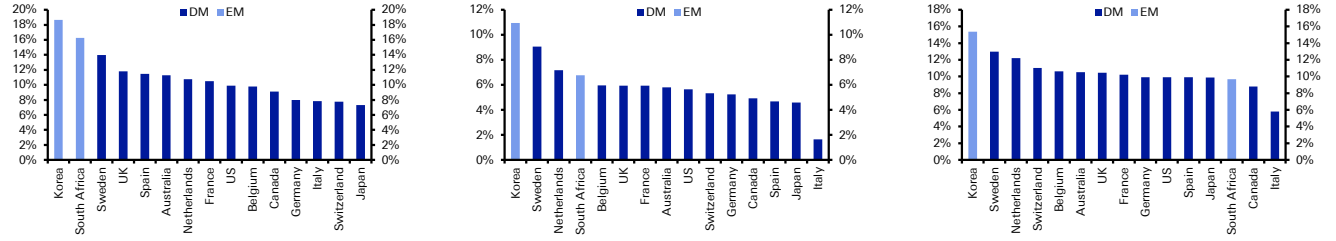
Source: Deutsche Bank, GFD

Figure 93: Last 25 Years Annualised Equity Returns – Nominal (left), Real (middle), USD (right)



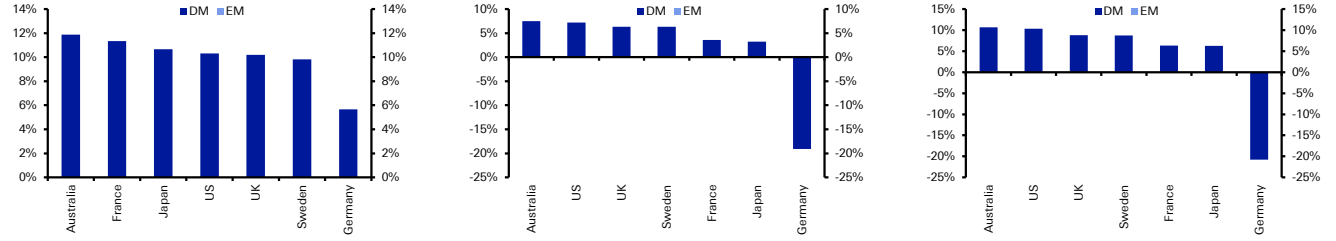
Source: Deutsche Bank, GFD

Figure 94: Last 50 Years Annualised Equity Returns – Nominal (left), Real (middle), USD (right)



Source: Deutsche Bank, GFD

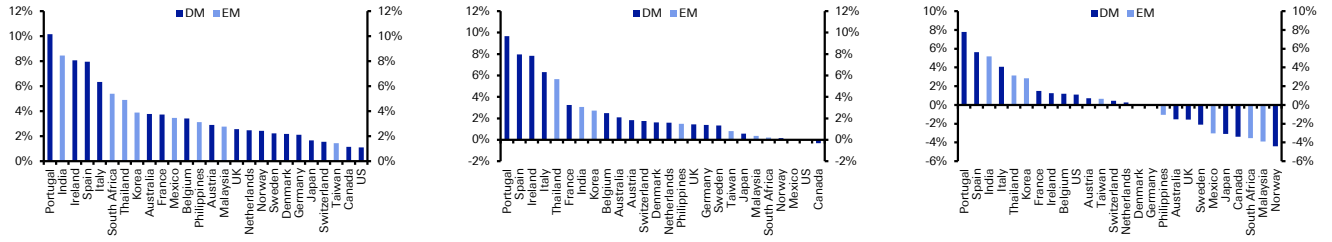
Figure 95: Last 100 Years Annualised Equity Returns – Nominal (left), Real (middle), USD (right)



Source: Deutsche Bank, GFD

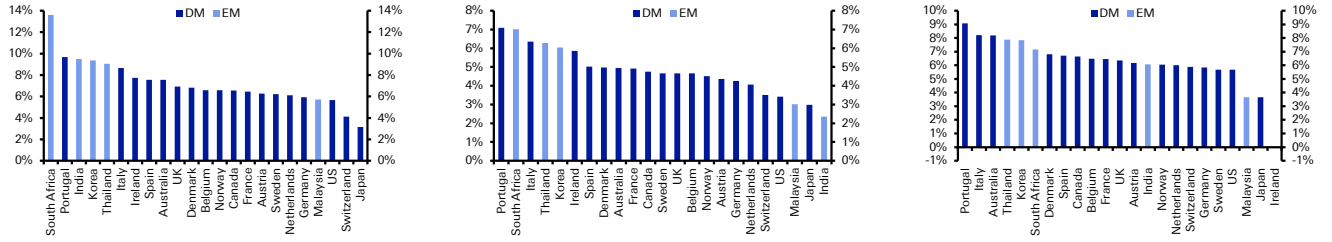
International 10 year government bond return charts

Figure 96: Last 5 Years Annualised 10 Year Government Bond Returns – Nominal (left), Real (middle), USD (right)



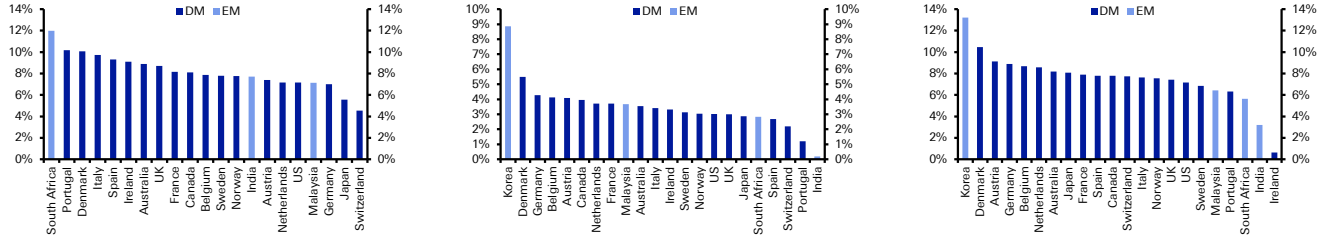
Source: Deutsche Bank, GFD

Figure 97: Last 25 Years Annualised 10 Year Government Bond Returns – Nominal (left), Real (middle), USD (right)



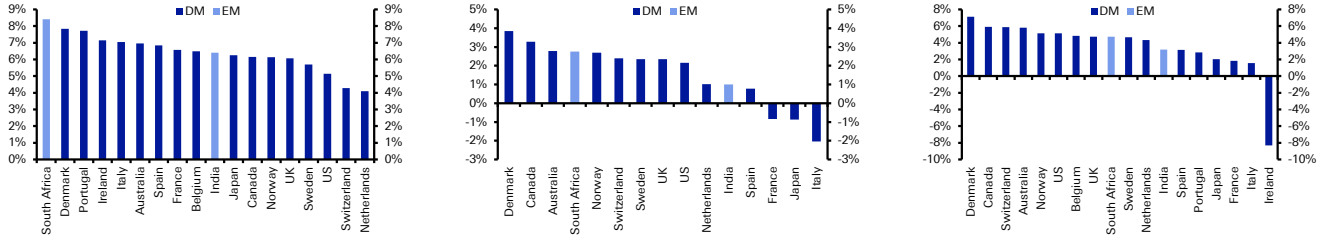
Source: Deutsche Bank, GFD

Figure 98: Last 50 Years Annualised 10 Year Government Bond Returns – Nominal (left), Real (middle), USD (right)



Source: Deutsche Bank, GFD

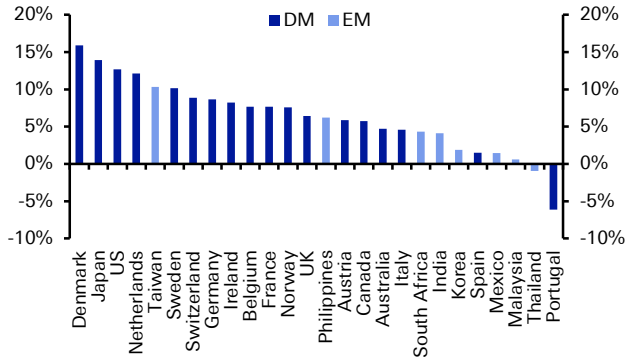
Figure 99: Last 100 Years Annualised 10 Year Government Bond Returns – Nominal (left), Real (middle), USD (right)



Source: Deutsche Bank, GFD

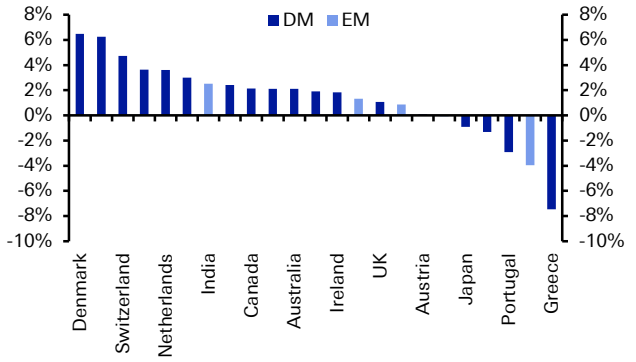
International equity minus bond return charts

Figure 100: Last 5 Yrs Annualised Equity-Bond Return



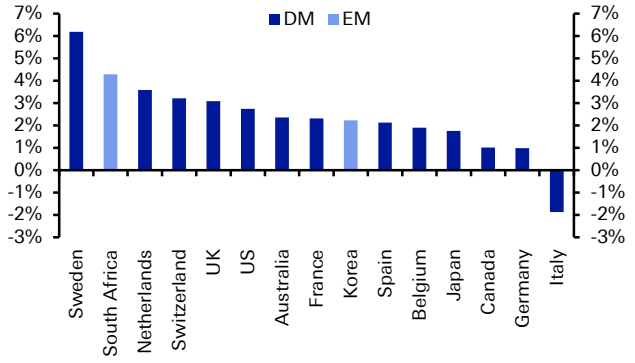
Source: Deutsche Bank, GFD

Figure 101: Last 25 Yrs Annualised Equity-Bond Return



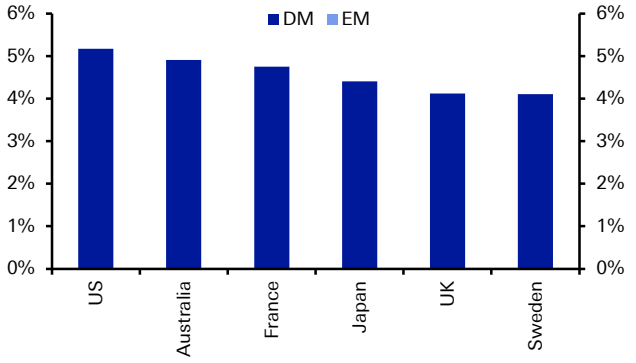
Source: Deutsche Bank, GFD

Figure 102: Last 50 Yrs Annualised Equity-Bond Return



Source: Deutsche Bank, GFD

Figure 103: Last 100 Yrs Annualised Equity-Bond Return



Source: Deutsche Bank, GFD

Appendix 1

Important Disclosures

*Other information available upon request

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