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Long-Term Asset Return Study

An Ever Changing World...

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The maps on the front cover represent every 40 years in Europe from 1000-1800. From 1800-2000 we have chosen selected maps to illustrate some of the more dramatic changes seen over the last 200 years.

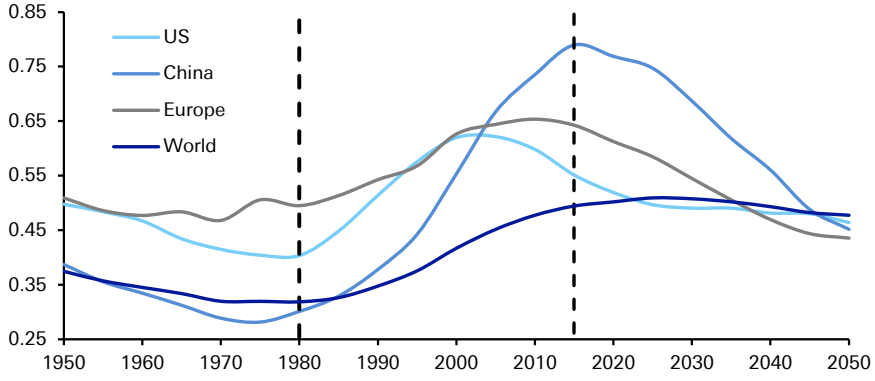
Executive summary

This is our annual long-term study aimed at providing long-term context to today's financial markets. The world is constantly changing over the medium to long-term but for the short-term focused financial markets, extrapolation of the recent past is commonplace. As such the risk is a major under-estimation of the huge changes that happen through secular and longer-term cycles. Indeed change is a big theme of this year's document. We argue that we're about to see a reshaping of the world order that has dictated economics, politics, policy and asset prices from around 1980 to the present day. We also show that Europe has seen constant change (in particular to its internal and external borders) through history and we should therefore be very vigilant to the huge economic and political stresses currently seen in the continent.

With regards to the reshaping of the world order, given that this current cycle has lasted around 35 years, it's possible that the next cycle – and the themes associated with it - will also last many decades. Although economic cycles last a few years, super cycles can last for over a generation. Going forward, extrapolation of the last 35 years could be the most dangerous mistake made by investors, politicians and central bankers.

The genesis of the current economic era arrived towards the very end of the 1970s with China's re-emergence into the global economy, and this was further enhanced a decade later by the collapse of the Iron Curtain (1988-91) and maybe the economic liberalisation of India in 1991 following the IMF bail-out. In combination this has essentially added over a billion cheap workers to the global economy. This has coincided with a general surge in the global workforce population in absolute terms and also relative to the overall population, thus creating a perfect storm and an abundance of workers. Drilling down to more micro details, the most productive, highest earning and highest spending 35-54 year olds were at their smallest portion of the key global economic powerhouses around 1980. They then surged in numbers but have been peaking out and declining from this decade. This will likely reverse a number of the key global themes characteristic of the 1980-present day period.

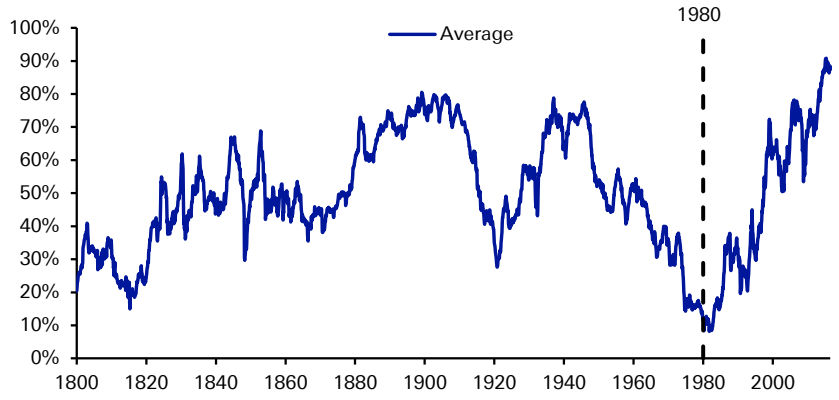
Figure 1: Productivity ratio (35-54yr vs. 0-24yr & >65yr)



Source: Deutsche Bank, UN Population Division

We don't think it's a coincidence that asset prices were historically very depressed in 1980 (see Figure 2) and arguably at all time lows in valuation terms. 35 years later and traditional asset valuations in major DM countries have never been higher due to the themes unique to the 1980-present day period.

Figure 2: Aggregated 15 DM country average bond (nominal yields) and equity percentile valuations (100% = most expensive; 0% = cheapest)



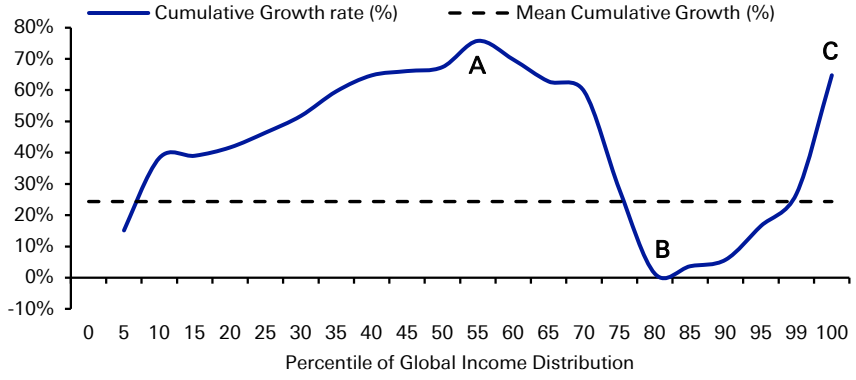
Source: Deutsche Bank, Global Financial Data

Extraordinary central bank buying of assets post the global financial crisis has obviously contributed to high asset prices in recent years but the reasons they have had to intervene also stems from the trends originating around 1980 that will be further discussed in this report.

Another related feature of the post 1980s landscape has been 'globalisation'. Economic activity across the planet has become more integrated as the heavy protectionism that started in the inter-war period and the heavy financial repression/regulation following WWII were swept away. Globalisation has also caused great upheaval in many of the largest developed countries on the planet with many of these themes coming to a head in recent years.

Income inequality has been a big consequence of globalisation, not necessarily at a global scale but within individual countries as the gains have not been evenly distributed. The chart that perhaps reflects this better than any other is the so called 'elephant' graph (Figure 15) constructed by Lakner and Milanovic which has become a popular addition to the academic economic literature in recent times.

Figure 3: Cumulative real income growth by percentile of global income distribution, 1988-2008. 120 countries covering 90-95% of global GDP.



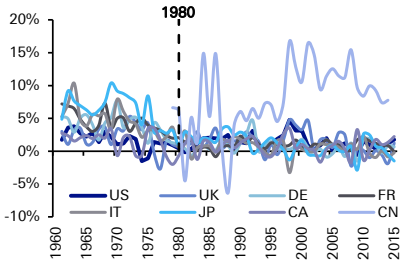
Source: Lakner-Milanovic World Panel Income Distribution (LM-WPID) database as utilized in the paper 'Global Income Distribution: From the Fall of the Berlin Wall to the Great Recession' (Lakner & Milanovic, 2013)

The top global 1% (point C; largely made up of higher income groups in rich DM countries) have seen their incomes grow but by no more than those in the middle of the global income distribution (point A; largely composed of the population in developing countries, particularly China and India). Worse hit have been those around the 80-85th percentile (point B; mostly the bottom half of the income scale in major developed countries) and surrounding areas where virtually no real income growth has been seen over the sample period.

So it appears that these lower income groups in developed countries have been the relative losers in the globalisation era as a consequence of the success of the masses in developing economies and the rich across the world. The mass global integration of developing country labour and a coincidental natural demographic surge in the size of the global work force has likely pushed down the price of labour (especially lower skilled) in the developing world. In addition, migration from the poorer to richer countries has emphasised the downward pressure on this unskilled labour in the developed world. The latter theme has been accentuated by the expansion of the EU and the free movement of labour that is associated with it.

It does feel however that this era and the trends associated with it are close to reversing and creating at best a new trend that will last for several decades, or at worst a more destabilsing political accident.

Figure 4: Real wage growth, (YoY %)



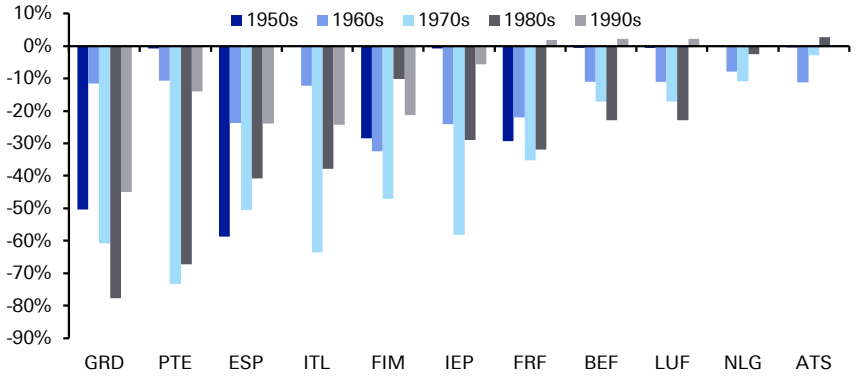
Source: Deutsche Bank, Haver

Demographic changes should ensure a natural reshaping of some of these last 35 year trends over the next few decades with the inflection point being around this point in time. However have we got time for the world to naturally rebalance? The recent rise in support for extreme (and anti establishment/immigration) parties is the most obvious risk to a natural work out. The recent UK 'Brexit' vote is one such act of rebellion from the disenfranchised, but populism is on the rise across the developed world. Whether its globalisation, immigration, inequality, poor economic growth or a combination of these, it's quite clear from this and other anti-establishment movements that the status quo can't last in a democracy without compensating policies: eventually you'll have a reaction.

The reason this rebellion didn't surface before the GFC was that the very same downward pressure on inflation/wages that this era created, alongside other factors (e.g. the Euro lowering borrowing costs and financial market deregulation) allowed for huge increases in debt that helped create a money illusion as wealth grew even if wages didn't in real terms. So the post crisis deleveraging years have now exposed this 35 year era as one that has been challenging for the earning power of the masses in developed countries.

The single currency has perhaps accentuated some of these problems and in this report we use some long-term charts to show that to impose a single currency on countries that have historically been very divergent in their economic performance was always going to be challenging. One example is that virtually every country in the single currency spent the five decades from the 1950s to the start of the Euro devaluing versus Germany (Figure 5).

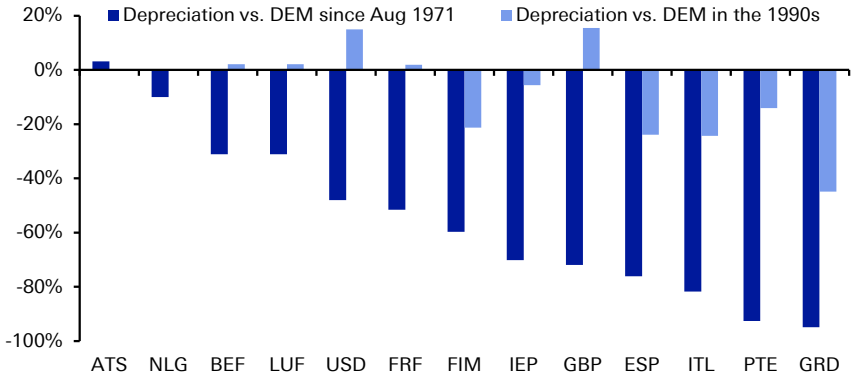
Figure 5: Euro-area currencies vs. German DEM by decade from the 1950s, ordered from most (GRD) to least devaluation (ATS)



Source: Deutsche Bank, Global Financial Data, Bloomberg

The periphery has seen more extreme moves, especially in the years leading up to the Euro when the core countries saw their currency begin to stablise relative to the German Deutsche Mark (DEM). For example, Greece (who joined slightly later in 2001) devalued 95% to the DEM in the 28 years between the end of the Bretton Woods system and the start of the Euro and by around 45% in the 1990s alone.

Figure 6: Depreciation of Eurozone currencies vs. DEM from when Bretton Woods was abandoned (1971) to start of Euro (1999), and during the 1990s



Source: Deutsche Bank, Global Financial Data

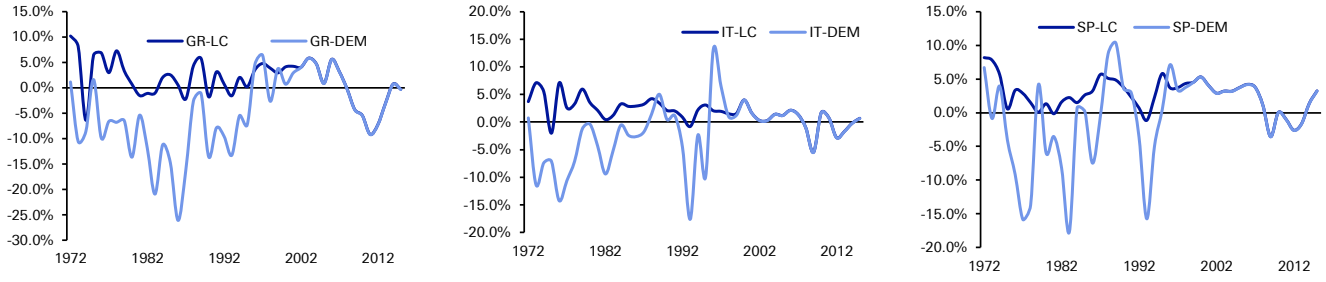
Although Greece saw the most extreme currency weakness against the DEM in this period, it should be noted that Portugal (-93%), Italy (-82%), Spain (-76%) and Ireland (-70%) all saw big devaluations between the end of Bretton Woods and the start of the Euro, with Italy and Spain seeing around 24% devaluation in the decade leading up to the start of the single currency.

So without major structural reforms in the weaker economies, history would suggest that pressures were always going to build within the Euro-area. That it took so long to surface (over a decade) was likely a function of the periphery seeing a huge reduction in borrowing costs and a huge increase in debt across all parts of the economy thus papering over the cracks.

On a similar vein we also look at the growth of Euro-area countries (particularly the weaker ones) in the decades leading up to the introduction of the Euro

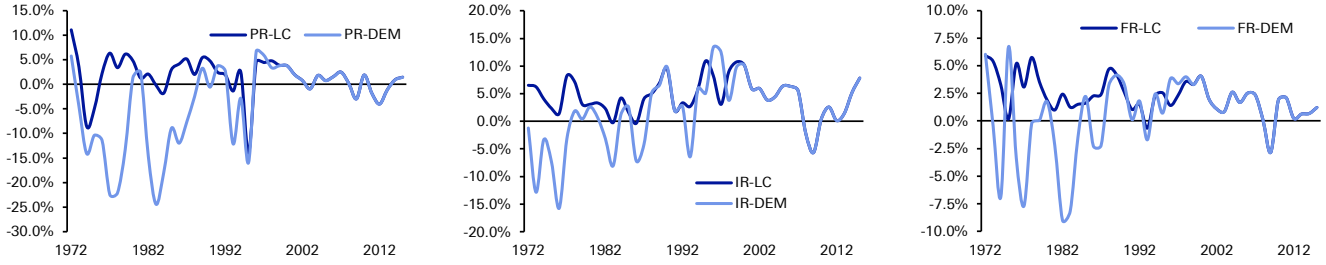
denominated both in local currency and in German (DEM) terms. We show that the weakest half were in a near 30-year economic depression when their growth was denominated in German DEM in the pre-1999 period.

Figure 7: Real GDP Growth, YoY % in Local Currency (LC) and DEM - Greece (left), Italy (center), Spain (right)



Source: Deutsche Bank, Global Financial Data

Figure 8: Real GDP Growth, YoY % in Local Currency (LC) and DEM – Portugal (left), Ireland (center), France (right)



Source: Deutsche Bank, Global Financial Data

We also show that growth rates of these same countries since 1999 have been relatively similar to Germany, and we speculate that without the move to the single currency, the pattern of growth being negative in DEM terms 1971-1999 would have likely continued from 1999-current day in many of the weaker European economies. So in currency adjusted terms, the sizes of many European economies today are still probably notably bigger than they would have been today had the Euro not existed.

For these countries with arguably inflated GDP due to the Euro, this is a double edged sword as it gives these countries higher overall wealth than they would have had but it creates great economic problems clinging on to that artificially higher level of wealth. High unemployment and increasing debt levels are obviously issues. If competitiveness can't be restored by lower wages (a politically difficult measure) then unemployment is likely to be high.

So we think long-term charts can neatly explain Europe's predicament and the risk is that these inherent imbalances and the current policies employed are creating the same level of disenfranchisement for the populations as globalization is. As such a political accident is a major risk for Europe.

The best argument for closer European economic and political integration is undoubtedly that since WWII peace has broken out across the continent after centuries of constant upheaval, bloodshed and constantly changing borders through military aggression. We have shown this via a series of maps – one for every decade since the year 1000. Instructions are included as how to see this as a flick-book in PDF format at the start of that section (Page 34).

We worry that imposing an artificial EU boundary on a continent where the natural evolutionary state is change will build up tensions in a manner similar to tectonic plates – if they shift again in the future it's possible it occurs in a significant manner.

Perhaps economic issues are a very small price to pay for a long period of lasting peace. However was the single currency an overreach by politicians determined to further build on their post WWII successes? If your opinion is that it has economically destabilsed the region to a point where the European project is under threat, then you might argue that it was. Assuming there is no way back from the single currency, it feels like Europe needs to buck the international trend and politically integrate more towards being one sovereign nation and redistribute the gains of both the common market and of globalisation to resist an ever increasing amount of economic hardship at the edges and the rise of populism at the ballot boxes. Without moves in this direction we could soon have a politician elected with a mandate to remove his or her country from the European Union in some form or another. If this country is in the single-currency area it could cause economic, political and diplomatic chaos for years to come.

Investment and economic conclusions 2016-2050 vs. 1980-2015

With demographics deteriorating it seems highly unlikely that the next couple of decades (possibly longer) will see real growth rates returning close to their pre-crisis, pre-leverage era levels. Obviously if there is a sustainable exogenous boost to productivity then a more optimistic scenario (relative to the one below) can be painted. At this stage it is hard to see where such a boost comes from – and even if it does, time is running out for it to prevent economic and political regime change given the existing stresses in the system.

So we are likely stuck with the challenge of how to deal with prolonged low real growth and high (and largely increasing) overall debt levels. Although this will persist we do think that this current era is drawing to a close with a muddle through the least likely option due to various economic, political and social pressure points that have been reached.

We think that these will be the some common themes of the next 35 years.

- Lower real GDP growth
- Higher real wages
- Higher inflation
- Higher nominal GDP for most
- Higher yields
- Negative real returns in bonds
- Lower corporate profits/GDP
- Higher taxes for the wealthy and corporates
- Less international trade
- More controlled migration
- More financial repression
- Equities outpace bonds but lag long-term returns
- Property under performs real wages and inflation
- Lower than average defaults

These are the broad themes but it does feel that for individual countries the outcome is becoming more binary. We either see a long smoother work out where financial repression allows for deleveraging and bond holders take a slow and steady erosion of capital via inflation or an accident happens and default risk is back on the table.

It could be that a combination of these outcomes is seen across different countries but one thing is a near certainty. Government bonds will likely see a negative real return from this starting point over the next few decades. For those who think such a long period of consistently bad performance is unlikely, Figure 9 (taken from our data section at the back) shows annualised real bond returns by decade since 1940 for 19 major DM bond markets with negative return decades shaded.

Figure 9: Real Annualised 10yr Govt. Bond Returns by decade since 1940

	1940 -1949	1950 -1959	1960 -1969	1970 -1979	1980 -1989	1990 -1999	2000 -2009	2010 -2016
Australia	-0.20%	-3.10%	1.70%	-2.90%	3.80%	10.40%	3.50%	6.20%
Austria		1.50%	2.70%	2.00%	4.80%	5.90%	3.90%	3.80%
Belgium	-6.90%	2.20%	1.60%	-0.80%	6.90%	8.20%	3.90%	5.00%
Canada	-1.00%	-0.90%	1.00%	-0.70%	6.80%	8.40%	4.60%	3.60%
Denmark	0.30%	0.60%	-1.40%	0.50%	11.70%	9.00%	4.10%	5.00%
France	-22.40%	-0.80%	0.40%	-2.80%	7.50%	8.70%	4.00%	5.30%
Germany		3.60%	3.40%	3.00%	5.30%	4.50%	4.00%	4.70%
Greece							2.00%	8.90%
Ireland	1.80%	-4.10%	-0.90%	-6.70%	8.80%	8.00%	2.50%	9.30%
Italy	-29.80%	-0.60%	1.30%	-5.60%	6.30%	9.90%	3.40%	5.90%
Japan	-32.70%	3.00%	6.40%	-2.00%	6.70%	6.10%	2.10%	1.90%
Netherlands	-3.00%	-3.40%	-1.90%	0.30%	6.70%	6.20%	3.60%	5.00%
Norway	7.80%	-8.20%	1.30%	-3.50%	3.40%	9.00%	3.40%	3.10%
Portugal					2.40%	4.90%	4.10%	5.80%
Spain	-3.30%	-2.80%	-0.90%	-7.60%	5.90%	7.80%	2.60%	6.70%
Sweden	3.40%	-3.00%	-0.20%	-4.20%	4.40%	8.60%	3.70%	3.80%
Switzerland	-0.40%	1.50%	-0.30%	0.80%	0.60%	3.70%	3.30%	4.30%
UK	0.50%	-0.70%	1.30%	-3.20%	6.60%	6.50%	3.40%	1.90%
US	-2.50%	-1.80%	0.20%	-1.20%	7.30%	4.90%	4.00%	3.80%

Source: Deutsche Bank, Global Financial Data. Shaded areas represent negative real return decades.

It is clear that 1980 marks a big inflection point between two major long-term performance trends for bonds. We think we're close to starting a new one that could last as long as the two previous 35 year cycles, especially if the authorities choose the long-drawn out financial repression solution and especially if we're nearing helicopter money across the globe as we expect.

Data Summary on a page

- In the US, over the last 100 years (since end 1916), where we have data for the widest selection of assets, Equities outperform 10yr and 30yr Governments by +4.6% p.a., Corporates by +3.8% p.a. and T-bills (cash proxy) by +6.3% p.a. (on a nominal basis). It also outperforms Gold by 5.6% p.a., Oil by 7.1% p.a., and US housing (prices only) by 6.1% p.a.
- Indeed in real terms, over the past 100 years, Gold, Oil and Housing have only returned +1.2%, -0.3%, and +0.7% respectively (p.a.). Equities over the same period gave you +6.6%, 10yr Treasuries +2.0% and corporate bonds +2.9% p.a. Over the 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.
- 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. However in real terms 5 out of the 12 decades since 1900 have seen a negative return from 10yr Treasuries, including four successive decades from the 1940s. After this the last 4 decades have seen stunningly positive real returns for govt. bonds though with each decade seeing average annual returns between +3.5%-7.5% above inflation. As we discuss elsewhere in the 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 definitely a survivor bias in fixed income. Although real returns are broadly in the +1.5-2% p.a. bucket for the majority since 1900, there have been government bond markets with negative returns. Italy (-2.3% p.a.), France (-1.1% p.a.) and Japan (-0.8% p.a.) lead the way in developed markets although Germany would be the worse 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.
- For equities, since 1980 (a key period in this report) virtually every country sees a higher return for equities and bonds than their long-term average. A notable exception has been Japanese equities likely due to demographics.
- Since the Euro was introduced in 1999, there is little doubt that real equity returns in Europe have been relatively disappointing. Germany is identical (+3.1% p.a.) to the US (+3.0% p.a.) and UK (+3.1% p.a.) but Greece (-9.1% p.a.), Portugal (-1.8% p.a.), Italy (-0.9% p.a.) have all failed to see positive real total returns (including dividends) since 1999. Spain (+1.0% p.a.) and Ireland (+1.3% p.a.) are also relatively weak. These are worrying statistics for supporters of the single currency.
- Government bond returns since 1999 are strong across the board due to the themes explored in this report 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 once lost, even the very long-term.
- The current decade is the first through history to see the vast majority of nominal DM economies shrink in dollar GDP terms. Prior to this decade any currency weakness was offset by strong local currency growth. This has not been the case over this past decade. So the world is suffering from its worst period of dollar growth on record.

The World at an Inflection Point?

It feels like we're coming towards the end of an economic era. Such eras often come and go in long waves. In relatively modern economic history we saw the first wave of globalisation between around 1860-1914; we then saw the inter-war period which included an ill fated return to the Gold Standard between 1925 and various points in the 1930s depending on when individual countries subsequently left. Then post-WWII, we saw the Bretton Woods system that lasted around a quarter of a century (1945-1971); and this was followed by the high inflation period of the 1970s. You can break up economic history into alternative distinct periods but these broad eras have shaped economies, politics, policies and asset performance. In the modern era it seems that ever since the beginning of the 1980s the global economy has been dominated by globalisation and also a complimentary and massive change in demographics. This has had a profound impact on the global economy at a macro and micro level. It's also had a huge impact on asset performance. We will argue that this era is close to being over and the economic, political, policy and asset trends that accompanied it could soon start to reverse. Extrapolation of the last 35 years will be one of the most dangerous things that policy makers and investors can do going forward. This is likely to make the next 35 years very different from the last 35 years.

It would be easy to say that in 35 years time we'll all be retired (except for the lucky/unlucky younger readers) – so why do we need to worry about our analysis and conclusions today? That may be a fair point but we would argue that many of the trends that have shaped the last 35 years are actually reversing or are in the process of doing so at present. So we could be at an inflection point and therefore we need to understand the new trends that will soon emerge in the global economy and financial markets.

The current economic era perhaps started towards the very end of the 1970s with China's re-emergence into the global economy, which was then further enhanced a decade later by the collapse of the Iron Curtain (1988-91) and maybe the economic liberalisation of India in 1991 post IMF bail-out. Combined this has basically added over a billion cheap workers into the global economy and dramatic changes in the balance of economic power across the world.

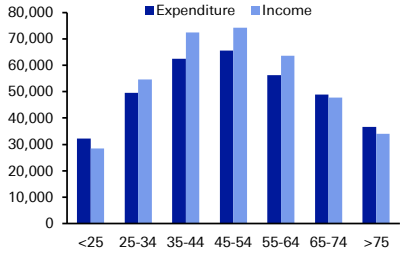
This major liberation of workers due to political integration from previously closed economies coincided with a global demographic surge in those of working age to create a perfect storm and an abundance of workers. This we argue has shaped the entire last 35 years economically and for asset prices. We first look at actual demographics and then analyse its impact historically and likely impact going forward.

Demographics

The UN reports historical population splits in 5 year cohorts and projects them out on the same time line. So a theme of this section is to look at the 1980-2015 period and compare it with the forecasts over the 2015-2050 period to show how demographics have evolved in the period of globalisation and how they are likely to change going forward.

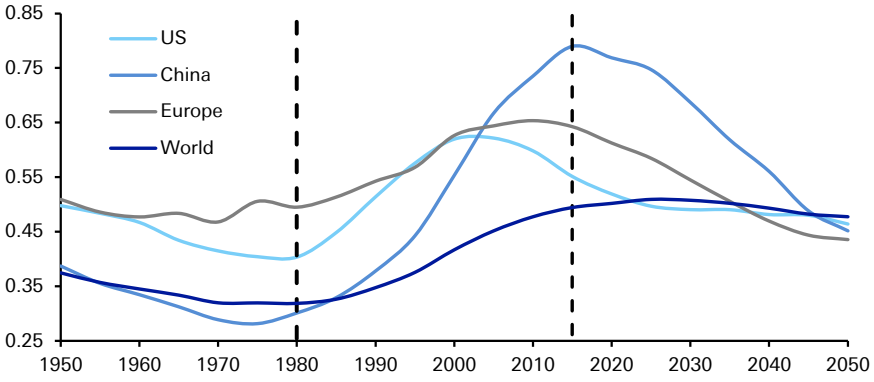
Figure 11 is a good example of why we're interested in this past 35 year period. It shows a 'dependency ratio' – the population aged between 35-54 years old (which is widely recognized to be when workers are at their peak productivity) *divided* by the total population below 24 and above 65 years old (the economically less productive). Figure 10 also looks at the income of expenditure of this key cohort in the US and shows how it peaks around middle age. It could be argued that a rising ratio is economically the most beneficial as high productivity workers are in abundance relative to those the economy and particularly this cohort needs to support. This ratio started to accelerate aggressively for a few decades around 1980 and is now in the process of topping out/reversing in most major economic areas across the globe. This highlights our interest in separating out these last three and half decades for closer inspection, especially relative to the future.

Figure 10: US Consumer income and expenditure by age group (2014)



Source: Deutsche Bank, US Bureau of Labor Statistics

Figure 11: Productivity ratio (35-54yr vs. 0-24yr & >65yr)

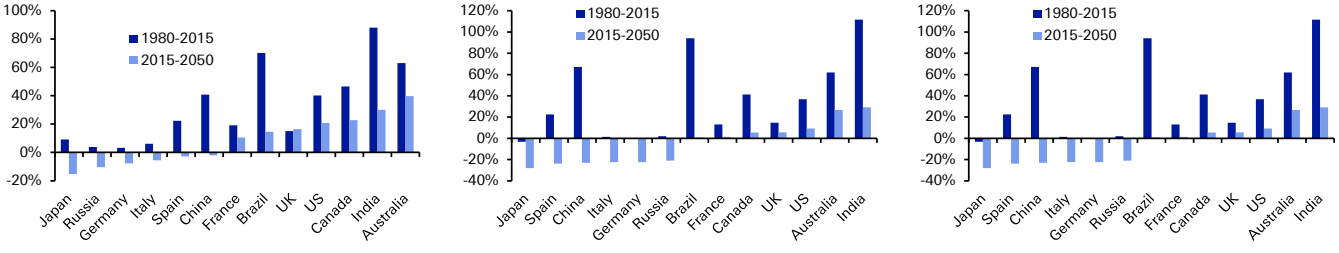


Source: Deutsche Bank, UN Population Division

However this analysis only tells part of the story. It's worth expanding the demographics of the period to hammer home the point.

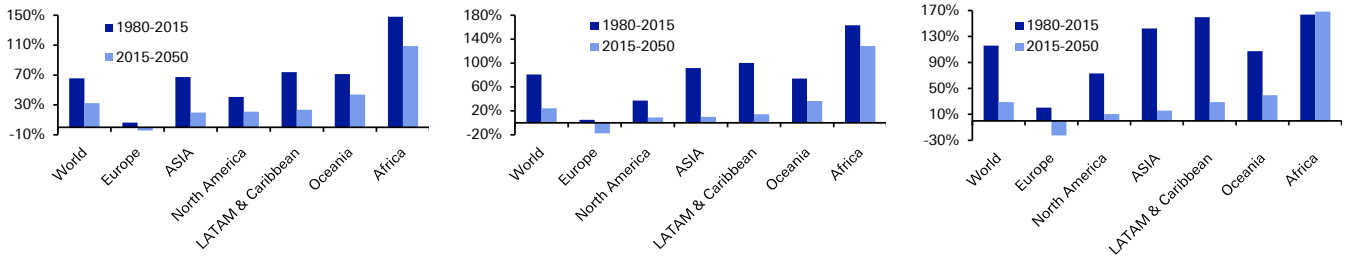
Figure 12 and Figure 13 below show a graph of the two periods (1980-2015 & 2015-2050) exploring the change in total population, the number of people aged between 15-64 years old (a broad proxy for those of a working age), and also those between 35-54 who are widely acknowledged to be the most productive and the highest earners/spenders.

Figure 12: Total population growth by country, all ages (left), 15-64 years (center), 35-54 years (right)



Source: Deutsche Bank, UN Population Division

Figure 13: Total population growth by region, all ages (left), 15-64 years (center), 35-54 years (right)



Source: Deutsche Bank, UN Population Division

As can be seen, the trends in the period 1980-2015 largely reverse between 2015-2050. Every major country and region in the world saw population growth in the former. However the next 35 years sees some of the largest countries in the world depopulate, with this trend most prevalent in Europe. This contributes to Europe seeing a likely -4% drop in inhabitants over the period (vs. +6% cumulative increase over 1980-2015). China also sees a drop in population (-2%) after a +41% growth in the preceding 35 years.

The working age population change is perhaps more appropriate to our analysis given that it is more closely tied to the globalisation and associated 'cheap/excess labour' debate which has shaped the global economy and financial assets since around 1980. In the 1980-2015 period only Japan saw a fall (-3%) in their working age population. However the contrast between this earlier period and 2015-2050 is stark across the board. Europe overall experiences a -18% fall in its working age population between the two 35 year periods with Germany (-22%), Italy (-22%) and Spain (-24%) seeing notable falls within the continent.

Every other region still sees increases but the rate of growth slows markedly over the next 35 years. The most notable decline and most relevant to this chapter is probably the dramatic reversal in China where a 67% increase in the earlier period becomes a -23% decline over the 2015-2050 period. A key driver of a lot of the post 1980s macro themes discussed in this chapter have been China's 'cheap' labour force being integrated into the financial system. To put numbers on it there were 666 million Chinese aged between 15-64 years old in 1980. At the highs the number was 1.127bn in 2010 and a touch lower at 1.113bn in 2015. So the peak was sometime between 2010-2015. By 2050 there will only be 857bn. So nearly half a billion of Chinese 'workers' were added into the global financial system in the 35 years up to 2015, whereas the next 35 years will see this number drop by over 250bn. There is always talk that continued rural to urban migration can counter this; however given the internal mobility seen in recent decades it will be very hard for this to be replicated by enough to offset natural forces.

Elsewhere the inflection points for many major other countries also occur in this current decade; not exactly now but either slightly before 2015 or slightly after. The US still sees the population of 15-64 year olds increase 9% in the next 35 years but this is down from a 37% increase in the prior 35 years. It's also true to say that in the US the period between 2015-2030 sees only a 3mn increase in these 'workers' from around 237mn to 240mn. In 1980 the number was 173mn.

Also worrying for the global economy over the next 35 years, the 'dynamic' or most productive 35-54 year old cohort is really going to shrink relative to the past. Europe will see a 20% growth rate (1980-2015) turn into a -23% decline (2015-2050) with bigger swings in Germany, Italy and Spain. China again is very dramatically changing from 146% growth to a fall of -30%. In numbers terms China saw 178mn in this cohort in 1980 before hitting a peak of 437mn in 2015 and only 306mn likely in 2050.

Again the middle of this decade is an inflection point for many major countries in this key cohort which supports our thesis that we're set for an era change.

Even the US, which has slightly better demographics than Europe and China, sees the growth rate fall from a 72% increase to an 11% increase between the two periods. However there is a fall between 2010 and 2020 within this and 2020's number of 83mn is unchanged from 2000 after increasing from 49mn and 64mn in 1980 and 1990.

Clearly retirement age changes could offset a lot of these issues but most major Governments in a democracy will struggle to raise pension ages by anywhere near enough for it to offset the big natural trends. Adding a year or two to retirement ages over the next few decades will be paying lip service to the scale of the problem.

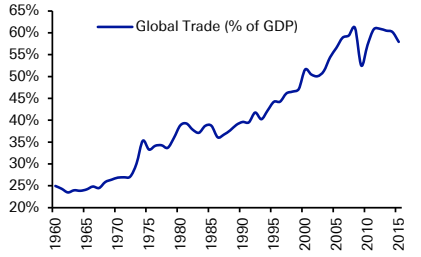
So not only did demographics change dramatically post 1980, so did the economic liberalisation of policies across large parts of the planet thus creating a perfect economic storm. So what were the implications?

Globalisation

One of the features of the post 1980s world has been 'globalisation'. Economic activity across the planet has become more integrated (for reasons discussed above) as the heavy protectionism that started in the inter-war period and the heavy financial repression/regulation that was commonplace post-WWII were swept away. Globalisation has also caused great upheaval in many of the largest developed countries on the planet with many of these themes coming to a head in recent years.

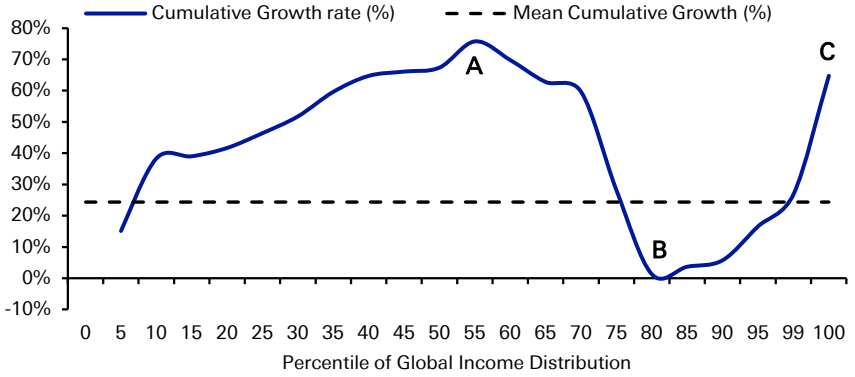
Income inequality has been a big consequence of globalisation, not necessarily at a global scale but within individual countries as the gains have not been evenly distributed. The chart that perhaps reflects this better than any other is the so called 'elephant' graph (Figure 15) which has been a popular addition to the academic economic literature in recent times.

Figure 14: Global Trade as % of GDP



Source: Deutsche Bank, Haver (World Bank)

Figure 15: Cumulative real income growth by percentile of global income distribution, 1988-2008



Source: Lakner-Milanovic World Panel Income Distribution (LM-WPID) database as utilized in the paper 'Global Income Distribution: From the Fall of the Berlin Wall to the Great Recession' (Lakner & Milanovic, 2013)

This graph above complied by Lakner and Milanovic (see footnote in Figure 15) shows real income growth by income distribution across 120 countries (covering 90-95% of global GDP) by percentile in the 20 years between 1998 and 2008.

The results are fascinating as although it's clear that the top global 1% (point C) have seen their incomes grow, they've actually seen less of a relative gain than those in the middle of the global income distribution (point A). Worse hit have been those around the 80-85th percentile (point B) and surrounding areas where virtually no real income growth has been experienced over the sample period. The split of where these groups are based at a global level is very instructive.

According the authors of the study nine out of ten people around the global median (point A) are from Asian countries, mostly from China and India as they have entered the global economy and reshaped their economies over the period. This group may still be poor by developed world standards but the rate of growth has been astonishing in such a short space of time.

The root of a lot of the current extremism in developed world politics (and perhaps Brexit) lies in the fact that 70% of people at point B are from developed countries. Although relatively affluent on a global scale they tend to make up the lower half of the income scale in their own country.

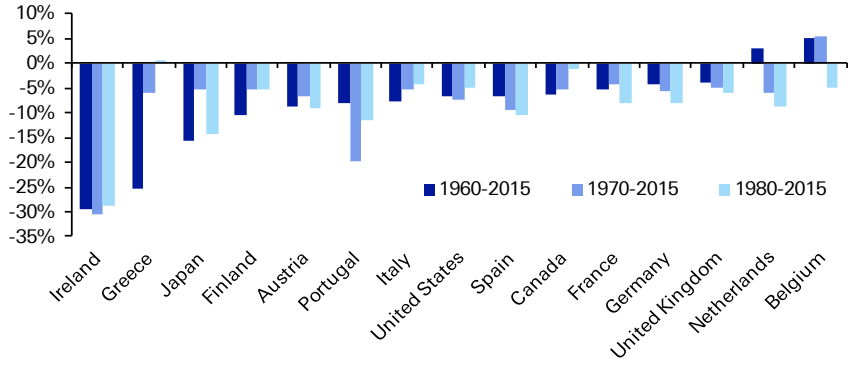
The global top 1% is primarily from the developed world with the US making up half of the group although the rich in countries like China and India are a growing part of this group.

So one has to ask whether the lower half of the income scale in developed countries have been unambiguously the relative losers in the globalisation era as a consequence of the success of the masses in developing economies and the rich across the world. It doesn't automatically follow that they are (correlation as we know does not equal causation) but it's easy to see how you can build a pretty sturdy hypothesis as to such an outcome. A surge in the global integration of developing country labour and a coincidental natural demographic surge in the size of the global labour force have likely pushed down the price of labour (especially lower skilled) in the developing world. In addition migration from the poorer parts of the world to the rich has emphasised the downward pressure on this unskilled labour in the developed world. The latter theme has been accentuated by the expansion of the EU and the free movement of labour that is associated with it.

Perhaps global inequality is a slight red herring as globalisation has definitely benefitted huge parts of the poorest sections of the world even more on a relative scale than it has the top 1% using the above analysis. However the big problem is that globalisation has been increasingly divisive at a national level with big winners and losers within individual country borders.

At a global level there's little doubt that labour's share of GDP has declined over the last few decades. Figure 16 shows this decline for a selection of G20 countries. We can see that a lot of the decline has occurred post 1980 when the current globalisation wave commenced.

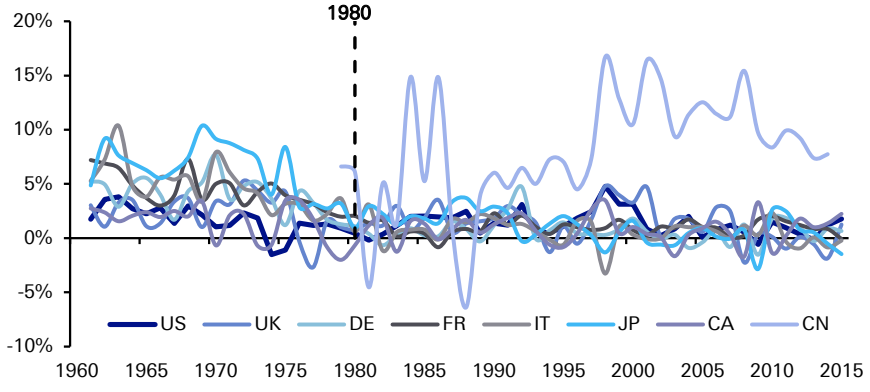
Figure 16: Cumulative change in labour share of GDP (%-pt)



Source: Deutsche Bank, Haver (AMECO)

In addition Figure 17 shows real wage growth (YoY change) over the last few decades for a selection of the largest countries around the world. As can be seen in the two decades we have data for prior to 1980, real wage growth was much higher than the post 1980-period. It's interesting that China's wage growth over the period was much higher which fits with our thesis that the EM countries that integrated into the global economy benefitted most from this period. If we look back at Figure 11 we can see that the our key 35-54 year old cohort fell steadily relative to those under 24 and over 65 years between 1950 and 1980. So the relative 'shortage' of this peak productive labour cohort may have allowed them to see consistent above trend real wage increases before the post-1980 glut reversed this. There was more unionisation of labour in this pre-1980 period but the sheer weight of numbers in the demographics was likely the main driver of wage pressure.

Figure 17: Real wage growth (YoY, %)



Source: Deutsche Bank, Haver

So there's strong evidence that real wage growth has stalled and suffered post 1980. One might wonder why there hasn't been more rebellion from workers against this trend until the recent rise of extremist politics around the globe. Well one argument might be that until the financial crisis, workers suffered from a kind of money illusion by replacing lost real wages with cheaper and cheaper debt (fuelled by cheap labour and thus low inflation) which funded spending and also allowed them to make capital gains from interest rate and debt sensitive assets like property. However post the financial crisis – as debt accumulation has reversed (especially consumer debt) and consumer held assets (e.g. property and equities) in some parts of the world have fallen in

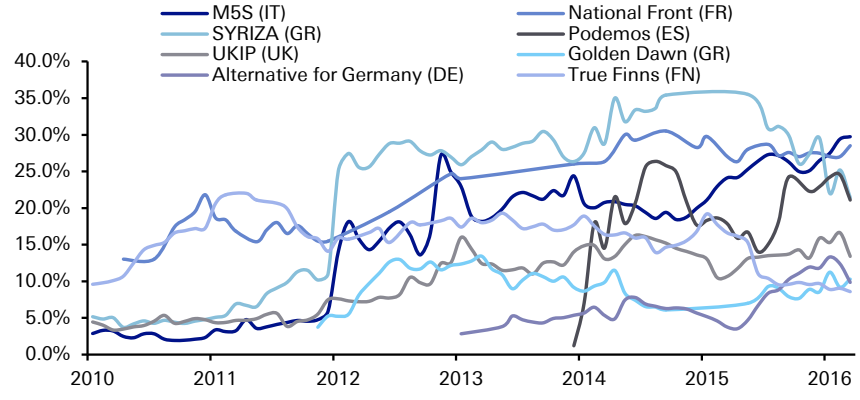
value or have stalled – workers/consumers have finally appreciated their predicament. So it's the post financial crisis world where the rise in anti-establishment parties has started, but the reality is that the trends that shaped this started three decades before.

Are we at an inflection point?

So have we reached breaking point? Are we approaching the end of this era? The most obvious way this could break is through politics, with the recent years of rising support for extreme (and anti establishment/immigration) parties being the most obvious example. In recent weeks the Brexit vote was a classic reaction to the themes discussed so far. Indeed it's worth looking at the voting split in the recent UK's EU referendum based on polls compiled by Lord Ashcroft to get an idea of the disenfranchisement. In terms of socio-economic groups, 57% of ABs (upper/middle class - professional/managers etc.) voted remain as compared to 49% of C1s (lower middle class - supervisory/clerical or junior management/administrative workers), 36% of C2s (skilled working class) and 36% of DEs (Ds - semi & unskilled manual workers; Es - casual/lowest grade worker or state pensioner). So there's no escaping the fact that this is a class struggle. Whether its globalisation, immigration, inequality, poor economic growth or a combination of all of them it's quite clear from this and other anti-establishment movements that the status quo can't last in a democracy without compensating policies. Eventually you'll have a reaction. This is one such major reaction and given that the UK growth rate has been ok of late, it would be strange if pressure didn't continue to build elsewhere where growth has been lower for longer.

In Europe we've seen an across the board rise in political extremism in recent years. Figure 18 shows the rise of anti-establishment parties in Europe and while it's not a straight line increase there is little doubt as to the direction of travel and the increasing number of countries that are experiencing this political movement. Even outside of Europe, the success of Donald Trump's politics has been dictated by similar themes even though the US economy has done relatively better than that of Europe. Without a major policy shift or positive exogenous global growth shock it seems hard to imagine that this developed world trend is going to reverse in the foreseeable future.

Figure 18: Opinion poll and election results of populist parties

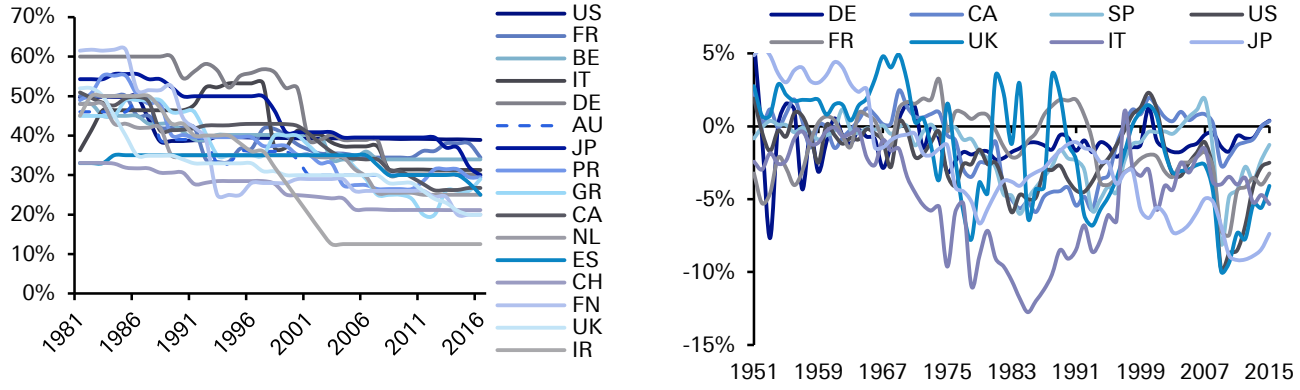


Source: Deutsche Bank

We discussed earlier about how the rise in cheap debt had allowed real wages to stagnate without notable worker rebellion for most of the globalisation period. On a related note, another consequence of this period which now makes it difficult for politicians to respond is the broad increase in government deficits and debt. Austerity policies have been in vogue which arguably accentuates the problem.

Governments have had a deficit problem for many years now and some of it is linked to globalisation. There is an argument that it's much more difficult to collect taxes in a globalised world. In particular the fear being that if you over tax companies they'll take their business and jobs to a lower taxation regime. Indeed one can't help but wonder whether the trends in Figure 19 are correlated: the chart on the left shows headline corporate taxation rates around the world over the last few decades and the one of the right shows budget deficits of major governments over the same period.

Figure 19: Statutory corporate income tax rates (left) and government budget deficits (right)



Source: Deutsche Bank, Global Financial Data, OECD, Haver

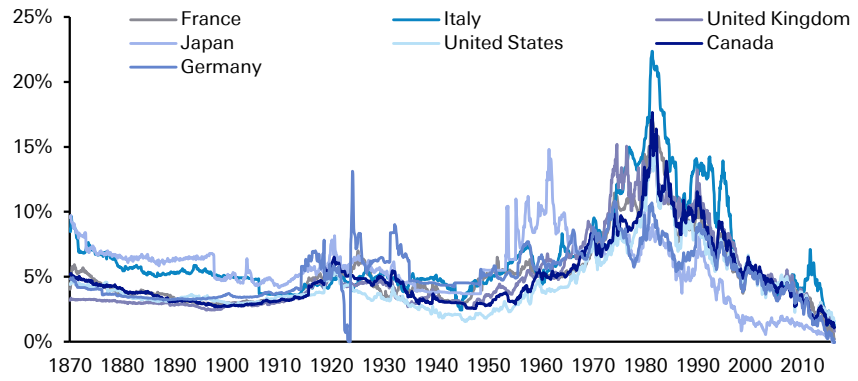
Has globalisation created a corporate arms race that's left tax revenues structurally lower and deficits structurally higher? Surely this can't go on indefinitely but how are governments able to reverse it? Immediately after the Brexit vote there was even some suggestion that the UK could lower the rate of corporate taxation to encourage businesses to stay/set up in the country.

On the other hand the Apple/Ireland tax case that broke just before we went to print is perhaps evidence that Governments (the EC in this case) are starting to investigate ways of taxing corporates more aggressively. At a global level it could be that momentum is shifting in this direction.

Monetary policy alone out of bullets

Another signal that this era is running out of road is the exhaustion of monetary policy to a point where further loosening not only results in diminishing returns but also genuine damage to the economy. Figure 20 first shows the convergence of 10 year yields towards and in some cases through zero.

Figure 20: Long term government bond yields (G7)

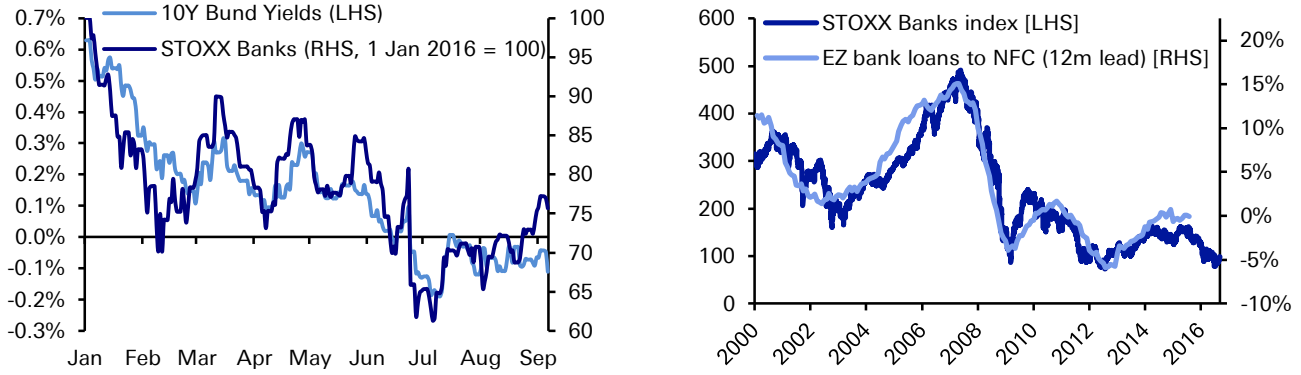


Source: Deutsche Bank, Global Financial Data

As we hit the zero bound for bonds and base rates and go negative for many countries, it does seem that there is increasing market rebellion. In 2016 the BoJ rate cut into negative territory in January and Draghi's supposed 'bazooka' back in March both failed to excite equity investors after similar policy changes in previous years led to huge gains.

Of more serious consequence seems to be what lower yields are doing to the performance of bank shares globally (but especially in Europe) and the effects that this might have for lending behavior. Figure 21 shows these relationships and it's worrying that the right hand chart shows that (if the correlation is to be believed) falling bank equity prices in 2016 might bring about lower bank lending to the economy in 2017. So will policy makers soon be forced into a change of direction after years of looser monetary policy being the sole weapon?

Figure 21: 10Y Bund yields vs. STOXX Banks index YTD (left) and STOXX Banks index vs. Eurozone bank lending (right)



Source: Deutsche Bank, Bloomberg

So how does this all resolve itself?

It could be that if we can muddle through the next few years (unlikely in our view), the natural sweeping forces of demographics could reverse some of the major inequality and low wage problems the world faces. This is likely to happen anyway for all the reasons discussed above. The huge influx of people into the global labour force over the last 35 years has been unique and won't be close to being repeated this century – if indeed ever! There won't be anything close to another China in any sensible investment horizon and indeed in our lifetimes.

However we probably don't have time for this trend to reverse naturally. The stresses it has caused politically are starting to result in higher and higher probabilities of a dramatic social and political response.

In our opinion we're getting closer to a binary outcome for the global economy and financial markets. It seems the status quo can't hold for much longer. Monetary policy can't be used as the predominant policy tool to the exclusion of the alternatives. Inequality surely can't continue much further without a political backlash. Globalisation and perhaps free movement/immigration can't continue in its current form without a similar such social/political response. Brexit has perhaps been a landmark event signaling that politics will force a more abrupt change. We have a number of elections/referendums over the next 18 months that will be interesting to watch on this front. Even if they don't signal an immediate change in politics, the trends are likely to be in the direction of change. Before YE 2016 we have the Italian referendum on constitutional reform which if rejected could lead to an early general election in Italy with the anti-EU M5S party likely to be a major force. The US presidential election in November provides an excellent opportunity for those disenfranchised to express their view with Donald Trump as the electoral magnet for these people. Even if he loses, it has been an incredible story. Then in 2017 we have the French and German elections where in the former the National Front party will likely make major strides. In Germany Merkel will still be the overwhelming favourite if she stands but the success of the AfD will be closely watched. If by then Italy hasn't had a general election, it will only be a matter of months before they will be naturally going to the polls.

Having said all this, we still might need the business cycle to accelerate policy or political change. Without crisis incentives, politicians and central bankers are likely to stick to current policies which arguably continue to cement the status quo. Outside of huge political upheaval, we'll likely need a recession to start on a different path. We won't dwell on our long standing view that 2017, or at latest 2018, will mark the start of the next global recession, but this could also be a catalyst for longer-term change.

In the next recession it's going to be hard to use monetary policy effectively as we're already at or close to the zero bound and it's been obvious in 2016 that cuts into negative territory and negative bond yields can be counterproductive by hitting bank profitability and seriously impacting their ability to transmit loose monetary policy into the wider economy. Thus ever looser monetary policy on its own is unlikely to be a serious option.

It seems that with little desire to see a creative destruction purge of the over indebtedness, it feels inevitable that fiscal policy will have to be used. Given that government debt is already at levels where sovereign solvency has been questioned in the past, it is also inevitable that money printing will be needed to help finance fiscal expansion. At that point we're in the territory of helicopter money - a topic we explored at length as the likely next major policy move in our 2013 long-term study entitled “A Nominal Problem”.

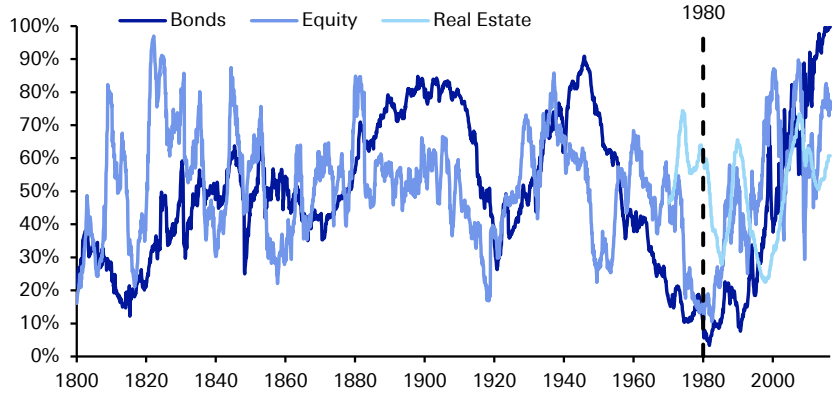
Investment conclusions 2016-2050

What has the post 1980 era looked like?

We've seen earlier how real wages have increasingly tended towards stagnation over this post 1980 period and also how labour as a share of GDP has declined over this timeframe. We’ve also shown how the working age population exploded. Now we turn to analyse how asset prices and the economy have performed and the related future implications.

A common theme of this series of long-term studies published over the last decade is that we've been in a period of above average returns over the last few decades. Indeed in Figure 22 we update the analysis we compiled last year that aggregated equity, bond and house price valuations across 15 developed market countries through time in terms of percentiles relative to history. This updates work from 2015's study "Scaling The Peaks". Please see the methodology in Figure 70 at the end of the document (Page 85) for how we calculate this or see last year's study.

Figure 22: Aggregated 15 DM country average bond (nominal yields), equity & housing percentile valuations (100% = most expensive; 0% = cheapest)

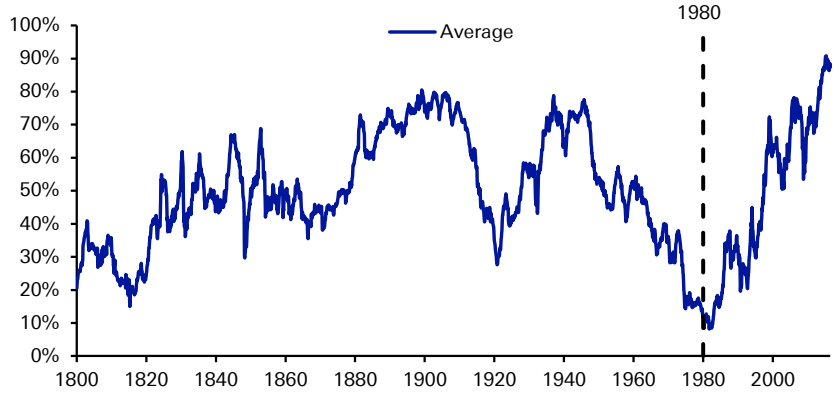


Source: Deutsche Bank, Global Financial Data

In aggregate, valuations across these three asset classes across 15 DM countries have moved from being near the bottom of their 215 year range at around our key 1980 starting point to being pretty much at record high valuations now.

For traditional asset prices it seems that the globalisation era was a boon. Our housing data doesn't get integrated until 1970s so Figure 23 then shows the same analysis aggregated for equity and bond markets only in those same countries. Not all the data starts at 1800 but we have substantial history for most of the countries (especially for bonds).

Figure 23: Aggregated 15 DM country average bond (nominal yields) and equity percentile valuations (100% = most expensive; 0% = cheapest)



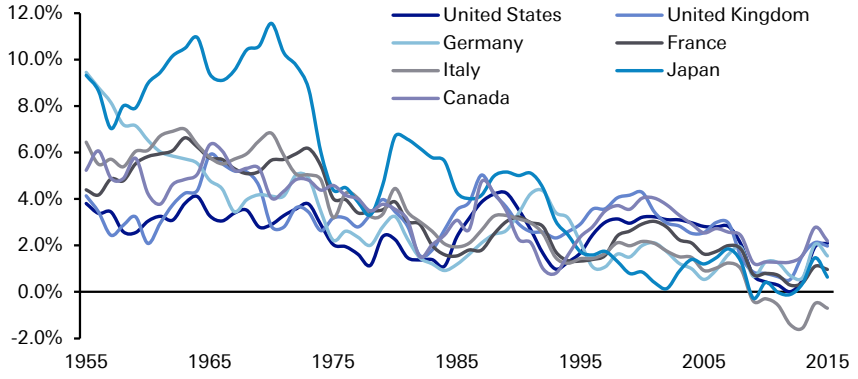
Source: Deutsche Bank, Global Financial Data

For the combined equity and bond valuation analysis the all time low and high fits even more perfectly with our thesis regarding trends over the 1980-present day period.

So there is further strong evidence to suggest that the post 1980- era has been a remarkable one for asset prices. In the data section at the back, we add a column to Figure 48-Figure 53 which show asset returns since the start of 1980 to provide context of this period relative to long-term history. It generally shows a notable above average period of returns. Unusually for a period where returns were so high, equities saw a much smaller level of out-performance relative to bonds than through longer term history. This illustrates amazing downward pressure on prices seen in this period due to globalisation and demographics with fixed income seeing stunning returns in the context of history.

However it's not been a great period for DM growth which has progressively slowed. Figure 24 shows real GDP growth across G7 countries.

Figure 24: Real GDP growth rate (YoY%, 5yr moving average)

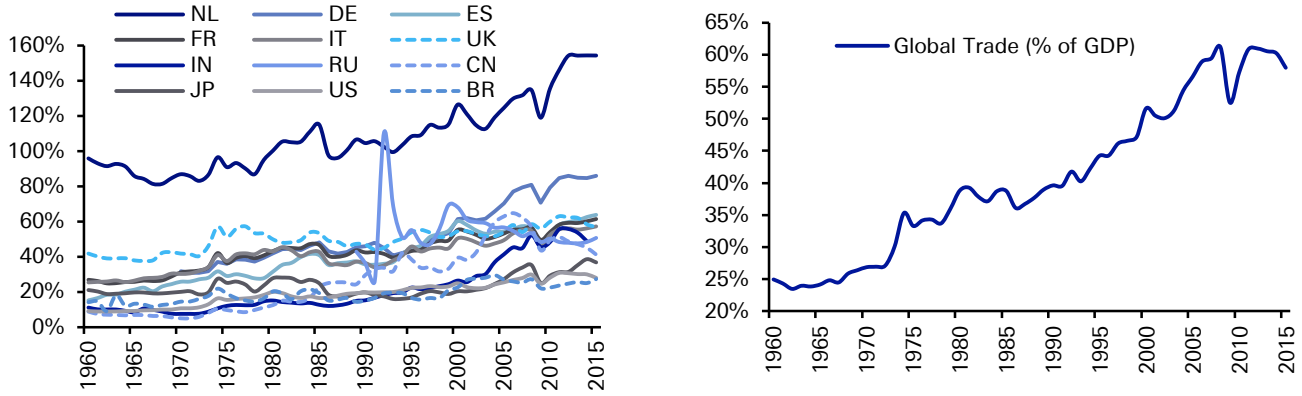


Source: Deutsche Bank, Global Financial Data

Maybe it could be argued that growth only fell away substantially post crisis however this could also be countered by the fact that high leverage which has been associated with the post 1980- period artificially boosted growth in the earlier period. So maybe we're now catching down to the natural trend rate of growth that should have been in place many years earlier. Again in the data section at the back, we introduce a new section looking at GDP (real and nominal) over the same periods (Figure 54-Figure 57) as the asset price returns. We again include a column starting in 1980 to provide context of this period relative to long-term history. Growth has clearly been nowhere near as impressive as asset prices over this period, particularly in the developed world. This is one of the main reasons why our equity valuation metrics (Figure 22-Figure 23) are so high relative to history: the metric uses nominal GDP as the denominator. Thus it represents a historic P/GDP ratio where the P has climbed much more than the GDP element over the last 35 years.

Another trend of the post 1980 era has been higher international trade. Figure 25 shows the steady increase of the sum of imports and exports as a % of GDP over the last 3-4 decades notwithstanding the leveling off post crisis. This surge however hasn't actually helped developed market growth over the period (relative to the past) which is in contrast to earlier globalisation periods through history.

Figure 25: Trade (imports + exports) at % of total GDP, by country (left) and world (right)



Source: Deutsche Bank, Haver

Given increasing economic and political tensions, will there be increased protectionism going forward? Will countries first look to protect their own perceived self-interests over that of fully embracing trade? It won't occur overnight if it does but the leveling-off seen post GFC is perhaps evidence that this era is coming to an end.

Investment and economic conclusions

With demographics deteriorating it seems highly unlikely that the next couple of decades (possibly longer) will see real growth rates returning close to their pre-crisis, pre-leverage era levels. Obviously if there is a sustainable exogenous boost to productivity then a more optimistic scenario to the one below can be painted. At this stage it is hard to see where this comes from and even if it does, time is running out for it to prevent economic and political regime change given the stresses in the system.

So we are likely stuck with the challenge of how to deal with prolonged low real growth and high (and largely increasing) overall debt levels. Although this will persist we do think that this current era is drawing to a close, with a muddle through tough due to various economic, political and social pressure points now reached.

Below we'll paint two brief alternative scenarios as to how these issues resolve themselves in the next era. However there are some common themes that will likely occur in both paths that are worth first highlighting.

Low real GDP growth: As discussed above, demographics lock this in without substantial changes to retirement ages or an exogenous productivity shock. Real GDP growth may start to pick up once obvious progress has been made on a clear sustainable deleveraging path but demographics should cap it below pre crisis levels.

Higher real wages: As the huge excess working age population surge reverses we should see the labour share of GDP increase, resulting in higher real wages.

Higher inflation: This assumes lower inflation has in large part been due to a surge in global workers post 1980 which led to low real wage growth. A reversal should lead to higher overall inflation. This will be reinforced if helicopter money is the next major policy regime we enter. Governments increasing minimum wages and/or introducing UBI (universal basic income) schemes will accentuate the move.

Higher nominal GDP for most: Mostly by virtue of inflation (higher wages and helicopter money), rather than higher real GDP.

Higher yields: Even with helicopter money, central banks will still be forced to buy bonds but it will be very difficult to see yields staying at multi-century lows if nominal activity/inflation increases.

Negative real returns in bonds: An almost certain medium to long term likelihood from this starting point. With debt levels this high and yields so low, investors will either see soft defaults (inflation) or hard defaults (non-payment of part of principal)

Lower corporate profits/GDP: Largely driven by higher wages and perhaps higher taxation.

Higher taxes for the wealthy and corporates: The DM winners from globalisation have been the most wealthy and corporates. Although companies and individuals can move across jurisdictions it will be difficult to escape the populist drive to redistribute wealth through the economy. Even if populist governments fail to get elected, mainstream parties are likely to preempt the move to protect their political chances. Maybe higher corporate taxation will be the most difficult to implement immediately and may be a later development as more capital and trade controls are established.

Less international trade: Figure 25 showed that global trade has been climbing as a % of GDP for several decades. Going forward it is likely that there is a decline in trade as a % of GDP.

More controlled migration: Populism will likely lead to more anti-immigration policies as voters demand economic protection.

More financial repression: The unrestricted flow of capital across borders and towards whatever asset class makes sense on a relative value basis will likely continue to be curtailed over time. Governments will want to make sure enough capital is directed to where it's needed domestically (e.g. government bonds).

Equities outpace bonds but lag long-term returns: Since 1980 equity returns have outpaced their long-term returns but they've lagged their normal level of out-performance relative to bonds. In the new era they are likely to outperform bonds at a rate more in line with their long-term averages (possibly more) but are likely to lag their long-term real returns as valuations are relatively high while real GDP and earnings growth is likely to be low. Furthermore if profits fall as a % of GDP then this will reinforce the sub long-term performance trend. Inflation levels will dictate nominal returns but remember the initial move to higher inflation often brings lower PEs first.

Property under performs real wages and inflation: Clearly global property markets have huge regional variations but a theme of the post 1980 era has generally been one of property gains outstripping earnings and inflation as borrowing costs plummet. It's hard to see a prolonged nominal fall in prices as it would be damaging to consumers and with it the voters that politicians require. If real wages and inflation can increase and borrowing costs rise less slowly than activity then nominal prices can be stable even if real prices fall. In countries like the UK where there has been a huge house building deficit it will be interesting to see if helicopter money is used to reverse years of restrictive planning regulations and finance a building program. This would help the economy but ensure property price rises are capped.

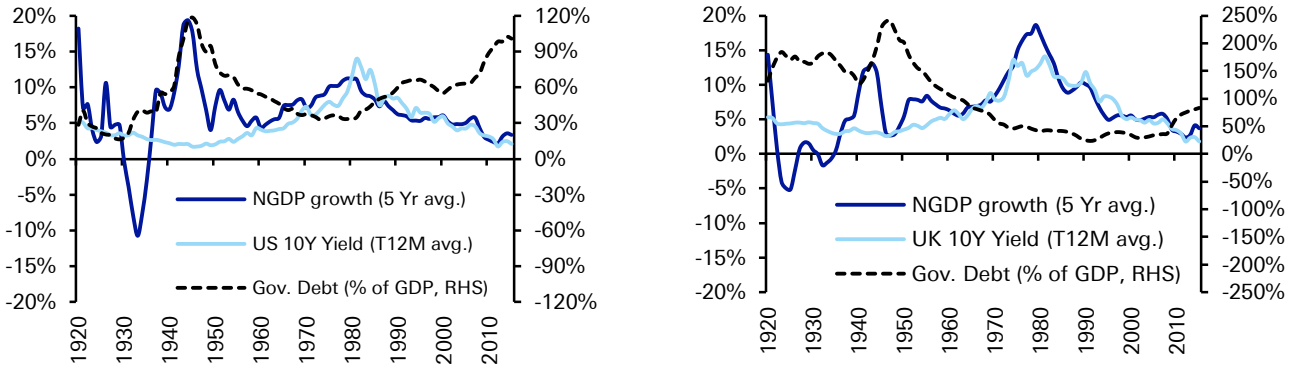
Lower than average defaults: In this (likely) era of negative real yields, a resistance to allow defaults to erode the debt burden, and a continuation of excess artificial demand for fixed income, it is unlikely that corporate bond default rates will be above their long-term average. Obviously there can still be recessionary spikes but overall levels will be lower than what the economic environment suggests it should be.

So these are the broad themes but it does feel that for individual countries the outcome is becoming more binary. Below we'll paint two broad scenarios as to the choices that might be made.

Scenario 1 – The best case

Put bluntly the best realistic scenario for financial stability in the new era is that bond holders around the world see a slow real adjusted haircut over several years, probably over at least a couple of decades. The best example of this through history was the post WWII period where government debt was at similar levels to that currently seen. Over the next 35 years this debt was successfully eroded by a long period where nominal GDP was notably above bond yields. So bond holders took a large real haircut. Figure 26 shows Government Debt/GDP in the US and UK over the last century with 10 year yields and nominal GDP.

Figure 26: Nominal GDP growth, Govt. Debt (% of GDP) and nominal yields for US (left) and UK (right)



Source: Deutsche Bank, Global Financial Data, Haver

Figure 27 then shows the real returns of a selection of DM bond markets in the eight decades between 1940-present.

The four decades leading up to 1980 saw very bad overall real returns in fixed income. We've shaded the decades with a negative real return and the main point to make is that returns were consistently bad for 40 years spread across the whole period and they've been remarkably high every decade since.

These hugely negative returns occurred largely without defaults and were terrible for investors but they obviously helped reset the financial system which was very over-levered. For such an outcome to have been achieved we needed financial repression and perhaps a reversal of the globalisation trends that had built up before WWI. There were substantial restrictions on the global flow of capital that allowed money to be trapped within countries thus allowing them to direct investments towards domestic policy issues such as financing the huge debt burden.

Such a scenario might seem alien to us in 2016 but it seems invariable that capital restrictions in some form or another will be a feature under this scenario. In many ways this has already happened as financial regulation has

encouraged banks, insurance companies and pension funds to buy domestic bonds for non-relative value reasons. This will surely have to continue. Maybe it will be more difficult in today's integrated world to limit international capital flows in the same ways as after WWII, so perhaps the cushion will come from a long period ahead of money printing and bond purchasing to ensure that there is no run on debt markets given the likely negative real returns.

Figure 27: Real Annualised DM Bond Market Returns by decade since 1940

	1940 -1949	1950 -1959	1960 -1969	1970 -1979	1980 -1989	1990 -1999	2000 -2009	2010 -2016
Australia	-0.20%	-3.10%	1.70%	-2.90%	3.80%	10.40%	3.50%	6.20%
Austria		1.50%	2.70%	2.00%	4.80%	5.90%	3.90%	3.80%
Belgium	-6.90%	2.20%	1.60%	-0.80%	6.90%	8.20%	3.90%	5.00%
Canada	-1.00%	-0.90%	1.00%	-0.70%	6.80%	8.40%	4.60%	3.60%
Denmark	0.30%	0.60%	-1.40%	0.50%	11.70%	9.00%	4.10%	5.00%
France	-22.40%	-0.80%	0.40%	-2.80%	7.50%	8.70%	4.00%	5.30%
Germany		3.60%	3.40%	3.00%	5.30%	4.50%	4.00%	4.70%
Greece							2.00%	8.90%
Ireland	1.80%	-4.10%	-0.90%	-6.70%	8.80%	8.00%	2.50%	9.30%
Italy	-29.80%	-0.60%	1.30%	-5.60%	6.30%	9.90%	3.40%	5.90%
Japan	-32.70%	3.00%	6.40%	-2.00%	6.70%	6.10%	2.10%	1.90%
Netherlands	-3.00%	-3.40%	-1.90%	0.30%	6.70%	6.20%	3.60%	5.00%
Norway	7.80%	-8.20%	1.30%	-3.50%	3.40%	9.00%	3.40%	3.10%
Portugal					2.40%	4.90%	4.10%	5.80%
Spain	-3.30%	-2.80%	-0.90%	-7.60%	5.90%	7.80%	2.60%	6.70%
Sweden	3.40%	-3.00%	-0.20%	-4.20%	4.40%	8.60%	3.70%	3.80%
Switzerland	-0.40%	1.50%	-0.30%	0.80%	0.60%	3.70%	3.30%	4.30%
UK	0.50%	-0.70%	1.30%	-3.20%	6.60%	6.50%	3.40%	1.90%
US	-2.50%	-1.80%	0.20%	-1.20%	7.30%	4.90%	4.00%	3.80%

Source: Deutsche Bank, Global Financial Data

Scenario 2 – The hard break

Rather than an artificial reflation and slow successful non-systemic deleveraging, there is a genuine risk of a more binary outcome where a major country (countries) see(s) a hard default on its debt taking a lot of other debt with it domestically and possibly internationally. This is probably most likely to happen via politics – especially in Europe if a country decides to leave the single currency.

Under this scenario, non-core government bond markets could see huge losses as the central bank backstop bid is removed.

Government bonds lose under both scenarios but clearly scenario 2 would be very negative for economies that went through it. As Figure 32 and Figure 33 will show in the next section a number of the weaker Euro Area countries have economies that are larger than they would be if their size wasn't 'artificially' inflated by being denominated in Euros. As such the natural non-Euro state would be a smaller economy. Equity markets would initially fall but as Figure 40 shows equity markets perhaps price the anomalies better and may eventually benefit from the countries being more internationally competitive (due to a weaker currency), especially those who have high overseas earnings.

A challenging few decades likely awaits us.

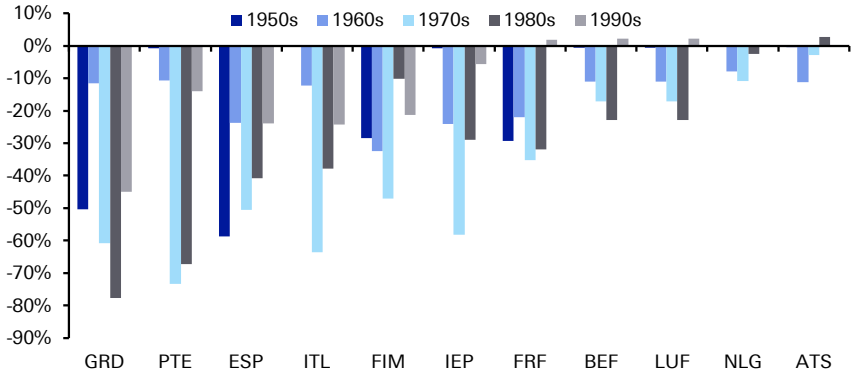
The problem with Europe in long-term charts

In this year's study we wanted to use long-term charts to try to help highlight the major problems with integrating Europe's economies into a single currency area. With the UK voting out of the EU this summer, Europe is going to continue to be under the spotlight in terms of survivability in its current form.

Devaluation to Germany the historic norm

One of the major problems in the pre single currency days was that the weaker European countries were serial 'devaluers'. Figure 28 shows the level of depreciation / appreciation of Euro denominated countries against the German DEM in each decade since the 1950s. Obviously since 1999 all the Euro-area currencies have morphed into the Euro but the multi-decade trend prior to this is quite stunning.

Figure 28: Euro-area currencies vs. German DEM by decade from the 1950s, ordered from most (GRD) to least devaluation (ATS)

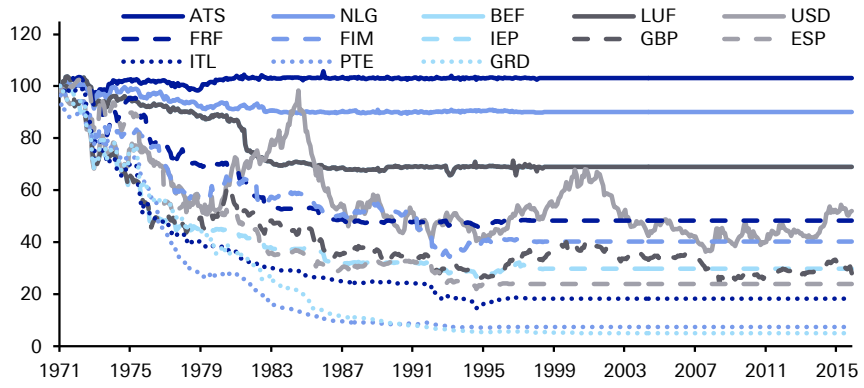


Source: Deutsche Bank, Global Financial Data, Bloomberg

Pretty much every Euro-area country in every decade between the 1950s and 1990s devalued consistently against the German DEM. So without a change in economic direction one would have to say that Germany joined the single currency aligned to many countries that had a natural bias to devalue against the DEM.

This trend is seen in a little more detail in Figure 29 and Figure 30. Figure 29 shows the path of the single currency countries' relative to the DEM post the suspension of the Bretton Woods system in August 1971. Obviously post 1999, the EU currencies become aligned. We've also included the US and the UK for comparison. The key is ordered by size of cumulative devaluation from least (Austria) to most (Greece).

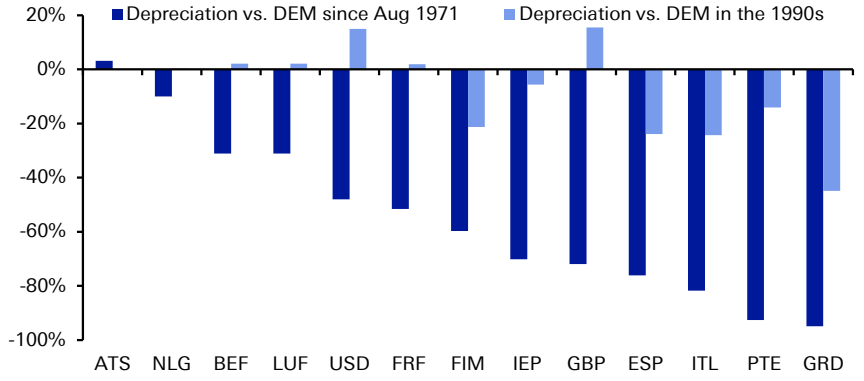
Figure 29: Eurozone currencies vs. DEM since August 1971 (end of the Gold Standard), rebased as Aug 1971 = 100



Source: Deutsche Bank, Global Financial Data, Bloomberg

There were some stunning levels of devaluation in the 28 years between the end of the Bretton Woods system and the start of the Euro. Greece (who joined slightly later in 2001) devalued 95% to the DEM in just under three decades and as Figure 30 showed by around 45% alone in the 1990s just before the Euro came into being.

Figure 30: Depreciation of Eurozone currencies vs. DEM since the Gold Standard was abandoned and during the 1990s

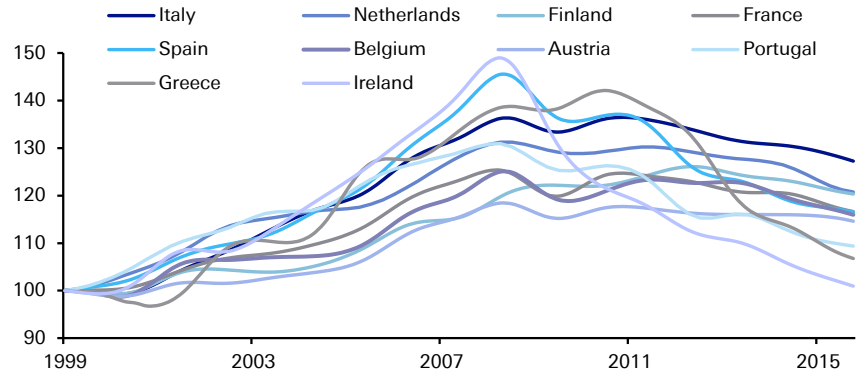


Source: Deutsche Bank, Global Financial Data, Bloomberg

Although Greece saw the most extreme currency weakness against the DEM in this period, it should be noted that Portugal (-93%), Italy (-82%), Spain (-76%) and Ireland (-70%) all saw big devaluations between the end of Bretton Woods and the start of the Euro, with Italy and Spain seeing around -24% devaluation in the decade leading up to the start of the single currency.

The above analysis would be meaningless going forward if the single currency member countries had worked hard to converge competitiveness once the Euro started. However the evidence from Figure 31 suggests that this has not been the case. It shows the real effective exchange rate of Euro member countries vs. Germany since 1999.

Figure 31: Real effective exchange rate, relative to Germany (rebased to Q1 1999 level = 100), ordered from most appreciated vs. Germany (Italy) to least (Ireland)



Source: Deutsche Bank, Haver

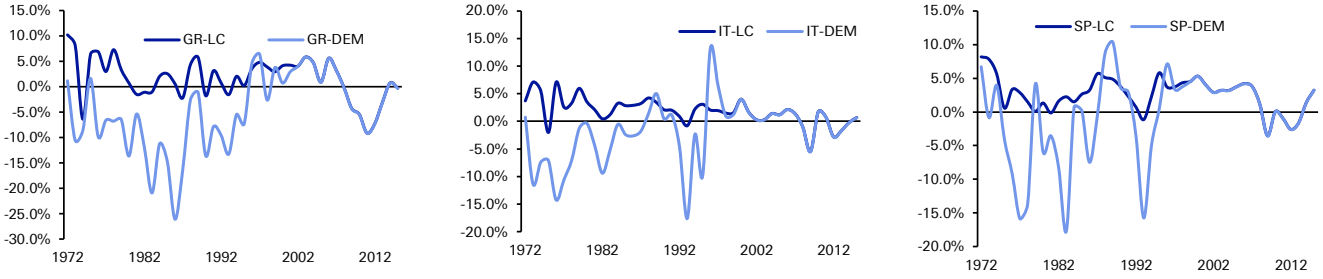
Given the general loss of competitiveness relative to Germany over the Euro's existence, it's not a surprise to see stresses continuing to mount within Europe. Although some countries (e.g. Ireland) have made great strides to improve their competitiveness since the financial crisis, most other countries have only seen minor improvements relative to Germany.

So if countries are unable or unwilling to adjust their competitiveness, the stresses have to come out elsewhere and it's fascinating to look at growth and unemployment before and after the single currency started in a selection of countries.

Growth - always negative for the weakest in pre-Euro DEM adjusted terms.

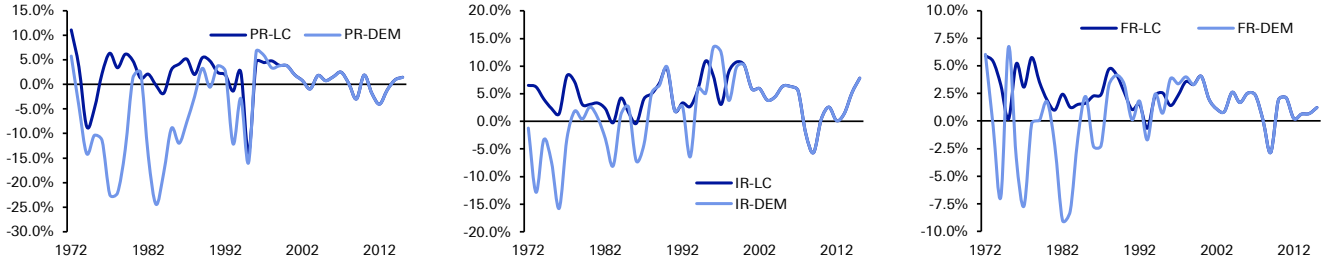
We thought it would be interesting to look at real GDP growth in a selection of Euro-Area countries denominated in German DEM as well as their domestic currency through history. The reason for this being that the DEM is effectively the currency that they pegged their currency to in the Euro era. Figure 32 and Figure 33 show real GDP growth (denominated in local currency and German DMs) for a selection of EU countries that devalued most relative to Germany post the collapse of the Bretton Wood's system in the early 1970s.

Figure 32: Real GDP Growth, YoY % in Local Currency (LC) and DEM - Greece (left), Italy (center), Spain (right)



Source: Deutsche Bank, Global Financial Data

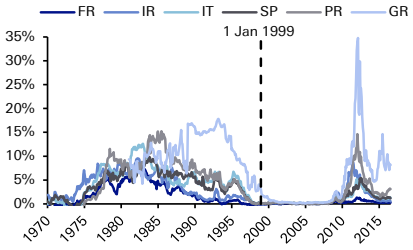
Figure 33: Real GDP Growth, YoY % in Local Currency (LC) and DEM – Portugal (left), Ireland (center), France (right)



Source: Deutsche Bank, Global Financial Data

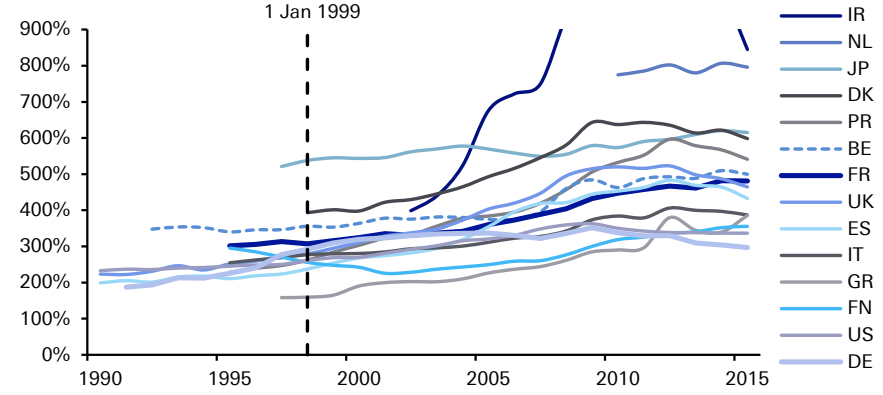
If we look at the graphs for the peripheral countries (plus France) it's quite clear that real GDP growth was negative when denominated in DEM terms for the majority of the 25-30 years before the Euro started. One could say they were in a long depression when their economy was denominated in DEM so the risks were always there when their economies and currencies were then joined in a monetary union. There was perhaps a brief period of stability in the latter half of the 1990s as bond yields fell sharply (Figure 34) and debt started to increase (Figure 35) masking underlying issues. Growth continued to hold up in the first few years of the single currency pre-crisis probably due to the continued increase in debt at lower and lower yields. However post crisis, growth has stalled and fallen in many countries, especially in the periphery.

Figure 34: Eurozone periphery 10Y yield spreads vs. Germany



Source: Deutsche Bank, Global Financial Data

Figure 35: Total debt (Corporate + Government + Household) to GDP, %



Source: Deutsche Bank, Haver

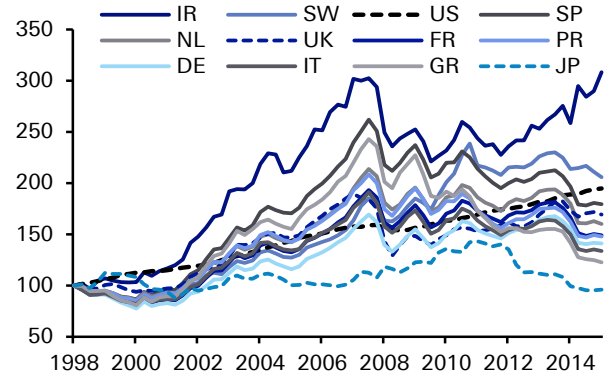
One can't help but speculate that without the move to the single currency, the pattern of growth being negative in DEM terms 1971-1999 would have continued from 1999-current day in many of the weaker European economies. So in currency adjusted terms, the size of many European economies today are still probably bigger than they would have been today had the Euro not existed.

Indeed Figure 36 shows that a number of EU economies have still outgrown Germany since the start of the single currency in Euro terms. We also add a selection of other countries for comparison. The scale on the graph is ordered by greatest growth since the Euro started (Ireland) to the weakest (Italy, Greece and Japan). It's clear that the level of out-performance was dramatic pre-financial crisis and even with the reversal, many of the peripheral economies have still performed very well in the Euro-era period relative to Germany – something that is the complete opposite of the decades pre-Euro. Figure 37 looks at this on a per capita basis to ensure there is no huge population distortion. There isn't and the order only marginally changes. Interestingly Ireland is the main success story which perhaps reflects their

willingness to undergo huge economic hardship and reform to adjust when a crisis hits. We saw this in the REER numbers in Figure 31 where they've made huge cost adjustments.

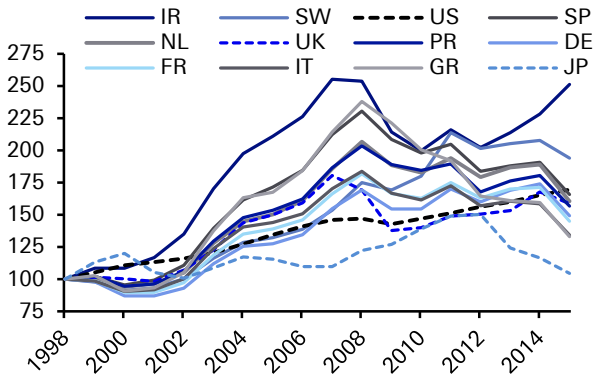
For other countries with arguably inflated GDP due to the Euro, this is a double edged sword as it gives these countries higher overall wealth than they would have had otherwise but it creates great economic problems clinging on to that artificially higher level of wealth.

Figure 36: Nominal GDP, USD (Dec 1998=100)



Source: Deutsche Bank, Haver

Figure 37: Nominal GDP per Capita, USD (1998=100)

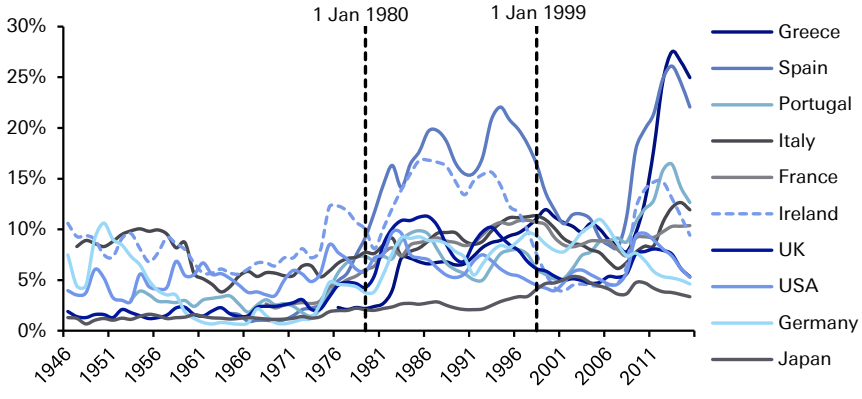


Source: Deutsche Bank, Haver

Unemployment

One way in which such aforementioned economic imbalances have manifested themselves is through higher unemployment. Those countries on an artificially high exchange rate with a loss of competitiveness can either dramatically cut wages or suffer from higher unemployment. Cutting wages is incredibly hard to do and Figure 38 shows this by looking at unemployment rates in a selection of European countries post WWII. We've put a line in at 1980 to link it to the themes we discuss in the previous chapter. Unemployment was certainly lower in the pre-globalisation era.

Figure 38: Unemployment rates (% of total labour force), Key ordered high (Greece) to low (Japan).

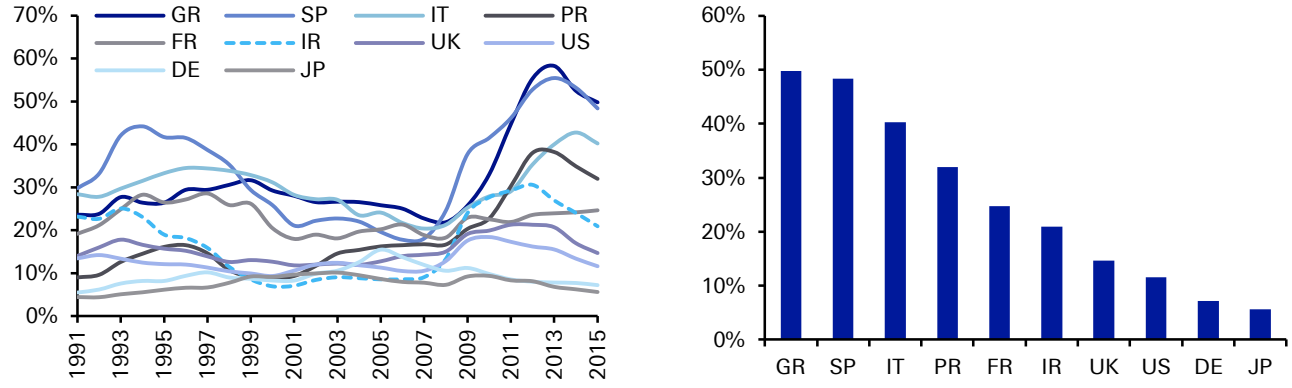


Source: Deutsche Bank, Global Financial Data, Haver

It's striking that the peripheral countries (plus selected others e.g. France) continue to have a shocking unemployment problem relative to long-term history. They may be off their post WWII highs but apart from Ireland they are

still at extreme levels relative to history (outside of the Depression). In particular Youth unemployment is also high and Figure 39 shows this for the same countries.

Figure 39: Youth unemployment as % of labour force within age group, 1991-2015 (left) and as on Dec 2015 (right)

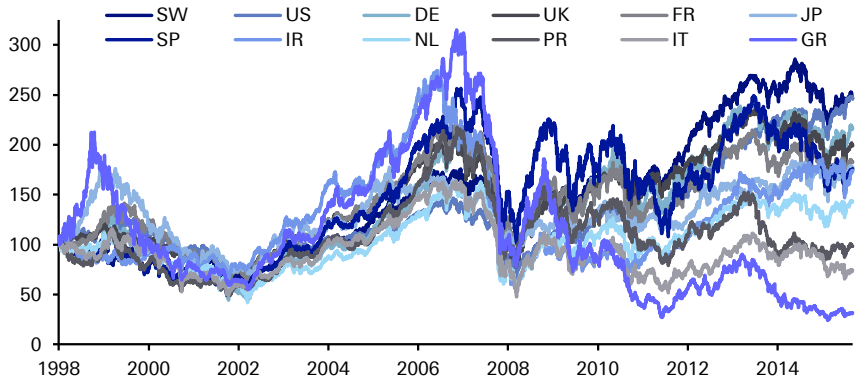


Source: Deutsche Bank, Haver

It's no wonder that extremism in politics continues to build (see Figure 18 earlier) with these pressures. The problem is that it's not clear how this resolves itself without a major event. This major event could be a political revolution with extremists voted into power a major European country. Or alternatively it could be a move to a fiscal Union in Europe with the imbalances corrected by fiscal transfers. Can we really have the status quo survive? Although imbalances can remain for an extended period of time it feels we are now at a point where the pressures are too large for this not to bring about a major political response either positive or negative.

In markets terms, much of this economic pressure has been reflected in equity market performance which is able to adjust more than GDP denominated in Euros can. Figure 40 shows that since the Euro currency started it's the peripheral economies that have seen the worst equity market performance. Greece, Italy and Portugal have all produced very low to negative total returns over the entire post-1999 period which is a stunningly negative indictment on the single currency.

Figure 40: Equity market performance, total returns, USD (Dec 1998=100); Key ordered by best to worst over the period



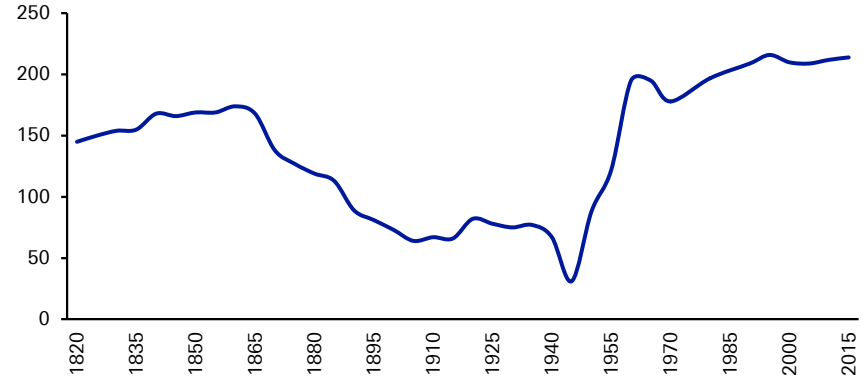
Source: Deutsche Bank, Bloomberg

So equity markets are perhaps pricing the stresses in Europe more than GDP is able to do. They also adjust more than competitiveness can in a world where nominal wages are fairly rigid for most countries for political reasons. In the next section we look at the very long-term (1000 years) history of Europe in terms of borders (internal and external) and give historical context to the formation of the single currency and also show that the continent has a history of constant change.

The Ever Changing Face of Europe

The post WWII formation of ever stronger European cross border alliances culminating in the current 28 member state EU (soon to be 27 post Brexit) has created political and economic integration and the formation of a super state at exactly the time that more and more individual sovereign states have been formed. Indeed since WWII the number has soared as shown in Figure 41.

Figure 41: Estimated number of sovereign states globally, 1820-2015



Source: Deutsche Bank

The 60+ years of voluntary European integration goes against the history of the continent. Over the coming pages we look at the ever changing borders of Europe and the immediate surrounding area over the last millennium. The maps are designed to be viewed as standalone snapshots of the continent every decade or as a moving flick-book.

To enable the 'flick-book' effect of showcasing the evolution of the continent, we have split the 1000 year period into 102 maps across 26 pages in the following manner: the first row of each page contains maps in chronological order over the period 1000-1250 AD; similarly, the subsequent rows contains maps over the periods 1260-1500 AD (second row), 1510-1750 AD (third row) and 1760-2000 AD (fourth row). The maps are spaced a decade apart but given the major influence that WWII had we've also added 1943 to the collection.

To visualize the flick-book effect, please follow the following instructions:

If you view the document on Internet Explorer:

Fit each full page of the document to the window.

- If you have Adobe Reader installed, you should be able to hover your mouse cursor around the top of the browser window, and a pop-up of icons will show up
- Select the Adobe symbol (if you hover over it, a "Show Adobe Reader Toolbar" pop up should display)
- The Adobe Reader Toolbar will display. You can now select the "fit one full page to a window" option/icon in the toolbar
- You will now be able to use arrow keys/page up-down keys to quickly scroll between pages

To visualize the flick-book effect:

- Start from the first page containing the first set of maps (i.e. 1000 AD in the top row, 1260 AD in the second, etc.)
- Hold down the down arrow key/page-down key to scroll through the pages; while doing so watch any particular row to see how Europe's borders evolve over time
- Go back to the first page of the maps and repeat with any of the rows to watch the borders evolve over specific time periods

If you view the document on Google Chrome:

Fit each full page of the document to the window:

- Hover your mouse over to the lower-right hand quadrant of the page
- There should an option/icon to fit the document to the page. Select this option.
- The document should now fit one full page to the window. You can use the Page up/down keys (Note: NOT the arrow keys) to scroll between pages quickly.

To visualize the flick-book effect:

- Start from the first page containing the first set of maps (i.e. 1000 AD in the top row, 1260 AD in the second, etc.)
- Hold down the **page-down** key to scroll through the pages; while doing so watch any particular row to see how Europe's borders evolve over time.
- Go back to the first page of the maps and repeat with any of the rows to watch the borders evolve over specific time periods.

If you download the document and view it on Adobe Reader:

Fit each full page of the document to the window:

- On the Adobe Reader Toolbar select the "fit one full page to a window" option/icon
- You will now be able to use arrow keys/page up-down keys to quickly scroll between pages

To visualize the flick-book effect:

- Start from the first page containing the first set of maps (i.e. 1000 AD in the top row, 1260 AD in the second, etc.)
- Hold down the down arrow key/page-down key to scroll through the pages; while doing so watch any particular row to see how Europe's borders evolve over time
- Go back to the first page of the maps and repeat with any of the rows to watch the borders evolve over specific time periods

We've annotated some key events that occurred in each decade alongside the maps. It's not meant to be fully comprehensive but a flavor for the shifting power bases across the continent and neighbouring areas.

It is amazing to see the constant shifting in boundaries, states and countries mostly through war and conquest. One does wonder whether in imposing an artificial EU boundary on a continent that's natural evolutionary state is change you are liable to build up tensions in a similar manner to tectonic plates. So that if they shift in the future again it's possible they shift in a significant manner. Interestingly the analysis shows that in a continent of ever changing

boundaries, one of the most stable alliances has been the one between England and Scotland (lasting 309 years). This has been at risk as over the past two years and we've narrowly escaped Scottish independence at the ballot boxes. With the recent vote for Brexit this issue could come up again in the future.

Looking at Europe it's fair to say that for centuries if not thousands of years up to 1945 the continent's boundaries were constantly changing through war. This is still occurring on the outskirts of Europe with the tragic consequences that Europe has seen all through its human existence.

To many people the genesis of the EU project was a shared political vision to integrate to save the continent from its own savage history of bloodshed that culminated in WWII. In 1949, the Council of Europe is formed by Western European leaders and in 1950, the European Coal and Steel Community was the first vehicle to bring together European countries economically and politically to meet this peace agenda. The six countries involved were Germany, France, Italy, Belgium, Luxembourg and the Netherlands. By 1957 the Treaty of Rome establishes the genesis of the common market by the formation of the European Economic Community (EEC). At the same time the Marshall Plan was the US's attempt to "promote world peace and the general welfare, national interest, and foreign policy of the United States through economic, financial, and other measures necessary to the maintenance of conditions abroad in which free institutions may survive and consistent with the maintenance of the strength and stability of the United States". In short the US was determined to offer financial assistance to promote peace, prosperity and stable borders. The rest is history and today the EU is made up of 28 countries (soon to be 27 with the UK exiting).

So there was undoubtedly a huge drive by Europeans and the US after WWII for there to be shared economic and political goals in Europe and new found unity to prevent the horrors of war. Obviously we don't know the counter factual but in terms of avoiding war one can only say that this greater integration has been an outstanding success. Indeed as the maps suggest the countries in the EU area have seen less border change since WWII than through possibly all of the last millennium. Where there has been border change it has tended to be 'positive' integration as with West and East Germany. On the other hand on the outskirts of integrated Europe (particularly to the south and east) the maps show great upheaval, war and numerous border changes over the same period.

Was the single currency overreach?

So far so good but one wonders whether the single currency was an example of where successes in the European project led to overreach by policy makers. Creating a common market of goods and services across large parts of Western Europe was an economic and political success and as we know fostered a long period of peace absent across Europe in the preceding decades and centuries.

As we saw in the previous chapter, the weaker parts of the single currency area are now suffering from crippling debt, low or negative growth, high unemployment and increasing political extremism. So is the single currency and/or the policies implemented alongside it endangering Europe's long period of stable borders?

While it would be sensationalist to suggest that Europe could again see border change consistent with the history of the continent, it's feasible that the EU and/or the single currency might not survive longer-term without full political and fiscal union which some might say is an even bigger political overreach. The very vehicle aimed at being the next step at avoiding tension and political upheaval in Europe (i.e. the Euro) could be the biggest risk to these aims.

As we showed in Figure 41 above, the global movement is actually for more autonomous countries in recent decades, with the number of sovereign states now past the highs we saw in the middle of the nineteenth century. In some ways globalisation and the single market can encourage a search for autonomy. If a small region believes it can still trade with the world or access the single market then it may be encouraged to seek political autonomy from its supposed oppressors as there is less to lose economically. The EU obviously discourages such ambitions but this doesn't prevent the populations of these unsettled regions from campaigning for more independent rule.

Academic research is also interesting here. A book by Alberto Alesina and Enrico Spolaore entitled "The Size of Nations" makes the interesting point that the optimum size of a country is determined by a cost-benefit trade-off between the benefits of size and the costs of heterogeneity. Larger countries offer scale advantages and they conclude that economically a bigger country is usually more optimal. It also gives it political advantages at global negotiations and no doubt helps with defense arrangements. However the heterogeneous preferences of a sizeable population make the formation of a one size fits all policy much more difficult and there therefore is a natural democratic bias towards disintegration of larger countries. They nod to the end of the Cold War as an example of how the existence of a large economic/political block can suddenly splinter into many small nation states as disaffection reaches breaking point. The various revolutions post 1989 then seemed to feed on themselves and within a short space of time the map of Europe and its surroundings looked very different as we can see from the maps in 1990 and that in 2000. So as discussed above, although EU country borders have seen decades of relative stability, there is still huge instability around the region.

In our view the EU/single currency is different in so far as the individual countries are still sovereign nations but it's a prime example of how scale can be good for trade and political influence across the world but also how the bigger it gets the more disaffection there is at the edges. It's an obvious point to make that the peripheral would have seen vastly different responses to the post financial crisis world had they not been in the straitjacket of the Euro. It's also possible to argue as we do in the next paragraph that they wouldn't have suffered as big an economic problem had the Euro not been invented. However as we showed in Figure 32 and Figure 33 they would now likely be less wealthy overall at a national level but with probably less unemployment and with it less inequality and the large number of the disenfranchised.

At the root of a lot of the Euro-era problems is debt. There's a very high probability that many European countries wouldn't have seen nearly as much debt without the single currency as this provided a massive increase in the potential buyers for their debt and at yields the weaker countries had not seen for several generations. It was the perfect storm facilitating a surge in debt issuance throughout these economies. Although there was a general global increase in debt it is unlikely that the smaller and weaker economies in Europe would have been able to lever up as much relative to their smaller more historically fragile, domestic economy.

A more controversial argument comes from Philip T Hoffman, professor of business economics and history at the California Institute of Technology in his book "Why Did Europe Conquer the World?" He details that Europe conquered at least 84 per cent of the world between 1492 and 1914 and left more culturally and economically sophisticated civilisations at the time behind in development (e.g. The Muslim Middle East, southern China and Japan). Hoffman argues that the major European successes were down to both military and economic advances gained through "gunpowder technology" which is essentially progress through military development. Without being too glib it was almost like a several century long Game of Thrones tournament where the contestants were incentivised or forced into innovation to protect their self interest and more importantly to grow at the expense of others.

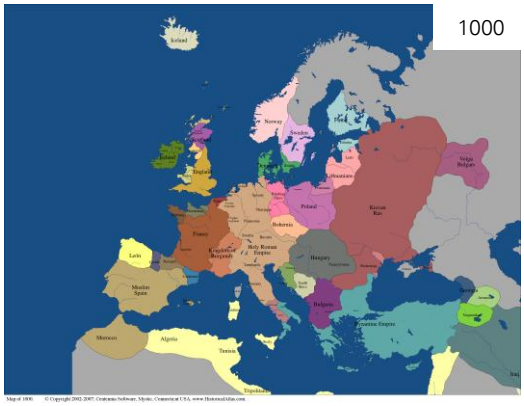
Hoffman explains that between 1550 and 1700 European nations were in battle with each other for two-thirds of the time and looking at our maps on the following pages it's easy to confirm this although the rest of the millennium was not radically different from this period. According to Hoffman well over 80 per cent of England and Prussia's government budget between 1688 and 1790 was spent financing war. He also argues that even when peace arrived in Europe in the nineteenth century competitive empire building became the new way of ensuring economic advances.

So whilst peace and no bloodshed is surely a major achievement in post WWII Europe, history might argue that the chaotic state of the continent in the centuries prior to this did foster higher innovation and growth.

If correct then maybe economic issues are a very small price to pay for a long period of lasting peace. However was the single currency overreach by politicians determined to further build on their post WWII successes? If your opinion is that it has economically destabilsed the region to a point where the European project is under threat, then you might argue that it is. Assuming there is no way back from the single currency, it feels like Europe needs to buck the international trend and politically integrate more towards being one sovereign nation and redistribute the gains of both the common market and of globalisation to resist an ever increasing amount of economic hardship at the edges and the rise of populism at the ballot boxes. Without moves in this direction we could soon have a politician elected with a mandate to remove its country from Europe in some form or another. If this country is in the single-currency area it could cause economic, political and diplomatic chaos for years to come.

Over the next 26 pages we show the evolution of the borders of Europe and surrounding areas in a series of maps over the last 1000 years. Instructions of how to view this best in PDF format are included at the front of this section (Page 34).

Decade ended 1000:
Holy Roman Empire dominant mainland force with Byzantine Empire continuation of this in East.

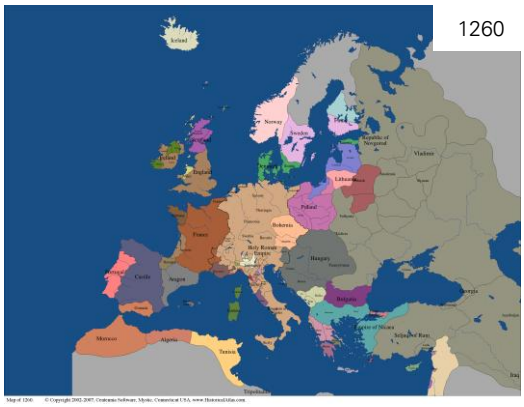


Decade ended 1260:

The Czech empire invaded and took control of Austria and Carinthia.

Byzantine emperors defeated Greeks of Epirus at battle of Pelagonia.

Mongols take Baghdad, but are defeated by the Egyptians at the Battle of Ayn Jalut.

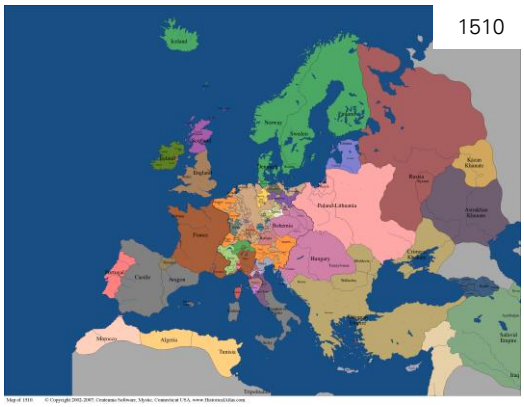


Decade ended 1510:

French and Spanish both invade the Kingdom of Naples. Spain defeats France and establishes rule over Naples.

Venice occupies most of the territory south of Bologna. League of Cambrai formed to stop Venice, and Holy League eventually formed to stop France.

Portuguese empire stretches from Africa to India.

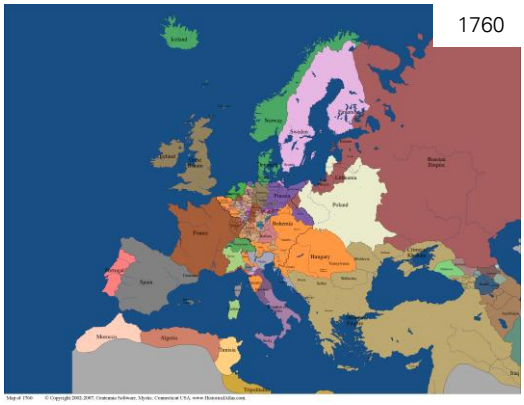


Decade ended 1760:

Seven Years' War begins. Diplomatic Revolution reversed alliances of previous wars: Prussia allied with the British while the French supported the Austrian Habsburgs.

Prussia suffers significant territorial losses.

Ottoman Empire greatly diminished.



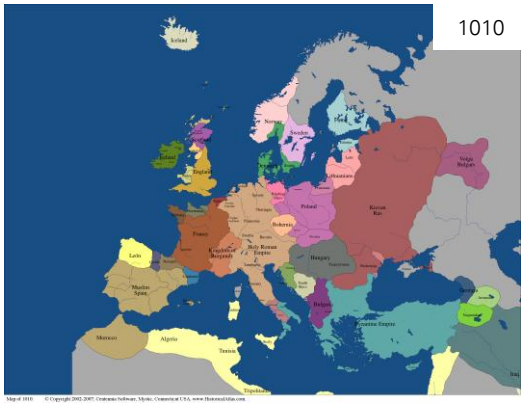
Source: Centennia Historical Atlas

Decade ended 1010:

Poland conquered neighbouring areas causing decades of conflict in area.

Bulgaria retreats from Byzantine armies.

Muslim Spain dissolved into warring factions.

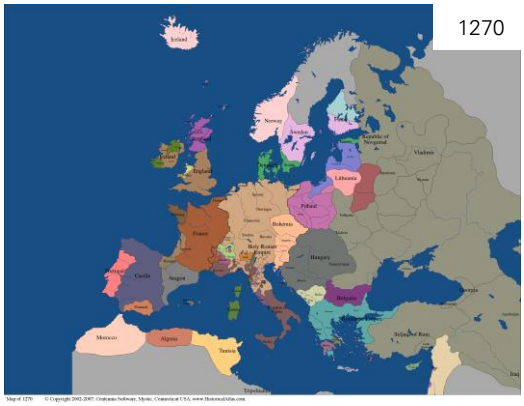


Decade ended 1270:

Greek emperor recovers Constantinople from Western Europeans.

Byzantines conquer city of Mistra.

Charles of Anjou (France) invades Kingdom of Naples.



Decade ended 1520:

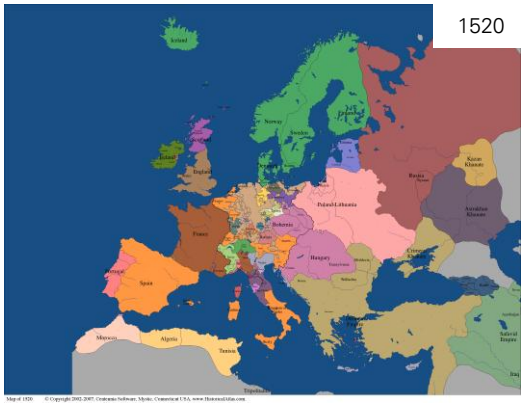
French occupy Bologna; Swiss storm Milan.

Aragon annexes Navarre.

England joins the Holy League against France.

Ottoman Turks turned against the Mamluk Empire.

Reformation begins in Germany.

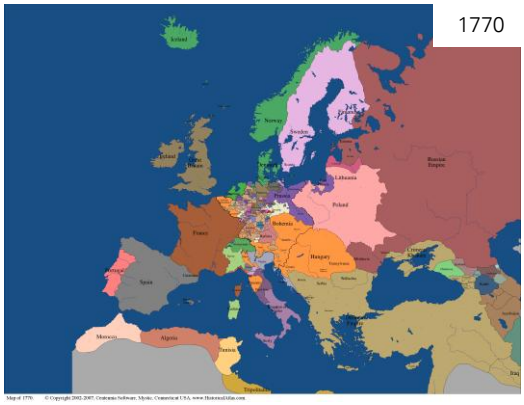


Decade ended 1770:

Peace of Paris ends the Seven Years' War.

France lost most of North America and India to the British.

Prussia recognized as major power.

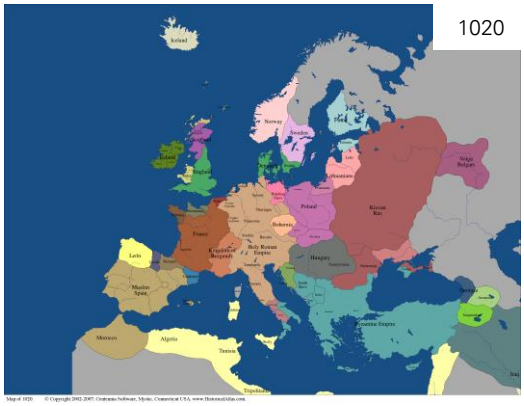


Source: Centennia Historical Atlas

Decade ended 1020:

Denmark invades England.

Byzantine Empire grows through battle.

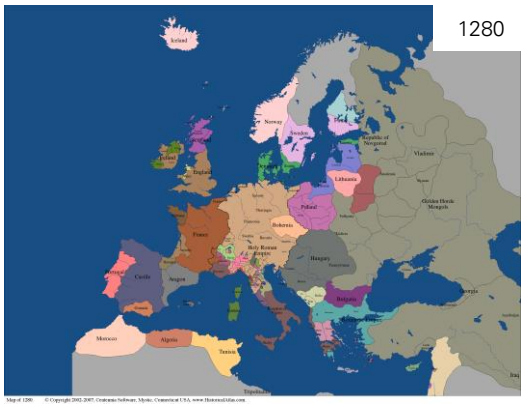


Decade ended 1280:

German colonists found the city of Konigsberg in Prussia.

Charles of Anjou invades the Byzantine Empire and gains control of the entire coast of Albania. He later takes over Morea in Greece.

Roman Empire annexes Austria and Styria under Count Rudolf.

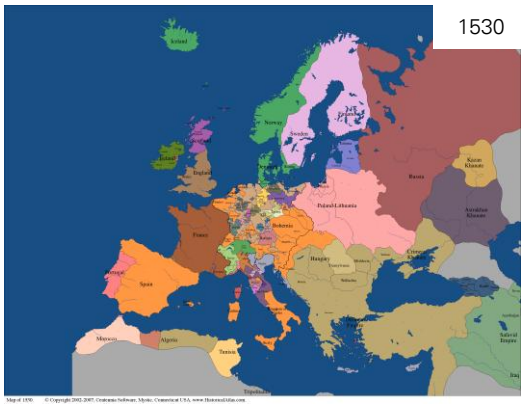


Decade ended 1530:

Sweden breaks away from the Union of Kalmar.

Spanish Empire rules half the known world under Charles V.

Ottoman Turks take central Hungary.

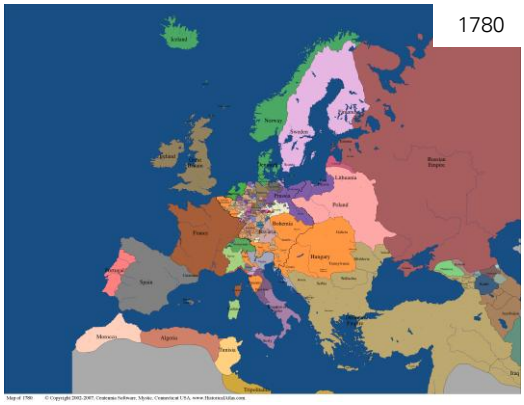


Decade ended 1780:

Russia invades and annexes Crimea.

First partition of Poland takes place between Russia, Austria and Prussia to limit Russian power.

Egypt recovered by Ottoman Empire.

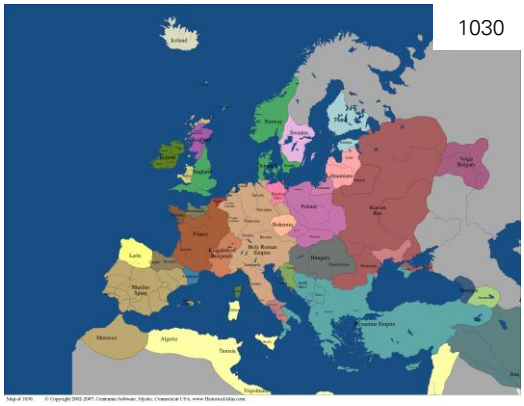


Source: Centennia Historical Atlas

Decade ended 1030:

Kievan Rus fractures internally.

Danish power spreads.



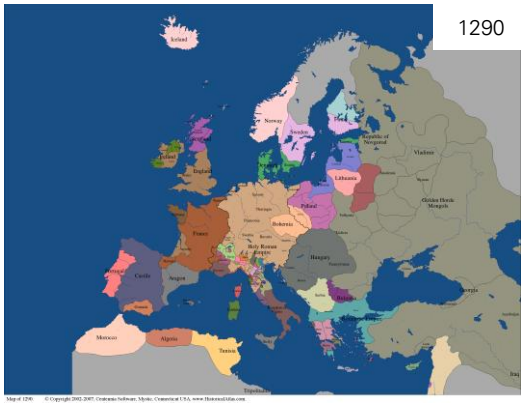
Decade ended 1290:

Vespers revolt spreads throughout Sicily. King Peter of Aragon takes over Sicilian government.

King of France inherits throne of the Kingdom of Navarre in Spain.

Genoa took over Corsica.

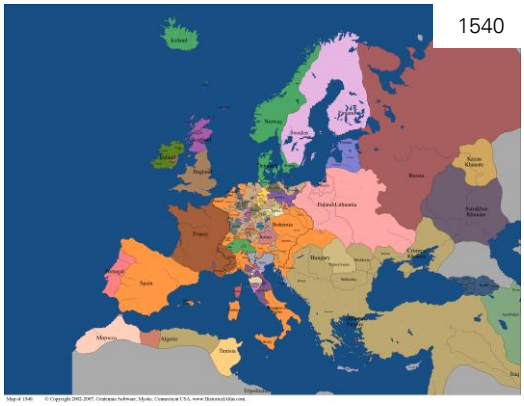
Serbia replaces Bulgaria as primary Slavic power.



Decade ended 1540:

Ottoman Turks invade and conquer Iraq.

Charles V is the now Emperor of the Holy Roman Empire and King of Spain, Hungary and Bohemia. He begins war with Southern France.

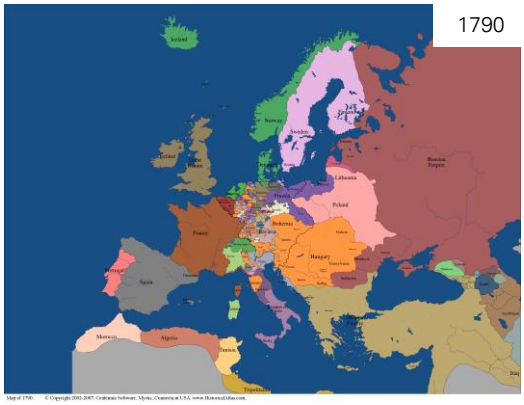


Decade ended 1790:

Egypt declares independence from Ottoman Empire.

Ottoman Turks attack Russian Empire.

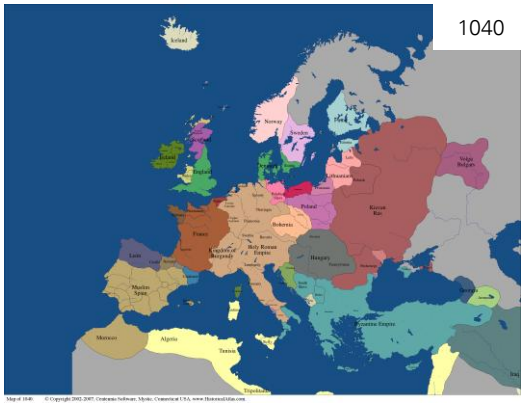
French Revolution begins in Paris.



Source: Centennia Historical Atlas

Decade ended 1040:

Polish expansion peaks and then splinters politically.



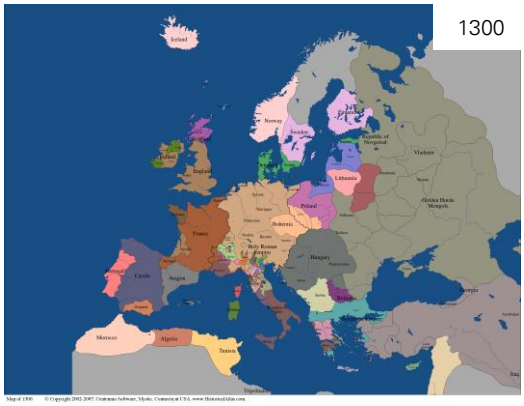
Decade ended 1300:

King Edward of England chooses new Scottish King, making Scotland a vassal of England.

England later invades Scotland.

Mongol Empire extends from China to Balkans.

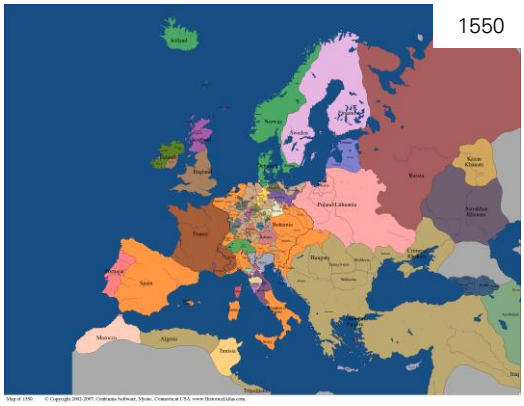
Byzantine Empire abandons most of the Anatolian lands.



Decade ended 1550:

Ottoman Turks take direct rule of Hungary.

Henry VII of England increases English control over Ireland and also temporarily captures Edinburgh. He later invades France in alliance with Charles V.



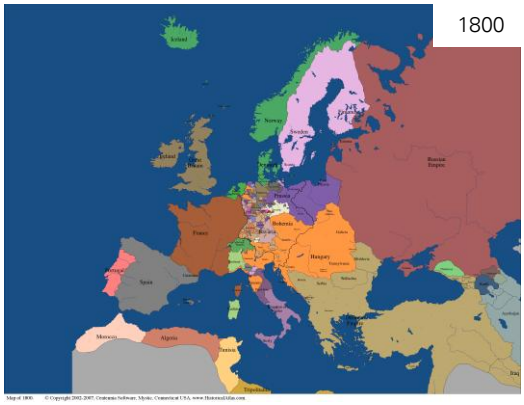
Decade ended 1800:

French revolutionaries execute King Louis XVI.

French revolution spreads through Europe.

Second and Third partition of Poland takes place.

Napoleon Bonaparte begins expanding the French empire aggressively, beginning the Napoleonic Era.

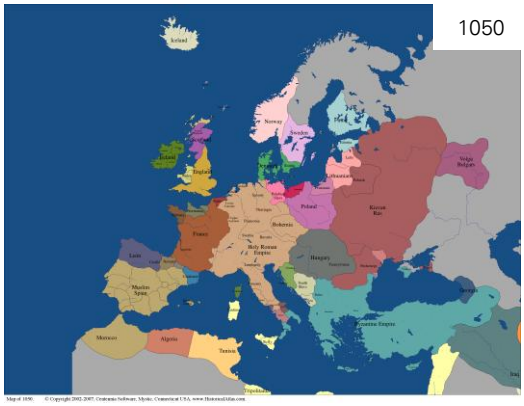


Source: Centennia Historical Atlas

Decade ended 1050:

England recovered independence from Denmark.

North African states claimed independence from Egypt.



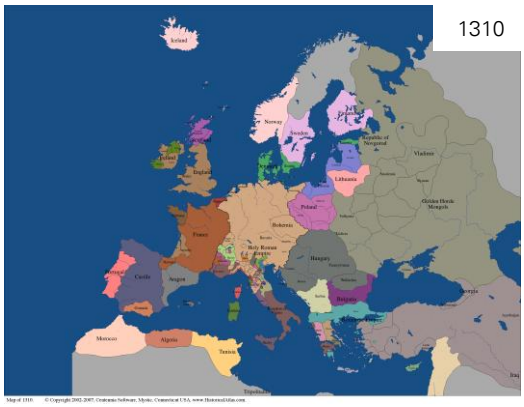
Decade ended 1310:

Bohemia rules over Poland from 1300 to 1305.

Byzantine Greeks liberate the city of Philadelphia and occupy Gallipoli for the Turks.

Catalans take control of Salonika and Thessaly.

Pope abandons Rome to live in Avignon.

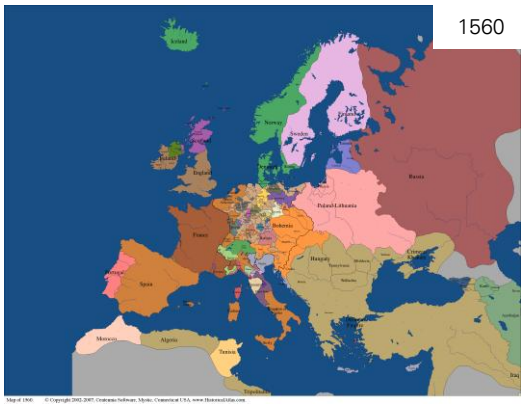


Decade ended 1560:

End of the long French wars in Italy.

Peace of Augsburg ends conflict between Charles V and German Protestant princes.

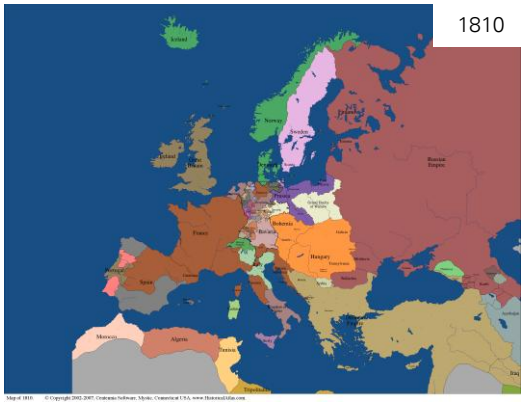
Treaty of Cateau-Cambresis ended 60 years of war between France and the Habsburgs. The treaty also led to Italian independence.



Decade ended 1810:

Napoleon crowns himself emperor of France after numerous successful conquests. He continues to expand French territory, eventually leading to the Peninsular War between Napoleon's empire and the allied powers of Spain, Britain and Portugal.

Holy Roman Empire comes to an end after a thousand years.



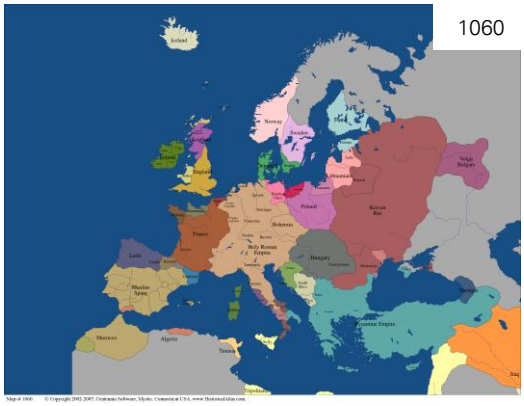
Source: Centennia Historical Atlas

Decade ended 1060:

Egypt attacked back.

Southern Italy an area of great interest to conquering Normans.

Seljuq Turks active at edge of Byzantine Empire.



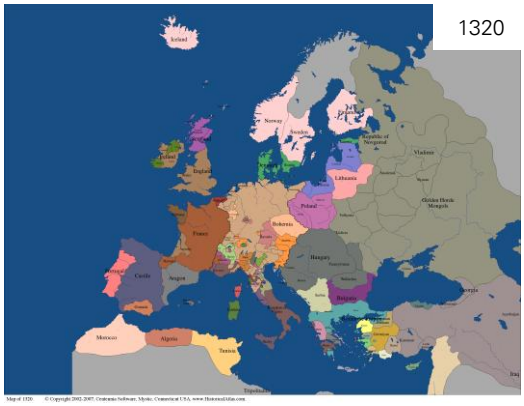
Decade ended 1320:

Henry VII of Luxembourg extends rule over Northern Italy.

Scotland defeats England at the battle of Bannockburn to ensure independence.

Mongol power in Turkey declines rapidly.

Swiss league was signed by communities of Uri, Schweiz, and Unterwalden.



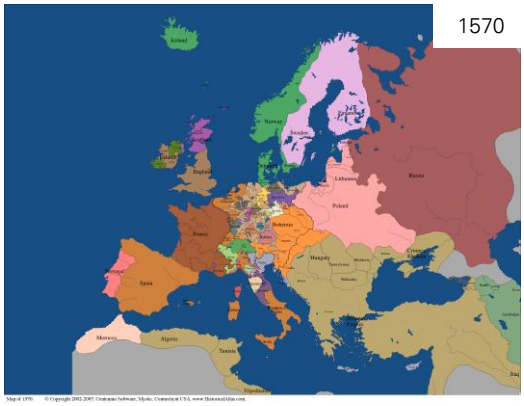
Decade ended 1570:

German Teutonic order on the Baltic begins to disintegrate. Lands divided between Poland, Sweden and Denmark.

First of a dozen religious wars begin in France.

Ottoman Turks take Tunisia.

Polish Kingdom annexes Lithuania.

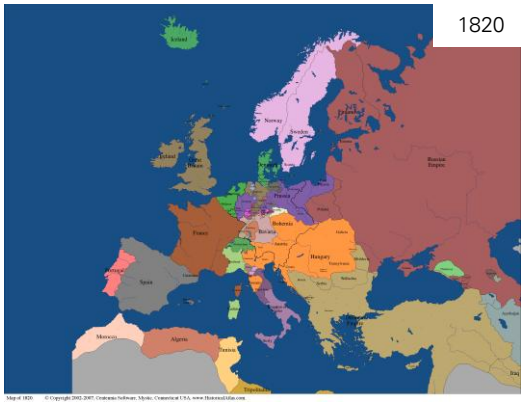


Decade ended 1820:

French finally defeat Spanish resistance in Catalonia.

Moscow Campaign begins as Napoleon invades Russia, where he suffers his first loss

Napoleon's armies were eventually defeated by Allied forces at Waterloo, marking the end of his empire.



Source: Centennia Historical Atlas

Decade ended 1070:

Normans conquer England.

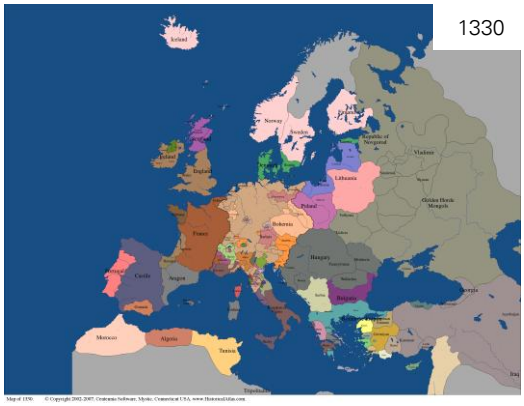
Nomadic Cumans migrated to power on the eastern front.

Spain sees more internal change.

Decade ended 1330:

Aragon conquers the island of Sardinia.

The Wittelsbachs of Bavaria acquired Brandenburg; their lands are eventually divided into two branches.



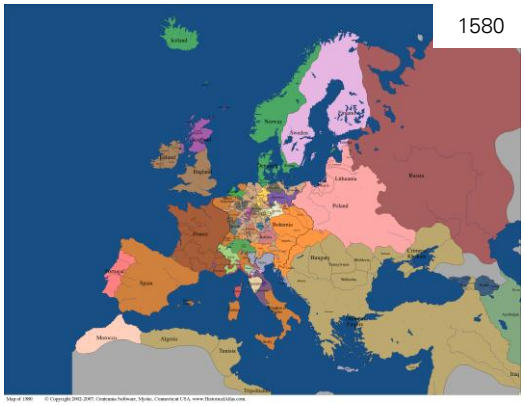
Decade ended 1580:

Crimean Tatars invade Russian Territory.

Holland revolts against Spanish oppression, leading to Union of Utrecht

Spanish take over Tunis from Ottoman Turks.

Battle of Three Kings in Morocco saw the Ottoman Empire give up Morocco and Spain target Portugal.



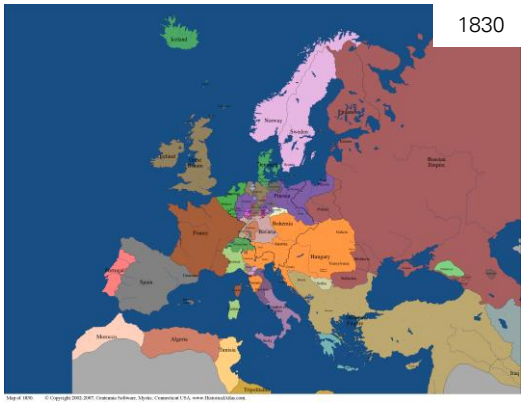
Decade ended 1830:

Democratic rebellions break out in Italy.

Spain's vast American empire revolts, leading to revolution in Spain itself.

Ottoman Empire defeated by British, French and Russian forces.

France experiences second revolution, replacing the King with the country's first constitutional monarch.



Source: Centennia Historical Atlas

Decade ended 1080:

Balkan power spreads.

Turks 'arrive'.

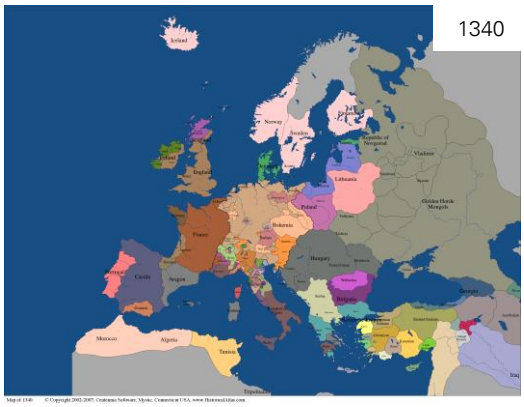
Normans wrestle control southern Italy from Byzantine.

Decade ended 1340:

Crumbling Byzantine Empire faced more threats.

Civil war in Scotland led to England advancing.

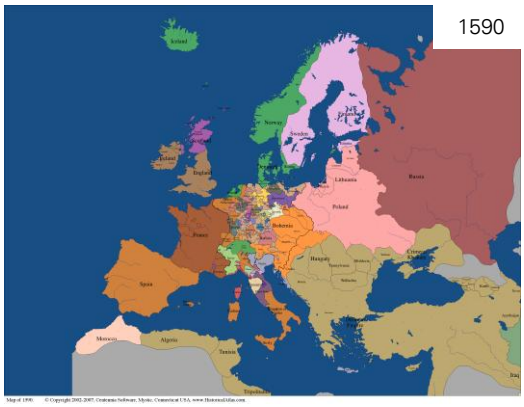
Il-Khanid Mongol Empire collapsed.



Decade ended 1590:

Spanish Armada defeated by English attacks.

Edict of Nantes guarantees Protestant rights in France and ends Civil wars temporarily.



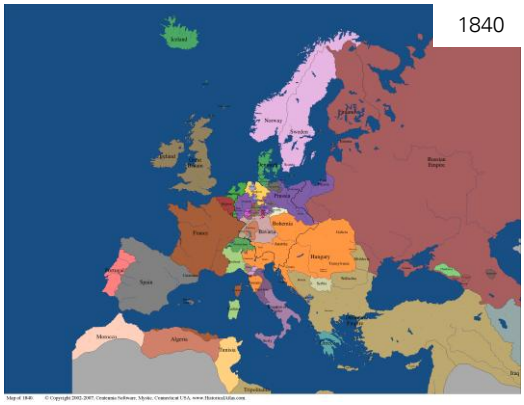
Decade ended 1840:

Belgian revolt against Dutch rule broke out soon after French revolution.

Poland seeks independence from Russia.

Victorian Era begins in Britain.

Ottoman Empire on verge of disintegration but continues to be supported by other empires to maintain balance of power.



Source: Centennia Historical Atlas

Decade ended 1090:

Normans attack Byzantine Empire and try to advance into Greece.

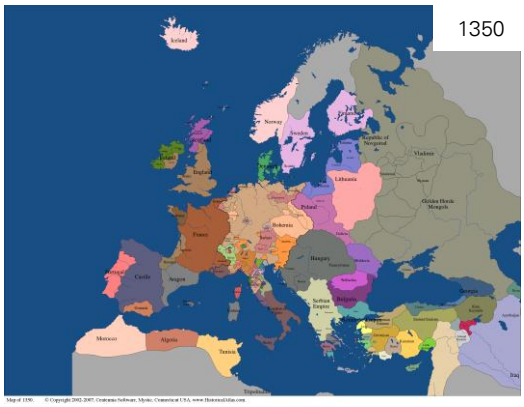
Inspired by the Norman attacks, the South Slavic Rashka tribes declare independence from the Byzantine Empire.

Spain internal conflict increased.

Decade ended 1350:

Hundred Years' war starts as England invades France.

French supported Scottish attack on England repelled. However Scottish independence is borne out of English preoccupation with France.

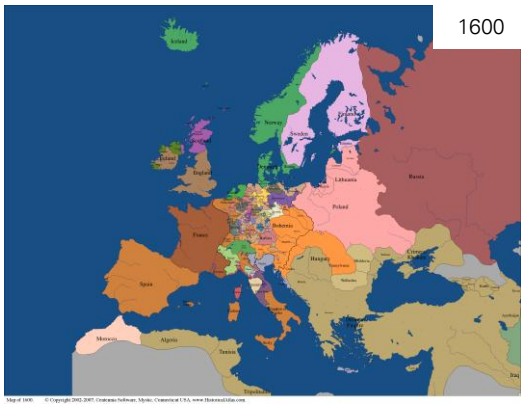


Decade ended 1600:

Ottomans extend power down coast of Eastern Arabia.

Irish clans rebel against English rule.

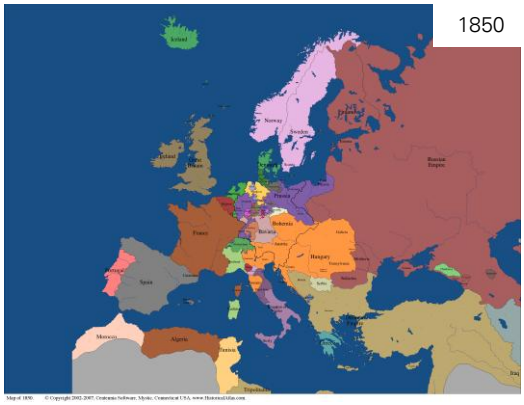
France recovers Spanish territories in France.



Decade ended 1850:

Irish potato famine begins and leads to mass Irish emigration to the United States.

Numerous revolutions take place throughout Europe in 1848.



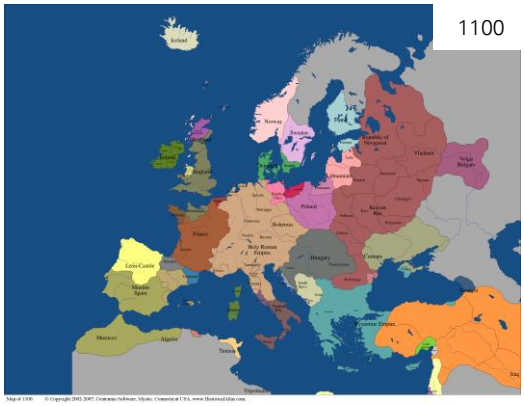
Source: Centennia Historical Atlas

Decade ended 1100:

Pechenegs (Turkish tribesmen) invaded Byzantine Empire.

Northern Italy revolts at Holy Roman Empire.

Seljuq Empire internally divided and Byzantine call to arms created the First Crusade.



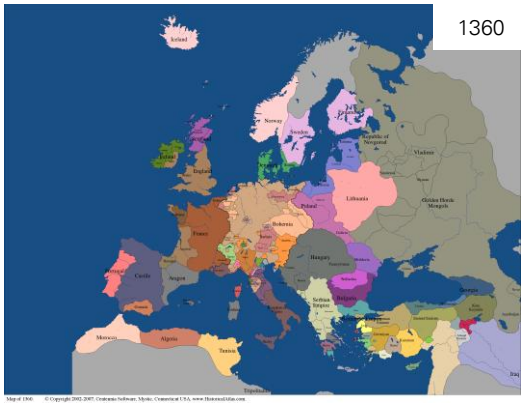
Decade ended 1360:

Visconti of Milan takes over Bologna and Genoa.

Hungary declares war on Venice and acquires Dalmatia via treaty.

Serbian Empire breaks up after death of King Dusan.

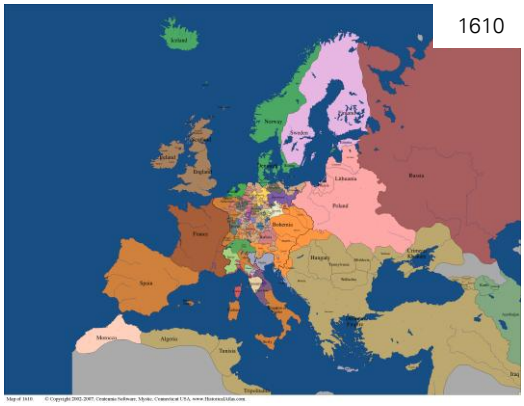
King John II of France cedes control of Aquitaine to England.



Decade ended 1610:

English defeated Irish rebels despite Spanish support.

Scotland and England united under King James.

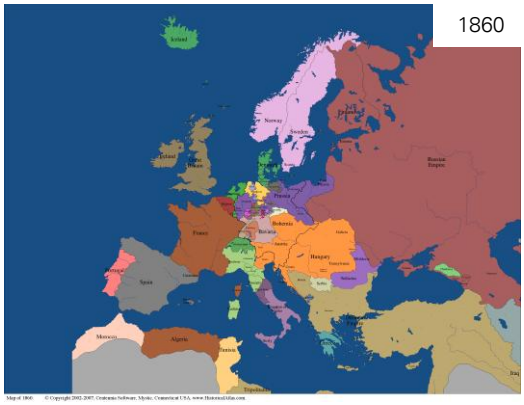


Decade ended 1860:

Crimean War begins between Russia and the alliance of France and Britain. War ends with Peace of Paris.

Russian power broken in the Black Sea.

War for independence and unification of Italy begins, with France eventually recognizing the new north Italian Kingdom.



Source: Centennia Historical Atlas

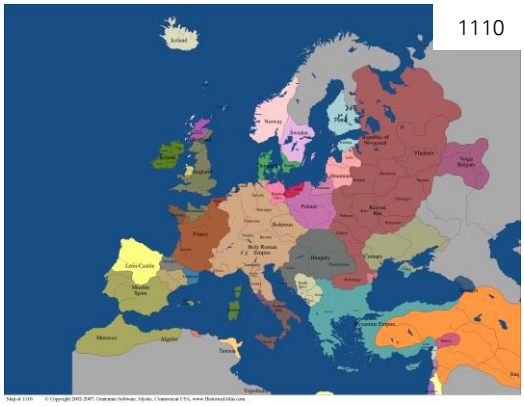
Decade ended 1110:

Crusaders take control of Edessa.

Byzantines conquered Little Armenia.

Crisis in Italy resolved. Matildine estates acknowledged as part of Roman Empire but a few cities of Northern Italy adopt republican forms of government.

1110



Decade ended 1370:

Ottoman Empire continues to grow.

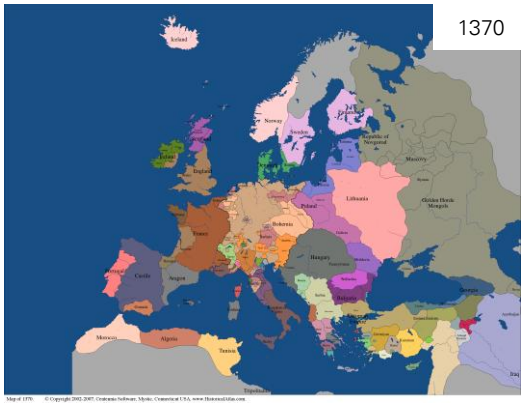
Byzantine territory reduced to a few cities.

French reacquire Aquitaine from the English.

Lithuania takes over Smolensk.

Poland inherited by King Louis of Hungary.

1370



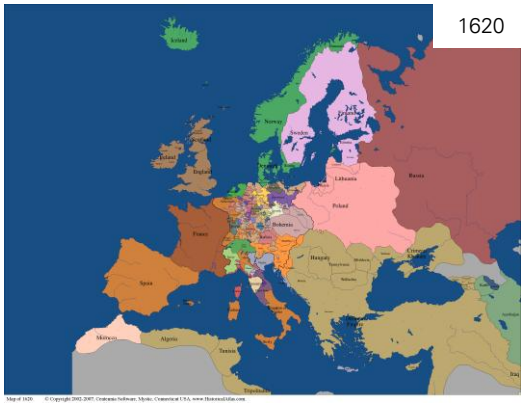
Decade ended 1620:

Poles occupy Moscow.

Thirty Years' war begins with rebellion in Bohemia.

Protestants of France revolt against French crown.

1620

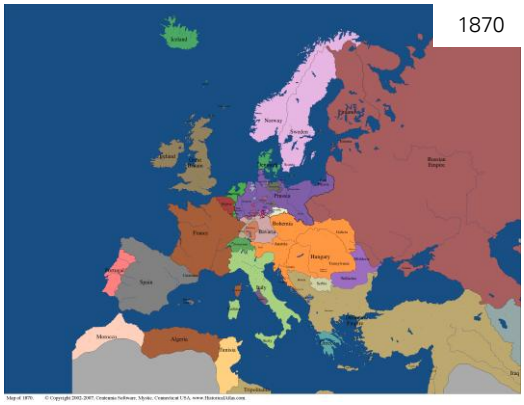


Decade ended 1870:

Seven Weeks' War takes place, with Austria and its German allies defeated. Austria excluded from Greater Germany. Prussia gains sole control of Northern Germany.

Italy annexes Rome and the last remnant of the Papal State.

1870

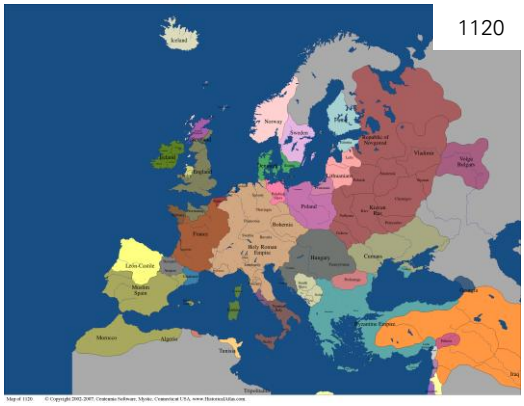


Source: Centennia Historical Atlas

Decade ended 1120:

Kingdom of Georgia begins to expand again.

Pomerania temporarily reunites with Poland.



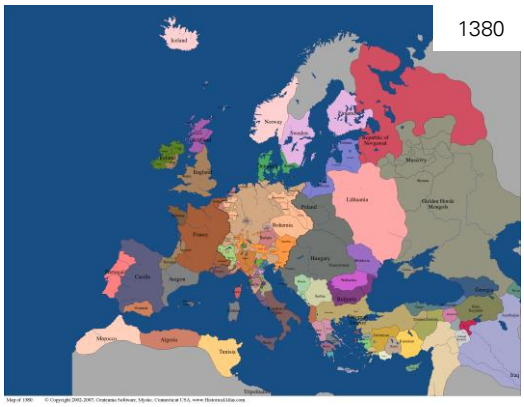
Decade ended 1380:

Luxembourg dynasty acquires Brandenburg.

Republic of Florence goes to war against the Papal State, leaving it in disarray.

Venice almost destroyed by Genoa.

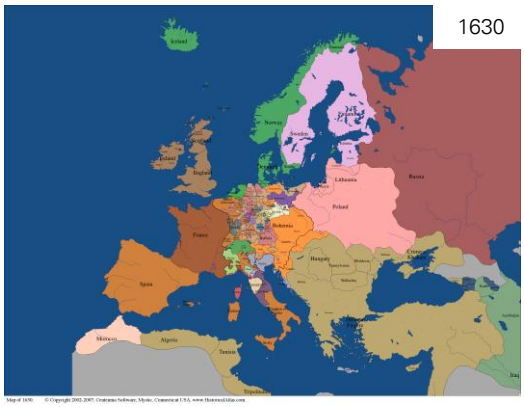
Norway reunited with Denmark.



Decade ended 1630:

Sweden captures Baltic ports of Poland.

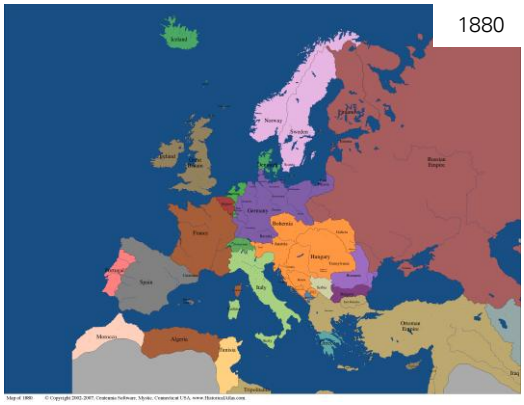
Catholic powers emerge victorious in wars in France and Germany.



Decade ended 1880:

Unification of Germany takes place.

Ottoman Turks concede defeat to Russians; Treaty of Berlin forces them to give up Bulgaria, Montenegro and Greece.



Source: Centennia Historical Atlas

Decade ended 1130:

Byzantines defeats Slavic tribes

Flanders comes under French rule

Scotland regains Independence

Hejaz (Western Arabia) revolts against the Fatimids (Egypt).

Decade ended 1390:

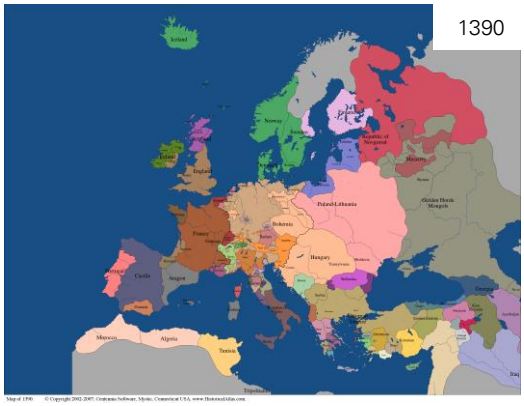
Savoy acquires Nice from Provence.

Duke Philip of Burgundy inherits Flanders.

Union between Poland and Hungary lapses.

Ottoman Turks take control of Serbia.

Principality of Moscow begins to act independently from Mongols.



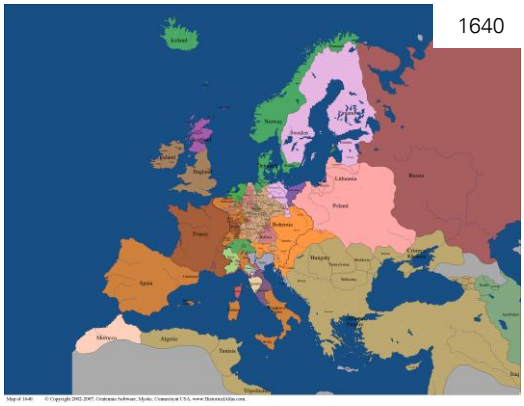
Decade ended 1640:

Peace of Prague signed.

Bishops' Wars lead to Scottish independence. Ireland later rebels against English rule as well.

Swedish army invades Bohemia.

Rebellion in Catalans and Portugal against Spanish rule.

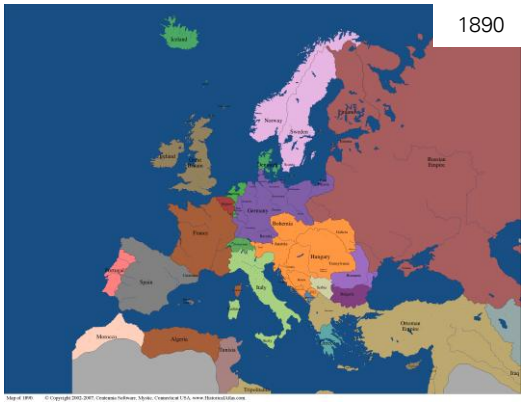


Decade ended 1890:

Egypt overthrown by military coup.

British invade Egypt but are defeated by Sudanese rebels at Khartoum.

Luxembourg dissolves union with Netherlands.



Source: Centennia Historical Atlas

Decade ended 1140:

Normans take Tunisia.

Germany invades southern Italy (under Norman control) but is eventually defeated.

Kingdom of Poland breaks up due to internal strife.

Succession war in England following death of King Henry. Scotland and Wales invade the border counties.

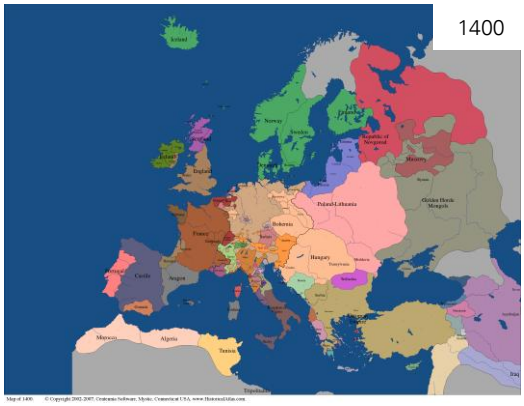
Decade ended 1400:

Timur's armies attack Mongols and ransack Baghdad and Crimea.

Union of Kalmar unites Scandinavia.

Timur turns against Ottoman Turks, slowing their advance.

Demise of Byzantine Empire slowed.



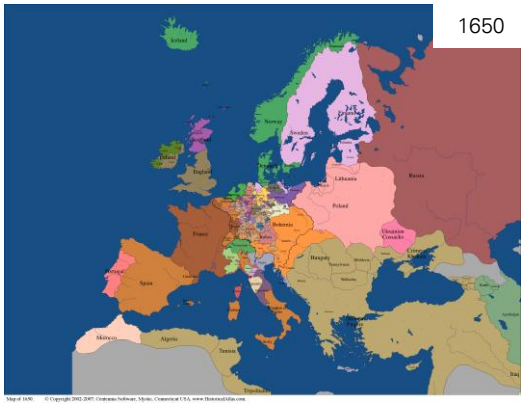
Decade ended 1650:

French occupy Catalonia.

Civil War breaks out in England; England declared a commonwealth.

Sweden defeats Denmark in war; Danes forced to sign peace treaty.

The Peace of Westphalia signed to end Thirty Years' War.

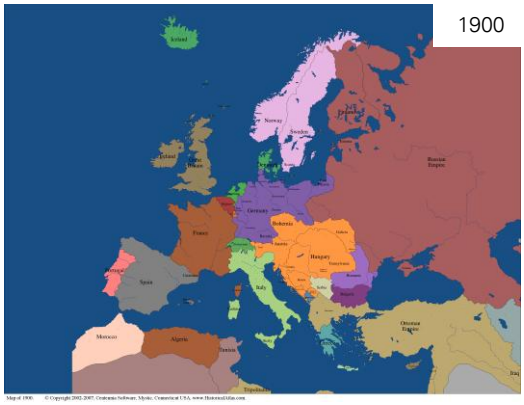


Decade ended 1900:

Saudi empire in Arabia reduced to just Riyadh.

France and Britain look to gain power in Africa. French and British forces clash but reach peaceful resolution in Sudan, ensuring an alliance for the future.

British eventually conquer Sudan with Egyptian forces.



Source: Centennia Historical Atlas

Decade ended 1150:

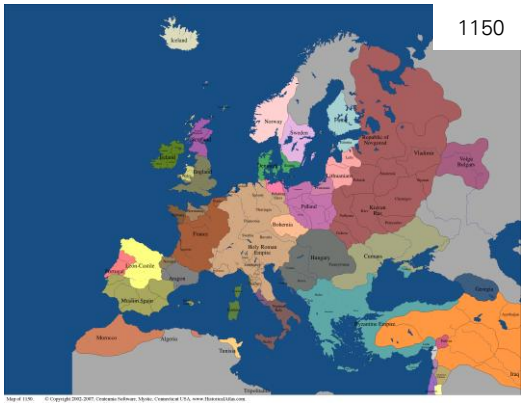
Normans abandon Tunisia; Crusaders lose Edessa.

Several Italian towns gain autonomy.

Portugal secedes from Kingdom of Leon; later captures Lisbon.

Almoravid Empure (Spain and Morocco) breaks up.

Germany captures Brandenburg from Polabians.



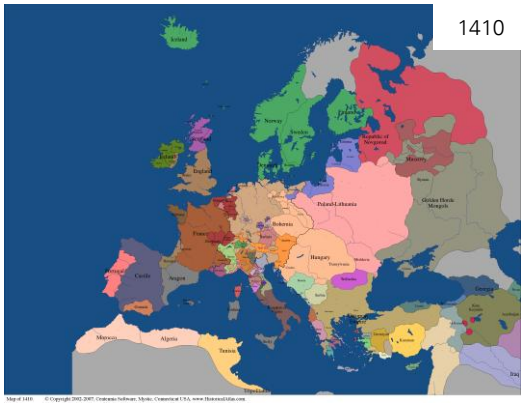
Decade ended 1410:

Milanese Empire disintegrated.

Timur dies and the Timurid Empire begins to disintegrate.

Venetians conquer Padua, Verona and lands up to Lake Garda. Florence annexes Pisa.

Limited civil war breaks out in weakened France.

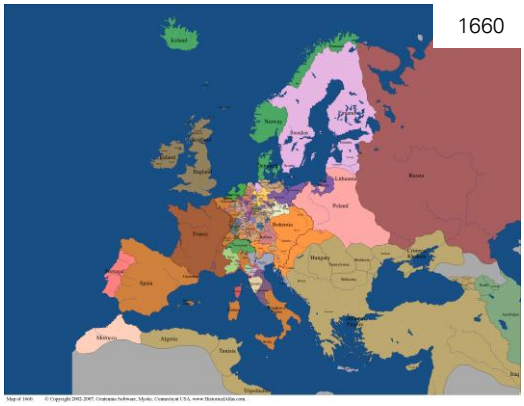


Decade ended 1660:

French abandon Catalonia to Spain.

English commonwealth allies with France in war against Spain. The Peace of Pyreness eventually ended the war between France and Spain.

German imperial army forces Sweden to exit Denmark.

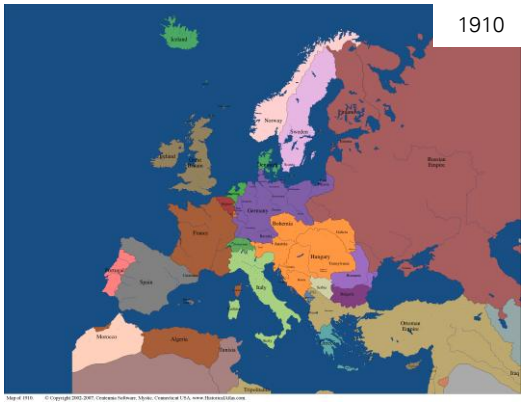


Decade ended 1910:

Much of Africa is under British and French influence.

Norway rises in rebellion against Swedish control, regaining its independence.

"Young Turks" stage democratic revolution in Ottoman Empire, adopting a modern constitution to stop the decline of the empire.



Source: Centennia Historical Atlas

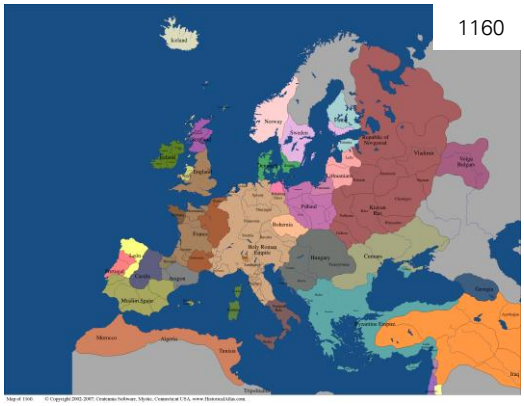
Decade ended 1160:

Plantagenet Empire expands through England and France.

Byzantine Greeks invade Italy again.

Khwarezmians (Turkestan) conquer northern Persia.

Germany Emperor Barbarossa attacks Milan.

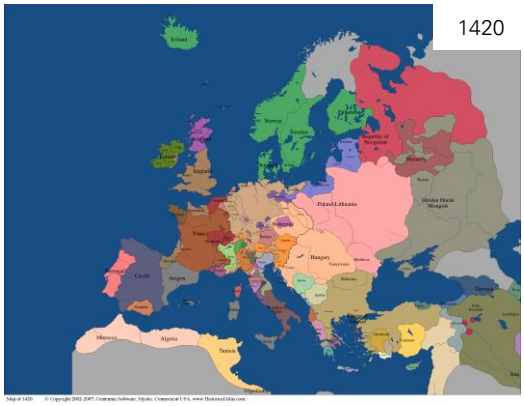


1160

Decade ended 1420:

England defeats France in battle of Agincourt.

Hussite rebellion breaks out in Kingdom of Bohemia.



1420

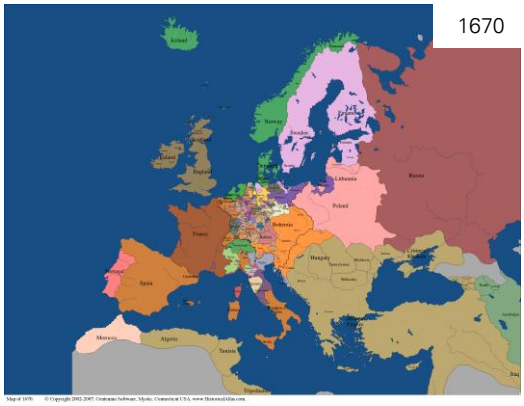
Decade ended 1670:

English Kingdom restored.

Treaty of Andrusovo ended the war between Russia and Poland.

France begins war against Spain. Treaty of Aix-la-Chapelle eventually ended the War of Devolution.

France allies with England to go to war against the Dutch Republic.



1670

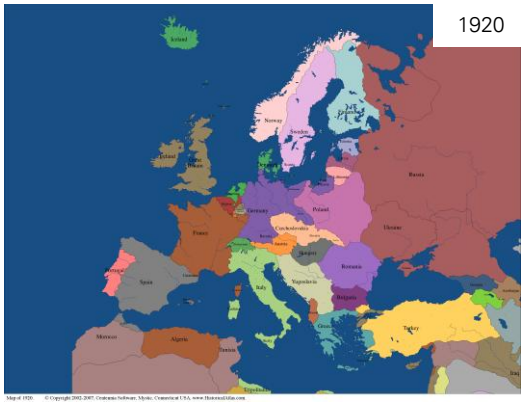
Decade ended 1920:

First and Second Balkan Wars take place.

First World War takes place, ending with Central Powers surrendering to the Allies.

Treaty of Versailles signed and League of Nations formed.

Ottoman Empire reduced to just Turkey.



1920

Source: Centennia Historical Atlas

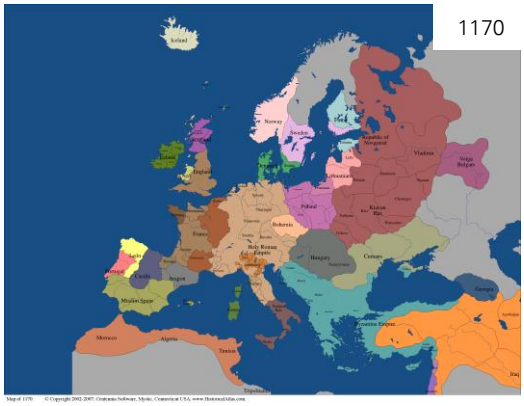
Decade ended 1170:

Byzantine empire expands to South Slav lands.

Italian republics unite to successfully fight against German emperor Barbarossa.

England invades Ireland.

Zangids take control of Egypt.



Decade ended 1430:

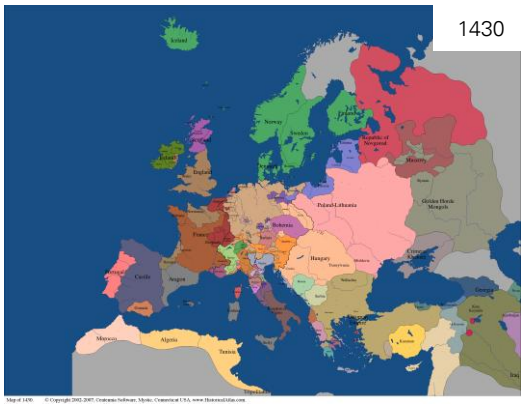
Republic of Genoa submits to Visconti Milan.

Venice and Savoy invade Visconti territory.

Germans wage war against Hussites.

Joan of Arc leads armies in war with English.

Crimea declares independence from Mongols.



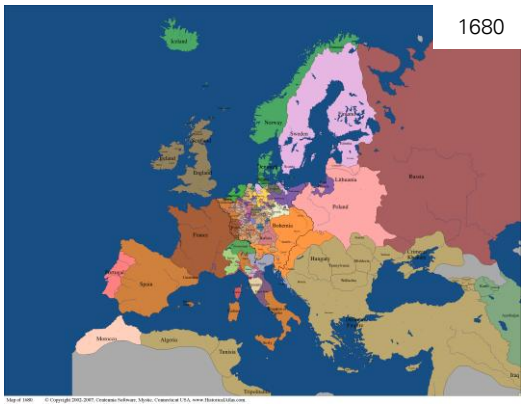
Decade ended 1680:

France attacks Dutch Netherlands, but eventually retreats.

Ottoman Turks invade southern Poland.

Peace of Nijmegen ends war between France, Dutch and Spain.

Swedish army faces defeats in Germany till French support arrives.



Decade ended 1930:

Ireland gains independence from British Empire.

Germany defaults on payments of war reparations. Hitler's Nazi Party soars in the polls.

USSR founded in late 1922.

Italy ruled by Mussolini and Fascist Party.

World economy stumbles into Great Depression.

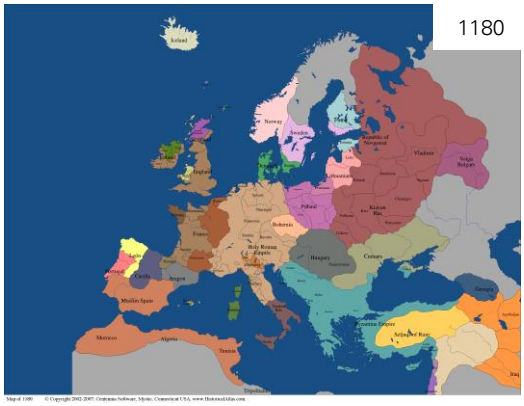
Source: Centennia Historical Atlas

Decade ended 1180:

Almohads invade Muslin Spain and Seville.

England conquers Scotland following capture of King.

Italian republics begin to reunite with Roman Empire.



Decade ended 1440:

Philip of Burgundy annexes Holland.

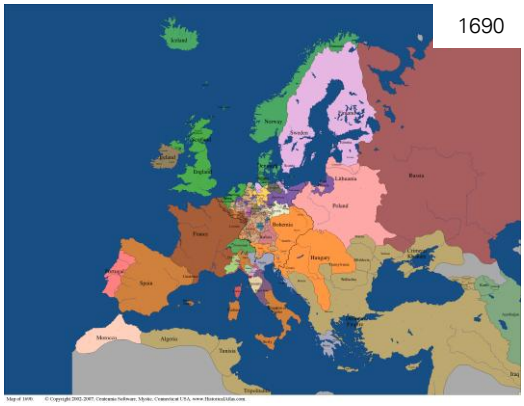
Ottoman Turks invade Serbia again.

Decade ended 1690:

Louis of France continues to expand empire.

Ottoman Empire battered at the hands of the Habsburgs and their German armies. Teeters on edge of collapse.

Glorious Revolution in England forces King James to flee to France; returns with French troops to Ireland.



Decade ended 1940:

Hitler seizes dictatorial powers in Germany and breaks the Treaty of Versailles to annex Austria.

Britain temporarily acquiesces to Hitler's demands but begins preparing for war.

Clashes between communist groups and military leads to Civil War in Spain.

WWII begins as Germany invades Poland.

Source: Centennia Historical Atlas

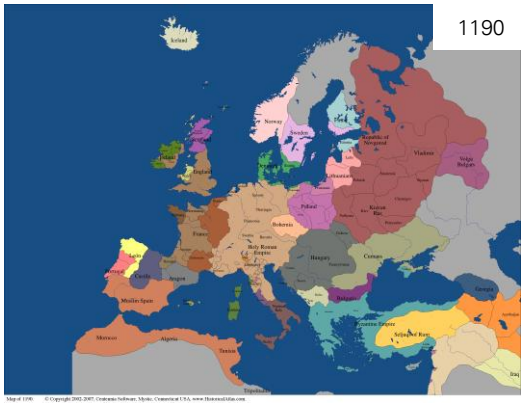
Decade ended 1190:

Normans attack the Byzantine Empire but are defeated.

Hungary captures Croatia, Bosnia, Nis and Sofia; regains control of the Dalmatian Coast.

Bulgarians found second empire.

Kurdish general Saladin invaded Jerusalem.



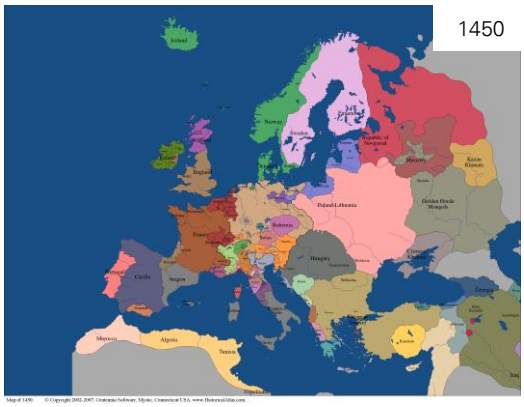
Decade ended 1450:

Aragon captures Naples.

Serbia and Hungary invade Ottoman Empire.

Sweden breaks away from Scandinavian Union.

England lost most of Normandy to France.

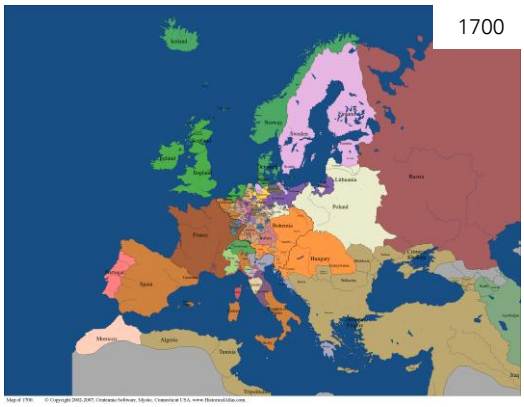


Decade ended 1700:

Battle of Boyne sees King James defeated in Ireland, dealing a blow to Catholicism.

Savoy becomes a French ally and attacks Spanish Milan.

Entire Spanish Empire inherited by Philip of France, leading to the Franco-Spanish Bourbon Empire.



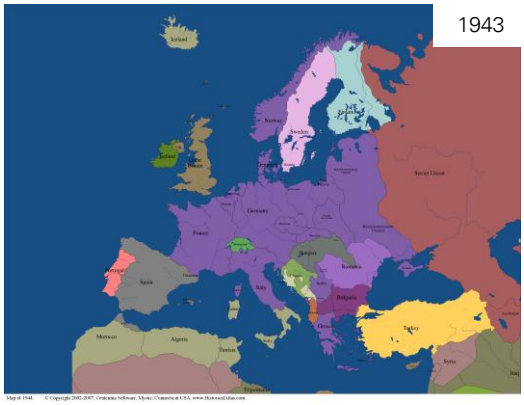
1941 - 1943:

Hitler invades numerous territories including Norway and France.

Soviet Union invades Finland under Stalin; later annexed the Baltic States.

British and Soviets join forces against Nazi Germany.

Italy surrenders to Germany.



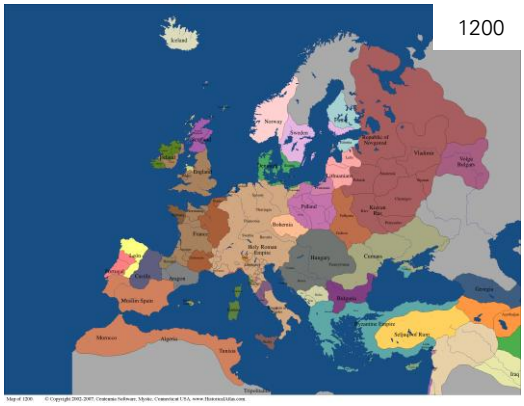
Source: Centennia Historical Atlas

Decade ended 1200:

Kingdom of Georgia allies itself with Byzantine Empire.

England captures Cyprus during the crusade.

German emperors inherit Northern Italy.



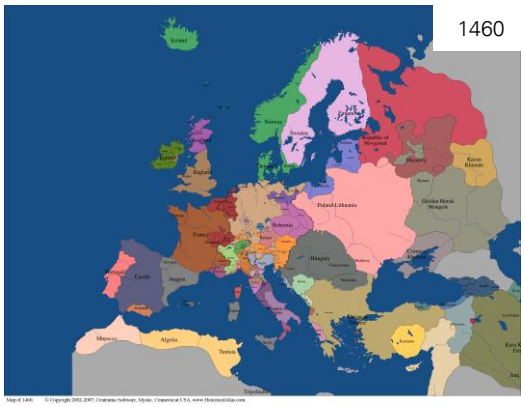
Decade ended 1460:

Ottomans conquer Constantinople.

French take Bordeaux from English.

Peace of Lodi signed by major Italian powers.

England lost Ireland during the 100 years war in France.

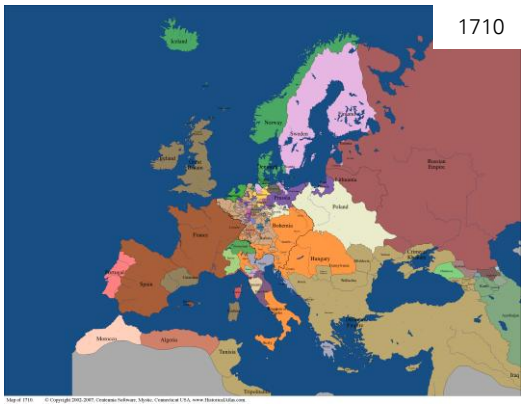


Decade ended 1710:

Great Britain formed as Scotland gives up independence.

Britain controls Catalonia.

Russian empire spreads.



1943 - 1950:

Hitler commits suicide and Nazi Germany surrenders following large losses to Allied forces.

Stalin begins building a new order in Eastern Europe.

United Nations announce plan to partition Palestine into Jewish and Arab Muslim states following violent clashes.

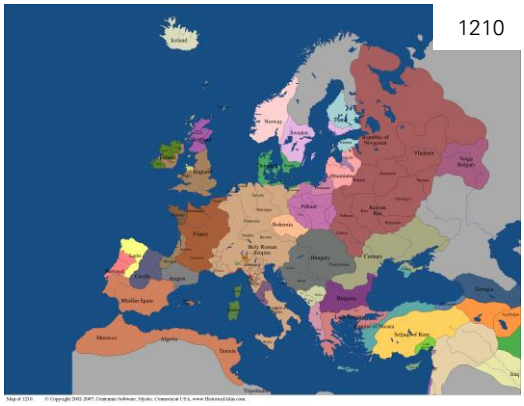
Source: Centennia Historical Atlas

Decade ended 1210:

King Philip of France conquers Normandy.

Byzantine Empire breaks up due to internal war; lands divided by leaders of fourth crusade.

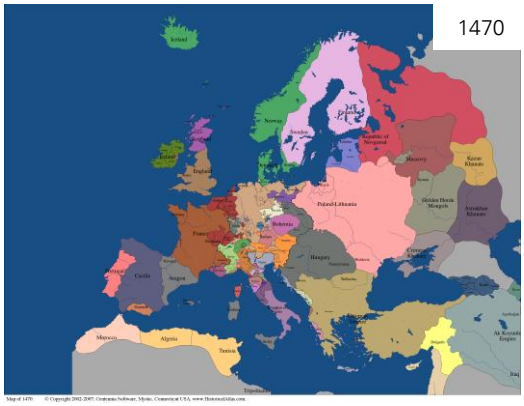
Weakened Byzantine empire loses Anatolia to Seljuq Sultans and Armenians.



Decade ended 1470:

Ottoman Turks take over Moldavia and Bosnia.

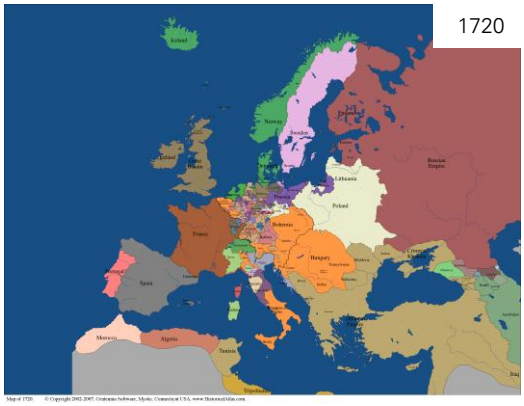
Poles ended war against Teutonic (German) order.



Decade ended 1720:

Britain backs out of Catalonia and starts discussion with French to end the war.

Russia occupied Finland but pulled out of Poland.



Decade ended 1960:

Stalin dies in 1953.

Numerous European territories granted independence.

Treaty of Rome creates European Economic Community (EEC).

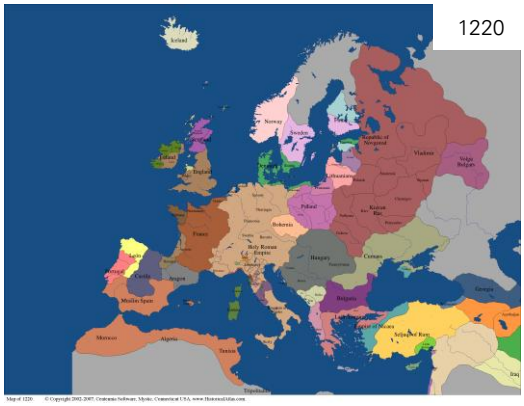
Source: Centennia Historical Atlas

Decade ended 1220:

Battle of Bouvines fought between France and the Roman Empire. France conquers Flanders.

Swedish empire takes control of Finland.

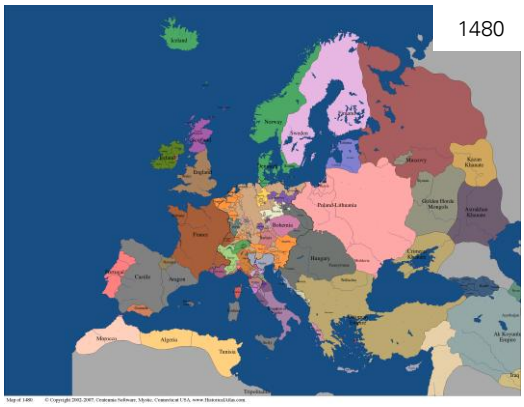
Denmark expands to Estonia.



Decade ended 1480:

Venetians take over island of Cyprus.

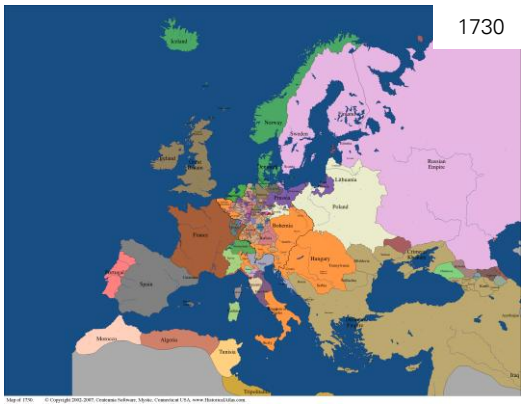
Burgundian Empire collapses after defeat by the Swiss. France and Habsburgs go to war over division of Burgundian state.



Decade ended 1730:

Russians and Ottomans advance into Persia following Afghan occupation.

Persia eventually forces back Afghan occupation.



Decade ended 1970:

Berlin Wall built between East and West Germany.

Six day war between Israel and Arab armies takes place. Israel occupies several Arab territories.

Source: Centennia Historical Atlas

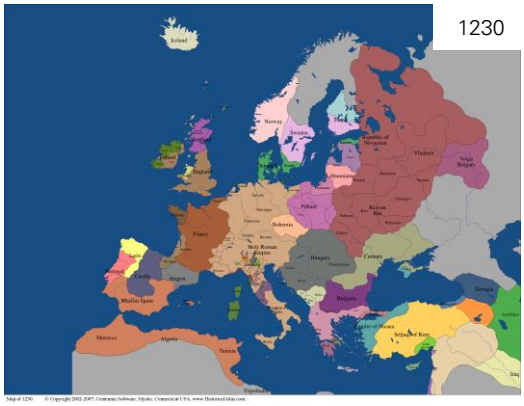
Decade ended 1230:

Mongols invade Persia, Georgia, Russia and Crimea.

Greeks of Epirus capture Salonika, breaking up the Latin Empire.

King of Denmark is captured and forced to give up numerous conquests.

Kingdom of Leon reunited with Castile in Spain.



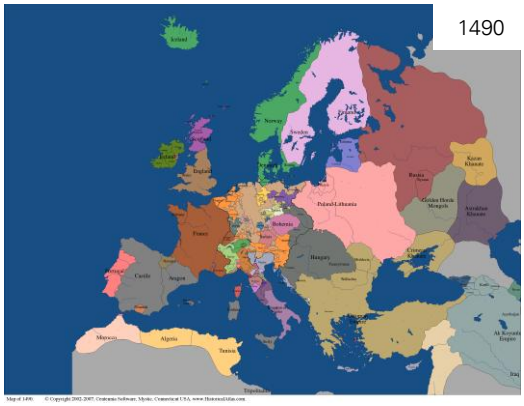
Decade ended 1490:

Provence annexed by France.

Moldavia becomes a vassal of the Ottoman Empire.

Muslim Kingdom of Granada in Spain nears its end.

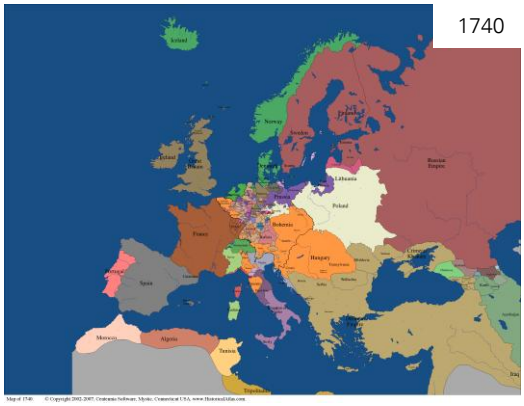
Muscovites recover Smolensk from Lithuania.



Decade ended 1740:

War of the Polish Succession pits France, Spain and Savoy against the German Empire, Russia and Britain.

Russians evacuate Poland.



Decade ended 1980:

Civil War breaks out in Lebanon.

Egypt and Israel sign a peace treaty following Camp David Accords.

Iranian revolution breaks out.

Soviet Union invades Afghanistan.

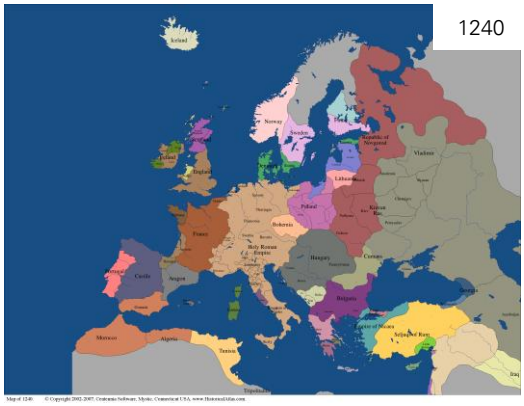
Source: Centennia Historical Atlas

Decade ended 1240:

Mongols invade and conquer numerous principalities in Kievan Rus (Russia).

Mongol armies capture Cumans, Crimea, Azerbaijan and the northern Caucasus.

Italian city states attacked by Roman emperor.



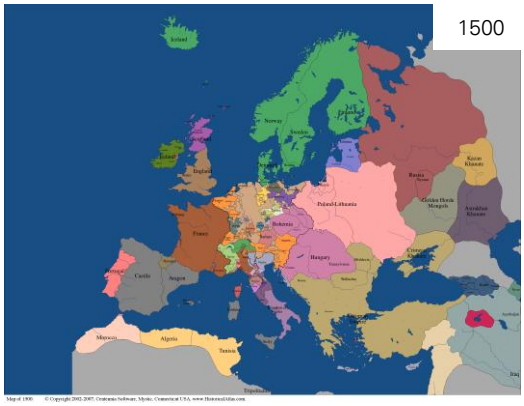
Decade ended 1500:

Spanish troops enter Granada and bring end to last Muslim Kingdom in Western Europe.

Spain captures Melilla.

France invades Italy and disturbs balance of power between independent Italian states.

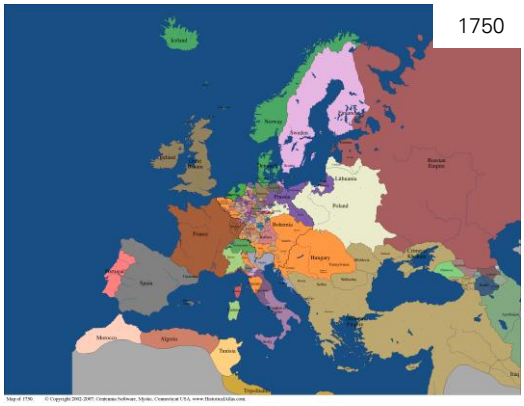
Sweden rejoined the Union of Kalmar.



Decade ended 1750:

War of Austrian Succession begins, eventually ended by Peace of Aix-la-Chapelle.

Persia breaks up into several independent dynasties.



Decade ended 1990:

Iran-Iraq war breaks out.

Berlin Wall is opened as the German Democratic Republic collapses. Communist governments across Eastern Europe begin to fall.

Soviet Union begins to break up as constituent states begin to declare independence.

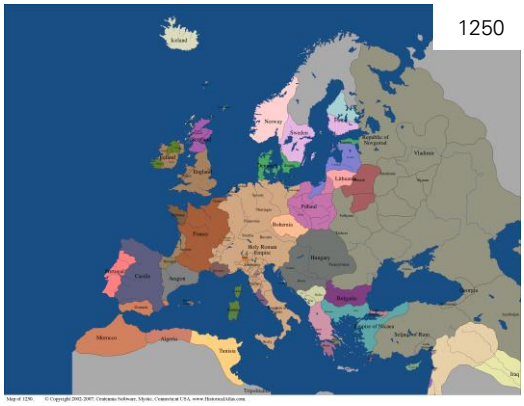
Source: Centennia Historical Atlas

Decade ended 1250:

Mongols invade Eastern Europe, advancing through Persia and Poland.

France takes control of Provence from the Roman Empire.

Roman empire devolves into smaller principalities following death of Emperor Fredrick.



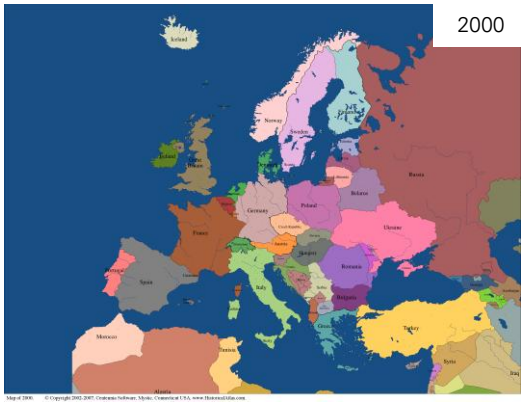
1250

Decade ended 2000:

Gorbachev resigns and Soviet Empire is formally dissolved.

Czechoslovakia and Yugoslavia dissolve.

Maastricht Treaty signed and the European Union is officially created.



2000

Source: Centennia Historical Atlas

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 42 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 42: 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)	8.5%	6.7%	-16.7%	-8.3%	-1.5%	-18.6%	-10.3%	-3.5%
	Equity (Trend Earnings/Average PE since 1958)	8.5%	6.7%	-8.4%	-2.9%	1.5%	-10.5%	-5.0%	-0.6%
	Treasury (10yr)	5.2%	3.2%	-6.2%	-2.4%	0.4%	-8.4%	-4.6%	-1.6%
	Treasury (30yr)	4.7%	1.7%	-11.7%	-5.8%	-1.2%	-13.7%	-7.8%	-3.3%
	IG Corporate Bond	5.8%	2.7%	-7.5%	-2.8%	0.8%	-9.7%	-4.9%	-1.3%
	BBB Bond	6.8%	4.0%	-6.8%	-2.2%	1.4%	-9.0%	-4.3%	-0.7%
	Property	3.5%	0.5%	-11.6%	-6.4%	-2.3%	-13.6%	-8.4%	-4.3%
	Gold	2.0%	0.3%	-20.8%	-12.4%	-5.4%	-22.6%	-14.3%	-7.4%
	Oil	2.1%	-0.1%	1.0%	1.4%	1.7%	-1.3%	-0.8%	-0.4%
High Yield	USD High Yield	8.5%	5.8%	0.1%	2.7%	4.6%	-2.2%	0.4%	2.4%
	Treasury (Duration Matched)	6.3%	3.7%	-3.3%	-0.7%	1.3%	-5.5%	-2.8%	-0.8%
	EUR High Yield			-4.1%	-0.5%	2.2%	-6.2%	-2.5%	0.3%
	Treasury (Duration Matched)			-5.9%	-2.6%	-0.1%	-8.0%	-4.7%	-2.2%
iBoxx EUR	Corporate Bond			-5.8%	-2.3%	0.5%	-7.8%	-4.2%	-1.4%
	BBB Bond			-5.0%	-1.8%	0.7%	-7.1%	-3.7%	-1.2%
	Non-Financial Bond			-6.7%	-2.9%	0.1%	-8.7%	-4.8%	-1.8%
	Non-Financial BBB Bond			-5.6%	-2.2%	0.4%	-7.7%	-4.2%	-1.5%
	Bund (Duration Matched)			-5.9%	-2.6%	-0.1%	-7.9%	-4.5%	-2.0%
iBoxx GBP	Corporate Bond			-10.3%	-4.6%	-0.2%	-12.3%	-6.6%	-2.2%
	BBB Bond			-7.0%	-2.6%	0.8%	-9.0%	-4.6%	-1.1%
	Non-Financial Bond			-12.3%	-6.0%	-1.0%	-14.3%	-7.9%	-2.9%
	Non-Financial BBB Bond			-8.9%	-3.9%	0.0%	-10.9%	-5.8%	-1.9%
	Gilt (Duration Matched)			-10.0%	-4.9%	-0.9%	-12.0%	-6.8%	-2.9%
iBoxx USD	Corporate Bond			-4.2%	-0.8%	1.8%	-6.4%	-3.0%	-0.3%
	BBB Bond			-3.3%	-0.3%	2.1%	-5.6%	-2.4%	-0.1%
	Non-Financial Bond			-5.4%	-1.5%	1.4%	-7.6%	-3.7%	-0.7%
	Non-Financial BBB Bond			-4.1%	-0.8%	1.8%	-6.3%	-2.9%	-0.3%
	Treasury (Duration Matched)			-6.2%	-2.4%	0.4%	-8.4%	-4.6%	-1.6%

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

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. We think the jury is still out as there is no conclusive evidence that earnings have broken permanently higher (and not

just cyclically) from their long-term trend post-1958. Basically when we look at our long database of returns, performance 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.

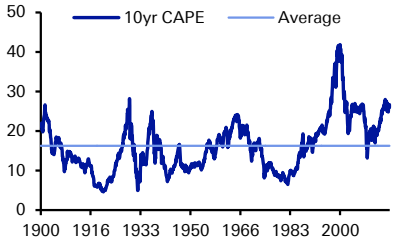
Overall this leaves us preferring method 1 over the very long-term but we've included both results in the exercise for those that think it's a slightly different market now to that seen prior to 1958 and the great dividend crossover.

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

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 43, PE ratios have been above average for most of the period since around 1990. Perhaps these higher valuations tie in with our analysis earlier in the document 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 its long-term average for almost the entire post 1990 period. Maybe the 2016-2050 period will see a return to better short-medium term returns from mean reversion strategies, especially if we're right that the trends that have shaped the post 1980 world are now likely to reverse over the coming decades.

Figure 43: 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. On a nominal basis 10 year Treasuries just about scrape into positive territory (+0.4% p.a.) when mean reverting over 10 years. For those that think such a negative outlook is highly unlikely, the long-term returns seen in this document show that every decade between the 1940s-1970s saw negative real returns for the US (and many other) Government bond markets.

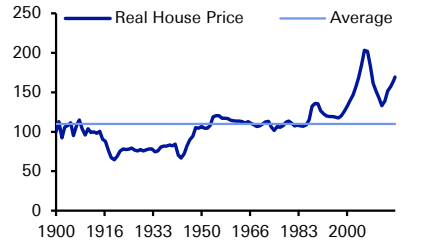
Future Dollar long-dated credit returns also look challenging based on this analysis but the extra carry gives them an advantage over Treasuries.

Extending this analysis to the iBoxx indices we can see that real returns over 10 years would be negative across all three currencies based on our mean reversion assumptions. That said for EUR and USD, excess returns are still expected to be positive. For GBP this is not the case when looking at overall non-financials, although this can be mostly explained by a slight mismatch in maturity. The index has an average life of around 14 years while we are comparing it with the 10 year Gilt. The key point here is that excess returns are broadly expected to be positive across all currencies as spreads are not at extreme levels.

Looking now at HY we can see the potential real returns for USD HY assuming mean reversion over the next decade has dropped since last year's study at 2.4% p.a. (4.6% p.a. in nominal terms). Therefore we would expect them to remain comfortably below long-term average levels. However excess returns (3.2% p.a.) would be above the long-term average level by around 1% and are about 2% higher than the potential IG excess return. For EUR HY expected returns over the next decade are notably lower than for USD HY but are still positive with excess returns of around 2.5% 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.

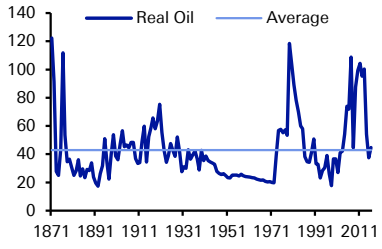
For property, using Robert Shiller's long-term data back to 1900, the asset class still appears expensive on a mean reversion basis. In nominal terms our mean reversion suggests house prices could fall by just over 2% p.a. over the next decade. This is the fourth year in a row where expected returns have fallen, reflecting continued improvement in US real estate. Perhaps property is tied to interest rates though. While yields remain ultra low, property will look expensive.

Figure 44: Real US House Price



Source: Deutsche Bank, Bloomberg Finance LP, Irrational Exuberance

Figure 45: 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. Given the significant re-pricing we've seen for oil over the past 2 years our mean reversion exercise has over the last year returned Oil back to seeing positive likely returns ahead on a mean reversion basis. So much cheaper but only really back closer to its long-term real price trend (Figure 45). Meanwhile Gold has got more expensive over the past year which ensures even more negative mean reversion returns over our chosen time horizons. Whether the new monetary paradigm leads to a permanent shift in the price of Gold is open to debate though.

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). We also then 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 also 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. We also then detail returns from certain starting points, including 1980 and 1999: two periods that correspond 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 56 and Figure 57 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 outperformed the Commodities analysed in this section. Over the last 100 years (since end 1916, where we have data for the widest selection of assets), Equities outperform 10yr and 30yr Governments by around +4.6% p.a., Corporates by +3.8% p.a. and T-bills (cash proxy) by +6.3% p.a. (on a nominal basis). It also outperforms Gold by 5.6% p.a., Oil by 7.1%, and US housing (prices only) by 6.1% p.a. Indeed in real terms, over the past 100 years, Gold, Oil and Housing have only returned +1.2% p.a., -0.3%, and +0.7% respectively. Equities over the same period gave you +6.6%, 10 year Treasuries +2.0% and corporate bonds +2.9% p.a. Over the 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.

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 returns. However in real terms 5 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 +3.5%-7.5% above inflation. As we discuss elsewhere in the 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 real returns are broadly in the +1.5-2% annualised return bucket for the majority since 1900, there have been government bond markets with negative returns. Italy (-2.3% p.a.), France (-1.1% p.a.) and Japan (-0.8% p.a.) lead the way in developed market terms although Germany would be the worst if we had reliable data due to the hyperinflation 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 +5-7% p.a. However the notable laggards are Italy (+1.0% p.a.), Japan (+3.9% p.a.) and Spain (+4.2% p.a.). Since 1980, the period we 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 (+3.0% p.a. real adjusted) and perhaps the UK (+3.1% p.a. real adjusted) for context. Germany is identical (+3.1% p.a.) but Greece (-9.1% p.a.), Portugal (-1.8% p.a.) and Italy (-0.9% p.a.) have all failed to see positive real total returns (including dividends) since the single currency came into existence nearly 18 years ago. Spain (+1.0% p.a.) and Ireland (+1.3% 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 this report, 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. One of the most interesting aspects of this is that the current decade is the first through history to see the vast majority of nominal DM economies shrink in dollar GDP terms. Prior to this decade any currency weakness was offset by strong local currency growth. This has not been the case over this past decade. So the world is suffering from its worst period of dollar growth on record.

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 46: 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 (2012-2016)	13.77%	6.34%	5.36%	7.55%	2.76%	5.47%	6.35%	1.36%	0.08%	5.98%	-2.89%	-8.08%	-15.92%	-10.55%	-9.93%
last 10yrs (2007-2016)	6.53%	8.27%	7.90%	8.33%	5.60%	7.71%	6.84%	4.27%	0.64%	-0.14%	7.82%	-2.39%	-3.75%	-2.25%	-5.15%
last 15yrs (2002-2016)	6.42%	8.87%	8.24%	8.99%	5.41%	7.42%	7.84%	3.98%	1.24%	3.00%	11.09%	8.38%	5.01%	1.57%	1.35%
last 25yrs (1992-2016)	8.98%	8.90%	8.63%	9.12%	6.20%	8.10%	7.89%	5.39%	2.56%	3.53%	5.20%	3.31%	3.15%	0.08%	2.23%
last 50yrs (1967-2016)	10.04%	8.47%	8.11%	8.88%	7.20%	7.34%			4.97%	4.93%	7.55%	3.76%	5.42%	1.55%	2.53%
last 75yrs (1942-2016)	11.49%	6.19%	5.82%	6.68%	5.47%	5.23%			3.95%	4.93%	4.97%	4.01%	3.82%	1.46%	2.24%
last 100yrs (1917-2016)	9.83%	6.04%			5.15%	5.19%			3.52%	3.75%	4.27%	1.93%	2.72%	0.71%	1.74%
last 125yrs (1892-2016)	9.25%				4.70%				3.37%		3.40%	2.15%	3.45%	1.15%	
last 150yrs (1867-2016)	8.89%				4.83%				3.42%		2.63%	1.02%	2.05%	0.46%	
last 175yrs (1842-2016)	8.96%				4.99%				3.65%		2.42%	1.26%		0.88%	
last 200yrs (1817-2016)	8.57%				5.01%						2.13%	1.07%			
since 1800	8.53%				5.15%						1.97%	0.68%			
since 1900	9.51%	5.80%			4.71%	4.82%			3.45%	3.48%	3.64%	2.13%	2.79%	1.47%	
since 1920	10.01%	6.28%	6.04%	6.76%	5.29%	5.33%			3.51%	3.67%	4.40%	2.61%	2.21%	0.44%	1.45%
since 1930	9.48%	6.23%	5.98%	6.70%	5.25%	5.25%			3.47%	4.03%	4.92%	2.97%	3.07%	1.23%	2.13%
since 1971	10.31%	9.36%	8.91%	9.81%	7.61%	8.02%			4.89%	4.95%	8.10%	3.23%	5.59%	1.70%	2.78%
since 1980	11.40%	10.36%	9.98%	10.71%	8.31%	9.37%			4.51%	4.22%	2.32%	2.18%	0.24%	-0.43%	0.68%
since 1986	10.28%	9.71%	9.35%	9.99%	7.20%	8.78%	8.50%	6.33%	3.36%	4.02%	4.41%	4.06%	1.46%	0.20%	1.48%
since 1999	5.14%	8.09%	7.74%	8.28%	5.16%	6.78%	6.59%	4.28%	1.81%	3.79%	8.96%	6.56%	7.07%	2.32%	2.06%
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%				4.75%				5.08%		0.00%	2.35%		5.70%	
1860-1869	18.34%				6.44%				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%	6.74%	6.52%	7.33%	5.65%	6.05%			3.88%	0.65%	0.00%	-0.48%	-4.98%	-6.18%	-4.33%
1930-1939	-0.47%	6.50%	7.48%	6.47%	3.88%	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%	0.04%	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%	32.23%	6.28%	28.04%	11.43%	10.48%
1980-1989	17.47%	13.72%	13.03%	14.45%	12.78%	12.64%			9.13%	6.94%	-2.85%	0.57%	-5.40%	-0.74%	-2.00%
1990-1999	18.21%	9.31%	8.84%	9.97%	7.98%	8.40%	11.21%	7.34%	4.95%	2.67%	-4.02%	-2.12%	1.67%	-6.31%	3.19%
2000-2009	-0.95%	8.87%	8.91%	8.64%	6.40%	7.03%	6.52%	6.17%	2.74%	3.95%	14.32%	13.96%	11.91%	6.67%	6.04%
2010-2016	12.21%	9.30%	8.85%	9.53%	5.33%	9.55%	7.28%	2.96%	0.08%	3.02%	3.03%	-4.92%	-8.84%	-1.12%	-6.20%
RETURNS BY HALF CENTURY															
1800-1849	7.20%				6.08%						0.13%	-1.83%			
1850-1899	7.61%				5.25%				3.91%		0.00%	-0.16%		0.48%	
1900-1949	7.39%	4.82%			3.20%	3.72%			2.24%	2.49%	1.35%	-0.09%	0.89%	2.34%	
1950-1999	13.55%	5.70%	5.33%	6.22%	5.83%	4.84%			5.30%	4.46%	4.00%	3.17%	4.72%	-0.03%	2.42%
2000-2016	4.27%	9.04%	8.88%	9.01%	5.96%	8.06%	6.83%	4.83%	1.64%	3.57%	9.53%	5.77%	2.85%	3.39%	0.81%

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

Figure 47: 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 (2012-2016)	12.54%	5.19%	4.23%	6.39%	1.66%	4.34%	5.20%	0.27%	-1.00%	4.84%	-3.93%	-9.07%	-16.82%	-11.52%	-10.89%
last 10yrs (2007-2016)	4.77%	6.49%	6.12%	6.55%	3.86%	5.93%	5.08%	2.55%	-1.02%	-1.79%	6.04%	-4.00%	-5.33%	-3.86%	-6.72%
last 15yrs (2002-2016)	4.30%	6.70%	6.09%	6.82%	3.31%	5.29%	5.69%	1.91%	-0.77%	0.95%	8.88%	6.22%	2.92%	-0.45%	-0.66%
last 25yrs (1992-2016)	6.60%	6.53%	6.26%	6.74%	3.89%	5.74%	5.54%	3.09%	0.33%	1.28%	2.91%	1.05%	0.90%	-2.10%	0.00%
last 50yrs (1967-2016)	5.76%	4.25%	3.90%	4.64%	3.03%	3.16%			0.88%	0.84%	3.37%	-0.28%	1.31%	-2.41%	-1.46%
last 75yrs (1942-2016)	7.49%	2.39%	2.03%	2.85%	1.69%	1.46%			0.22%	1.17%	1.21%	0.28%	0.10%	-2.17%	-1.43%
last 100yrs (1917-2016)	6.56%	2.88%			2.02%	2.05%			0.43%	0.65%	1.16%	-1.11%	-0.35%	-2.30%	-1.29%
last 125yrs (1892-2016)	6.24%				1.82%				0.52%		0.56%	-0.66%	0.61%	-1.63%	
last 150yrs (1867-2016)	6.59%				2.63%				1.25%		0.47%	-1.11%	-0.10%	-1.65%	
last 175yrs (1842-2016)	6.66%				2.77%				1.47%		0.26%	-0.88%		-1.25%	
last 200yrs (1817-2016)	6.70%				3.20%						0.38%	-0.67%			
since 1800	6.75%				3.42%						0.30%	-0.98%			
since 1900	6.30%	2.70%			1.64%	1.74%			0.41%	0.45%	0.60%	-0.87%	-0.22%	-1.50%	
since 1920	7.17%	3.53%	3.29%	4.00%	2.57%	2.61%			0.83%	0.99%	1.70%	-0.04%	-0.44%	-2.15%	-1.18%
since 1930	6.21%	3.06%	2.82%	3.51%	2.11%	2.11%			0.38%	0.92%	1.79%	-0.10%	-0.01%	-1.79%	-0.91%
since 1971	6.09%	5.18%	4.74%	5.60%	3.48%	3.89%			0.88%	0.93%	3.96%	-0.73%	1.54%	-2.19%	-1.16%
since 1980	8.03%	7.02%	6.65%	7.36%	5.03%	6.06%			1.35%	1.07%	-0.78%	-0.92%	-2.79%	-3.44%	-2.37%
since 1986	7.53%	6.97%	6.62%	7.24%	4.52%	6.07%	5.79%	3.67%	0.78%	1.42%	1.80%	1.46%	-1.08%	-2.30%	-1.06%
since 1999	2.95%	5.85%	5.50%	6.03%	2.98%	4.57%	4.37%	2.11%	-0.30%	1.64%	6.70%	4.34%	4.85%	0.19%	-0.06%
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%				3.14%				3.47%		-1.53%	0.79%		4.08%	
1860-1869	13.58%				2.16%				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%	7.75%	7.53%	8.35%	6.65%	7.06%			4.87%	1.61%	0.95%	0.46%	-4.08%	-5.29%	-3.42%
1930-1939	1.60%	8.72%	9.72%	8.69%	6.04%	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%	-2.41%	2.84%	-1.69%	-5.34%	-2.22%
1970-1979	-1.51%	-1.90%	-2.20%	-1.43%	-1.21%	-3.43%			-0.85%	0.56%	23.14%	-1.03%	19.23%	3.76%	2.88%
1980-1989	11.78%	8.22%	7.56%	8.91%	7.32%	7.19%			3.84%	1.76%	-7.55%	-4.30%	-9.98%	-5.54%	-6.75%
1990-1999	14.83%	6.19%	5.73%	6.82%	4.90%	5.30%	8.03%	4.27%	1.95%	-0.26%	-6.77%	-4.92%	-1.23%	-8.99%	0.24%
2000-2009	-3.42%	6.15%	6.19%	5.93%	3.75%	4.36%	3.86%	3.52%	0.18%	1.35%	11.46%	11.12%	9.12%	4.01%	3.39%
2010-2016	10.64%	7.77%	7.33%	8.00%	3.86%	8.02%	5.78%	1.52%	-1.31%	1.58%	1.59%	-6.25%	-10.11%	-2.50%	-7.51%
RETURNS BY HALF CENTURY															
1800-1849	7.70%				6.58%						0.60%	-1.37%			
1850-1899	6.85%				4.51%				3.19%		-0.70%	-0.86%		-0.23%	
1900-1949	4.91%	2.41%			0.82%	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%
2000-2016	2.14%	6.81%	6.66%	6.78%	3.79%	5.85%	4.65%	2.69%	-0.44%	1.45%	7.29%	3.61%	0.75%	1.28%	-1.25%

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

Figure 48: Developed Market Nominal Annualised Equity and Bond Returns

	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	Since 1800	Since 1980	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	2010-2016
EQUITY																															
Australia	11.0%	4.1%	9.3%	11.9%	12.0%	11.8%		11.3%	8.4%										7.9%	13.6%	9.7%	15.4%	10.2%	10.1%	15.3%	14.0%	8.6%	17.7%	11.0%	8.9%	6.2%
Austria	6.2%	-5.1%	4.5%					6.8%	5.0%																		6.5%	16.3%	1.4%	7.4%	1.1%
Belgium	13.6%	1.9%	8.4%	10.0%				10.6%	4.0%																	3.4%	7.2%	20.6%	11.4%	1.8%	9.0%
Canada	7.0%	4.1%	8.3%	9.3%				8.8%	7.1%															8.4%	13.3%	10.0%	10.4%	12.2%	10.6%	5.6%	6.0%
Denmark	21.7%	8.4%	11.7%					14.2%	11.2%																		7.9%	23.8%	11.1%	6.7%	16.8%
France	11.7%	2.2%	7.8%	10.2%	11.4%	10.4%		10.7%	5.0%											5.6%	8.1%	16.9%	-1.5%	20.7%	24.0%	4.5%	6.8%	21.9%	14.3%	-0.3%	6.7%
Germany	12.8%	4.8%	7.4%	8.3%	5.9%	5.4%		8.8%	4.5%								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%	9.2%
Greece	-1.7%	-16.6%	1.7%					12.5%	-7.3%																			36.2%	38.3%	-7.2%	-15.8%
Ireland	17.4%	-2.4%	8.6%						3.2%																				14.4%	-2.8%	12.5%
Italy	7.5%	-3.4%	5.8%	7.2%				10.2%	1.0%														6.5%	30.4%	23.5%	3.7%	-3.0%	28.0%	12.6%	-1.5%	1.4%
Japan	14.8%	-0.5%	0.3%	6.7%				4.1%	2.7%														14.2%	15.9%	33.9%	13.0%	12.3%	21.3%	-4.3%	-5.0%	7.6%
Netherlands	13.6%	4.6%	9.2%	10.9%				12.0%	3.9%																	6.1%	4.4%	21.5%	19.4%	-1.6%	9.5%
Norway	8.8%	3.9%																													7.0%
Portugal	2.9%	-3.3%	5.7%						0.2%																				11.1%	0.6%	-2.1%
Spain	4.2%	-4.2%	9.1%	11.1%				13.0%	3.4%																13.3%	19.1%	-1.2%	27.4%	18.7%	4.3%	-0.5%
Sweden	12.5%	5.7%	11.9%	13.8%				15.6%	7.8%													3.5%	-0.2%	10.5%	16.3%	8.1%	6.7%	32.4%	19.0%	1.3%	10.2%
Switzerland	10.6%	2.5%	8.9%	8.1%				8.6%	3.8%																		2.0%	10.6%	16.0%	1.1%	6.6%
UK	8.5%	4.8%	8.2%	12.2%	10.1%	8.7%	6.9%	12.0%	5.1%	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%	7.5%
US	13.8%	6.5%	9.0%	10.0%	9.8%	9.5%	8.5%	11.4%	5.1%	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%	12.2%
BOND																															
Australia	6.4%	7.7%	8.3%	9.1%	6.8%	6.1%		10.2%	6.5%							5.3%	5.8%	5.1%	3.5%	3.4%	2.1%	4.6%	4.7%	5.1%	3.1%	4.2%	6.9%	12.4%	12.9%	6.7%	8.4%
Austria	5.1%	5.3%	6.8%	7.4%				7.3%	5.0%														0.4%	7.0%	6.4%	6.2%	8.1%	8.7%	8.5%	5.8%	5.6%
Belgium	8.7%	6.3%	7.5%	8.2%	6.5%	5.6%		9.0%	5.6%					3.7%	6.1%	5.0%	5.3%	4.8%	2.6%	2.8%	-1.1%	8.5%	2.9%	4.9%	4.3%	4.4%	6.3%	12.0%	10.4%	6.0%	6.9%
Canada	3.4%	5.3%	7.4%	8.3%	6.4%	5.6%		9.3%	5.6%							5.0%	7.2%	5.3%	3.6%	1.8%	2.8%	5.8%	5.2%	3.5%	1.5%	3.7%	6.8%	13.4%	10.7%	6.8%	5.3%
Denmark	4.0%	5.8%	7.4%	10.3%	7.6%	6.8%	6.0%	10.9%	5.4%	3.6%	4.9%	10.6%	4.0%	3.6%	4.8%	4.6%	6.0%	4.9%	3.2%	3.7%	-0.5%	7.4%	6.0%	4.8%	4.5%	4.1%	10.1%	18.9%	11.2%	6.1%	6.3%
France	7.1%	6.1%	7.4%	8.5%	6.6%	5.7%	6.2%	9.7%	5.4%	23.1%	6.0%	10.6%	3.7%	0.5%	6.7%	4.9%	6.0%	4.5%	4.3%	3.1%	-1.0%	7.3%	3.8%	2.8%	4.8%	4.3%	6.1%	14.9%	10.7%	5.9%	6.5%
Germany	4.4%	5.8%	6.2%	7.1%				6.7%	5.1%																5.9%	5.8%	8.1%	8.2%	6.9%	5.8%	5.9%
Ireland	16.6%	7.6%	8.1%	9.3%	6.6%	5.6%		11.0%	6.2%											1.5%	-0.7%	6.2%	3.8%	7.1%	-0.6%	3.4%	5.5%	18.4%	10.6%	5.1%	9.9%
Italy	13.0%	6.5%	9.3%	10.0%	7.2%	6.5%		11.4%	5.6%		14.3%	10.2%	7.2%	5.6%	6.3%	1.0%	12.3%	6.4%	5.9%	5.1%	1.5%	2.9%	5.9%	5.0%	3.3%	5.0%	6.5%	17.3%	14.3%	5.8%	7.3%
Japan	2.4%	2.5%	3.7%	5.7%	6.5%	6.1%		5.3%	2.2%									7.0%	5.7%	5.8%	1.4%	7.8%	8.2%	4.1%	5.9%	12.3%	6.8%	9.2%	7.2%	1.8%	2.4%
Netherlands	5.5%	6.2%	7.1%	7.5%	5.3%	5.0%	5.5%	7.8%	5.4%	3.8%	17.7%	8.9%	3.2%	5.5%	5.7%	2.4%	6.0%	6.2%	2.6%	2.6%	2.1%	6.3%	4.7%	4.6%	0.2%	2.0%	7.5%	9.6%	8.7%	5.9%	6.5%
Norway	2.8%	4.6%	6.5%	7.8%	6.1%	5.6%		8.7%	5.2%				4.0%	3.9%	3.3%	3.6%	5.5%	6.8%	1.3%	3.7%	1.2%	6.9%	4.2%	12.1%	-3.6%	5.0%	4.6%	11.9%	11.7%	5.4%	5.0%
Portugal	22.8%	6.5%	8.1%					11.3%	6.1%																			19.5%	10.9%	6.7%	7.3%
Spain	10.6%	7.0%	8.0%	9.4%	7.1%	6.9%	8.5%	10.6%	6.0%	3.6%	13.6%	23.3%	9.8%	15.6%	9.5%	2.4%	10.7%	11.4%	5.2%	8.9%	2.7%	5.3%	5.8%	5.9%	2.8%	4.8%	6.0%	16.3%	12.1%	5.6%	7.9%
Sweden	3.3%	4.8%	6.9%	7.5%	5.8%	5.4%		8.9%	4.8%								5.9%	6.4%	3.5%	3.4%	-1.2%	6.7%	5.6%	7.3%	1.3%	3.6%	4.3%	12.4%	11.9%	5.6%	4.6%
Switzerland	3.2%	4.1%	4.8%	4.8%	4.4%	4.1%		4.6%	3.8%											3.6%	1.5%	6.0%	4.2%	4.1%	2.7%	2.9%	5.8%	3.9%	5.9%	4.3%	4.1%
UK	2.2%	4.4%	6.3%	8.6%	6.6%	5.6%	4.8%	8.7%	4.5%	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%	7.2%	3.3%	3.4%	5.0%	9.4%	14.0%	10.2%	5.4%	3.8%
US	2.7%	5.6%	6.3%	7.3%	5.2%	4.8%	5.1%	8.4%	5.3%	9.1%	6.2%	5.5%	2.8%	7.5%	4.0%	6.3%	3.7%	5.5%	3.9%	1.6%	2.5%	5.5%	4.0%	2.7%	0.4%	2.8%	6.1%	12.8%	8.0%	6.6%	5.3%

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

Figure 49: Developed Market Real Annualised Equity and Bond Returns

	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	Since 1800	Since 1980	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	2010-2016
EQUITY																															
Australia	9.1%	1.8%	6.7%	6.4%	7.6%	7.7%		6.9%	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%	4.1%
Austria	4.7%	-6.8%	2.5%					4.2%	3.2%																		0.5%	12.2%	-1.0%	5.5%	-0.7%
Belgium	12.3%	0.0%	6.4%	6.1%				7.7%	2.0%																	0.6%	0.1%	15.2%	9.1%	-0.3%	7.1%
Canada	5.5%	2.4%	6.4%	5.1%				5.5%	5.0%															3.7%	10.6%	7.1%	2.7%	5.6%	8.3%	3.5%	4.2%
Denmark	20.9%	6.8%	9.8%					10.9%	9.3%																		-1.6%	16.3%	8.8%	4.7%	15.4%
France	10.9%	0.9%	6.2%	5.6%	3.4%	3.2%		7.4%	3.4%											5.3%	-3.3%	8.3%	-4.3%	-8.8%	17.4%	0.6%	-2.2%	14.1%	12.2%	-2.1%	5.5%
Germany	12.0%	3.5%	5.6%	5.6%	-19.2%	-17.0%		6.7%	3.1%								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%	8.0%
Greece	-1.2%	-17.7%	-2.2%					3.5%	-9.3%																			14.3%	25.4%	-10.1%	-16.4%
Ireland	16.6%	-3.0%	6.6%						1.3%																				11.8%	-5.2%	11.8%
Italy	6.8%	-4.9%	3.3%	1.0%				5.3%	-0.9%														6.1%	-12.8%	18.9%	0.0%	-14.1%	15.9%	8.3%	-3.7%	0.1%
Japan	13.9%	-0.8%	0.1%	3.9%				3.2%	2.7%														10.4%	-25.1%	30.2%	7.1%	3.1%	18.5%	-5.3%	-4.7%	7.1%
Netherlands	12.3%	3.1%	7.0%	7.3%				9.5%	2.0%																	2.0%	-2.6%	18.3%	16.6%	-3.7%	7.9%
Norway	6.6%	1.9%																													5.1%
Portugal	2.1%	-4.5%	2.9%						-1.8%																				5.1%	-1.9%	-3.5%
Spain	3.7%	-5.5%	6.3%	4.2%				7.9%	1.1%																7.1%	12.6%	-13.9%	16.0%	14.1%	1.3%	-1.6%
Sweden	11.8%	4.4%	10.3%	8.9%				11.7%	6.2%													8.4%	-0.9%	6.5%	11.3%	4.1%	-2.0%	23.0%	15.6%	-0.6%	9.3%
Switzerland	10.9%	2.3%	8.1%	5.6%				6.8%	3.3%																		-2.8%	7.0%	13.6%	0.2%	6.9%
UK	7.3%	2.6%	5.9%	6.3%	6.1%	4.9%	4.9%	8.0%	3.1%	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%	5.5%
US	12.5%	4.8%	6.6%	5.8%	6.6%	6.3%	6.7%	8.0%	3.0%	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%	10.6%
BOND																															
Australia	4.6%	5.3%	5.7%	3.7%	2.6%	2.2%		5.9%	3.7%								5.6%	4.8%	5.0%	2.3%	-3.0%	3.8%	5.7%	-0.2%	-3.1%	1.7%	-2.9%	3.8%	10.4%	3.5%	6.2%
Austria	3.7%	3.4%	4.8%	4.0%				4.7%	3.2%																1.5%	2.7%	2.0%	4.8%	5.9%	3.9%	3.8%
Belgium	7.4%	4.4%	5.5%	4.4%		0.6%		6.1%	3.6%					4.8%	5.8%	3.5%	1.5%	3.9%	-0.7%	-0.2%			3.6%	-6.9%	2.2%	1.6%	-0.8%	6.9%	8.2%	3.9%	5.0%
Canada	1.9%	3.5%	5.5%	4.1%	3.4%	2.4%		6.0%	3.6%							9.8%	9.1%	5.0%	4.9%	-2.2%	-3.4%	6.7%	7.1%	-1.0%	-0.9%	1.0%	-0.7%	6.8%	8.4%	4.6%	3.6%
Denmark	3.3%	4.3%	5.5%	5.5%	3.5%	2.8%	2.9%	7.6%	3.7%	-2.1%	-15.4%	20.2%	4.3%	3.9%	3.3%	4.1%	6.2%	5.6%	3.3%	2.6%	-8.8%	8.4%	4.0%	0.3%	0.6%	-1.4%	0.5%	11.7%	9.0%	4.1%	5.0%
France	6.4%	4.8%	5.8%	4.0%	-1.1%	-1.3%		6.4%	3.8%						6.2%	4.2%	5.5%	4.6%	4.5%	2.7%	-11.5%	-0.6%	0.8%	-22.4%	-0.8%	0.4%	-2.8%	7.5%	8.7%	4.0%	5.3%
Germany	3.6%	4.4%	4.5%	4.4%				4.6%	3.6%																3.6%	3.4%	3.0%	5.3%	4.5%	4.0%	4.7%
Ireland	15.9%	6.9%	6.1%	3.5%				6.9%	4.3%														3.0%	1.8%	-4.1%	-0.9%	-6.7%	8.8%	8.0%	2.5%	9.3%
Italy	12.3%	4.9%	6.8%	3.6%	-2.3%	-1.9%		6.4%	3.6%								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%	5.9%
Japan	1.6%	2.2%	3.4%	2.9%	-0.8%	-0.5%		4.4%	2.2%									10.5%	-0.9%	2.2%	-7.1%	11.9%	4.6%	-32.7%	3.0%	6.4%	-2.0%	6.7%	6.1%	2.1%	1.9%
Netherlands	4.3%	4.7%	5.0%	4.0%	2.1%	1.8%	4.1%	5.4%	3.4%	2.9%	19.2%	10.7%	2.9%	6.9%	5.5%	2.6%	5.8%	8.1%	3.4%	0.7%	-4.6%	8.5%	6.1%	-3.0%	-3.4%	-1.9%	0.3%	6.7%	6.2%	3.6%	5.0%
Norway	0.7%	2.6%	4.5%	3.0%	2.3%	1.8%		4.8%	3.2%				3.2%	2.9%	2.0%	4.5%	5.6%	7.1%	0.5%	2.7%	-9.3%	11.7%	3.1%	7.8%	-8.2%	1.3%	-3.5%	3.4%	9.0%	3.4%	3.1%
Portugal	21.8%	5.1%	5.2%					4.2%	4.0%																			2.4%	4.9%	4.1%	5.8%
Spain	10.1%	5.5%	5.2%	2.6%	0.9%	1.5%		5.7%	3.7%			28.2%	7.0%	17.5%	6.8%	2.7%	9.5%	12.2%	5.3%	8.6%	-1.1%	4.5%	0.8%	-3.3%	-2.8%	-0.9%	-7.6%	5.9%	7.8%	2.6%	6.7%
Sweden	2.6%	3.4%	5.3%	2.9%	2.0%	1.8%		5.2%	3.3%								5.9%	6.9%	2.7%	2.3%	-11.0%	11.8%	4.9%	3.4%	-3.0%	-0.2%	-4.2%	4.4%	8.6%	3.7%	3.8%
Switzerland	3.5%	4.0%	4.0%	2.3%	2.3%	1.9%		2.9%	3.3%											2.3%	-6.7%	9.5%	5.5%	-0.4%	1.5%	-0.3%	0.8%	0.6%	3.7%	3.3%	4.3%
UK	1.0%	2.1%	4.1%	2.9%	2.8%	1.9%	2.9%	4.8%	2.5%	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%	6.7%	0.5%	-0.7%	1.3%	-3.2%	6.6%	6.5%	3.4%	1.9%
US	1.6%	3.9%	4.0%	3.1%	2.1%	1.7%	3.4%	5.1%	3.1%	9.1%	5.9%	7.6%	0.7%	10.5%	2.4%	2.0%	6.0%	5.5%	3.8%	-0.7%	-4.5%	6.5%	6.1%	-2.5%	-1.8%	0.2%	-1.2%	7.3%	4.9%	4.0%	3.8%

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

Figure 50: Developed Market USD Annualised Equity and Bond Returns

	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	Since 1800	Since 1980	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	2010-2016
EQUITY																															
Australia	4.6%	3.7%	9.3%	11.1%	10.7%	10.7%		10.1%	9.7%										8.0%	13.6%	6.9%	18.5%	5.5%	6.4%	15.3%	14.0%	8.5%	13.8%	9.0%	12.4%	3.8%
Austria	3.1%	-6.6%	3.9%					6.9%	4.7%																		14.6%	16.8%	0.0%	11.3%	-2.4%
Belgium	10.3%	0.2%	7.8%	10.7%				9.9%	3.7%																	3.4%	13.5%	17.8%	10.1%	5.4%	5.2%
Canada	1.9%	2.9%	7.8%	8.9%				8.4%	8.0%															8.5%	15.1%	8.7%	9.5%	12.3%	8.1%	9.0%	2.8%
Denmark	18.2%	6.6%	11.2%					13.6%	10.9%																		11.5%	21.3%	9.8%	10.5%	12.7%
France	8.5%	0.5%	7.3%	9.8%	6.4%	6.1%		9.5%	4.7%											5.7%	0.3%	7.5%	-6.9%	-1.7%	19.9%	3.2%	10.3%	17.6%	12.9%	3.3%	3.0%
Germany	9.6%	3.1%	6.7%	10.1%	-20.6%	-17.8%		8.8%	4.2%								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%	5.4%
Greece	-4.5%	-18.0%	-0.5%					6.2%	-7.8%																			17.5%	28.5%	-4.2%	-18.7%
Ireland	14.0%	-4.0%	7.7%						2.9%																				12.2%	0.7%	8.6%
Italy	4.4%	-5.0%	4.0%	5.1%				8.0%	0.7%														6.1%	-7.6%	23.6%	3.6%	-5.4%	22.3%	8.0%	2.1%	-2.1%
Japan	8.5%	1.0%	1.1%	9.5%				6.6%	3.3%														6.1%	-25.6%	33.9%	13.0%	16.9%	27.7%	-0.9%	-4.1%	6.2%
Netherlands	10.3%	2.8%	8.5%	12.3%				11.9%	3.7%																	6.5%	11.3%	21.4%	17.7%	1.9%	5.7%
Norway	1.6%	0.8%																													1.4%
Portugal	-0.1%	-4.9%	4.5%						-0.1%																				7.9%	4.2%	-5.5%
Spain	1.2%	-5.7%	7.2%	9.1%				10.5%	3.1%																3.8%	17.3%	-0.7%	21.2%	13.9%	8.0%	-4.0%
Sweden	7.8%	3.4%	10.0%	12.7%				13.4%	7.4%													6.0%	-1.5%	8.2%	16.3%	8.1%	9.1%	27.2%	15.4%	3.0%	7.4%
Switzerland	9.8%	4.8%	10.4%	11.4%				10.1%	5.9%																		12.7%	11.0%	15.6%	5.6%	7.7%
UK	5.1%	0.8%	6.7%	10.5%	8.7%	7.4%	6.3%	10.5%	3.8%	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%	4.5%
US	13.8%	6.5%	9.0%	10.0%	9.8%	9.5%	8.5%	11.4%	5.1%	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%	12.2%
BOND																															
Australia	0.3%	7.3%	8.3%	8.3%	5.6%	5.1%		9.1%	7.8%							7.3%	3.8%	5.1%	3.6%	3.4%	-0.5%	7.4%	0.2%	1.5%	3.1%	4.2%	6.8%	8.7%	10.9%	10.1%	5.8%
Austria	2.1%	3.6%	6.2%	9.0%				7.3%	4.7%														3.5%	-18.2%	6.4%	6.3%	16.3%	9.2%	7.0%	9.6%	1.9%
Belgium	5.6%	4.6%	6.9%	8.9%	4.9%	3.9%		8.2%	5.3%					3.5%	6.3%	4.9%	5.3%	4.8%	2.6%	2.8%	-8.2%	-3.6%	4.7%	-0.3%	4.3%	4.5%	12.6%	9.4%	9.2%	9.8%	3.1%
Canada	-1.6%	4.1%	6.9%	7.9%	6.1%	5.3%		9.0%	6.5%							8.0%	4.2%	5.3%	3.5%	1.6%	2.0%	6.5%	4.1%	3.6%	3.2%	2.4%	5.9%	13.5%	8.2%	10.2%	2.2%
Denmark	1.0%	4.1%	6.9%	10.4%	6.9%	6.3%		10.2%	5.2%			12.3%	6.6%	4.2%	5.3%	6.3%	4.0%	4.9%	3.2%	3.7%	-3.7%	11.1%	2.6%	1.7%	4.5%	3.2%	13.9%	16.5%	10.0%	9.9%	2.6%
France	4.0%	4.4%	6.9%	8.1%	1.8%	1.5%		8.6%	5.1%		3.7%	10.9%	3.7%	0.4%	7.0%	4.9%	5.9%	4.5%	4.4%	3.1%	-8.2%	-1.3%	-1.9%	-16.3%	1.3%	3.0%	9.6%	10.8%	9.4%	9.7%	2.8%
Germany	1.4%	4.0%	5.6%	8.8%				6.7%	4.8%																5.9%	7.1%	16.7%	8.4%	5.4%	9.6%	2.2%
Ireland	8.3%	3.6%	0.3%	0.1%	-8.7%	-7.5%		2.2%	3.2%											1.5%	-1.5%	7.0%	6.8%	-0.3%	-22.4%	-57.5%	-1.2%	6.4%	-3.4%	2.0%	4.9%
Italy	9.8%	4.8%	7.6%	7.8%	1.4%	1.4%		9.1%	5.3%			11.6%	7.3%	5.2%	6.9%	0.4%	11.5%	7.6%	5.4%	5.8%	-7.5%	-0.8%	5.5%	-25.7%	3.4%	4.9%	3.9%	12.1%	9.6%	9.6%	3.5%
Japan	-3.3%	4.1%	4.5%	8.4%	2.4%	2.6%		7.8%	2.8%									5.4%	0.9%	5.8%	1.5%	7.6%	0.5%	-33.2%	5.9%	12.3%	11.2%	14.9%	11.0%	2.8%	1.1%
Netherlands	2.5%	4.4%	6.5%	8.8%	5.5%	5.2%	5.7%	7.7%	5.1%	5.4%	16.9%	9.2%	3.1%	5.5%	6.1%	2.2%	5.8%	6.2%	2.6%	2.6%	1.3%	7.2%	7.6%	-2.5%	0.3%	2.4%	14.7%	9.6%	7.3%	9.6%	2.8%
Norway	-4.0%	1.5%	5.1%	7.4%	5.2%	4.8%		7.1%	4.6%				6.7%	4.5%	3.8%	5.3%	3.5%	6.8%	1.4%	3.6%	-1.6%	9.9%	2.5%	6.8%	-3.6%	4.9%	8.6%	8.6%	9.5%	8.9%	-0.5%
Portugal	19.2%	4.7%	6.8%					7.5%	5.8%																			7.2%	7.7%	10.5%	3.6%
Spain	7.4%	5.2%	6.1%	7.4%	3.5%	4.1%		8.2%	5.7%			24.4%	9.9%	15.8%	9.7%	2.1%	10.1%	10.9%	3.2%	11.0%	3.4%	1.6%	2.7%	-3.3%	-5.8%	3.2%	6.6%	10.6%	7.6%	9.4%	4.1%
Sweden	-1.1%	2.5%	5.0%	6.5%	4.8%	4.7%		6.8%	4.5%								5.8%	6.3%	3.6%	3.3%	-3.5%	9.3%	4.2%	5.1%	1.3%	3.7%	6.6%	8.0%	8.4%	7.5%	2.0%
Switzerland	2.5%	6.5%	6.2%	8.0%	6.1%	5.6%		6.0%	5.8%											3.7%	0.7%	6.9%	5.7%	4.5%	2.7%	2.9%	16.9%	4.3%	5.6%	8.9%	5.1%
UK	-1.1%	0.3%	4.9%	7.0%	5.2%	4.4%	4.3%	7.2%	3.2%	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%	-0.2%	3.4%	3.4%	8.6%	10.4%	10.2%	5.4%	0.9%
US	2.7%	5.6%	6.3%	7.3%	5.2%	4.8%	5.1%	8.4%	5.3%	9.1%	6.2%	5.5%	2.8%	7.5%	4.0%	6.3%	3.7%	5.5%	3.9%	1.6%	2.5%	5.5%	4.0%	2.7%	0.4%	2.8%	6.1%	12.8%	8.0%	6.6%	5.3%

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

Figure 51: Emerging Market Nominal Annualised Equity and Bond Returns

	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	Since 1800	Since 1980	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	2010-2016
EQUITY																															
India	13.8%	8.9%	12.5%						14.7%																				21.1%	15.2%	8.2%
Korea	2.6%	4.9%	8.3%	19.9%				12.0%	10.3%																	40.7%	29.2%	4.6%	9.9%	3.4%
Malaysia	3.6%	6.7%	7.2%					8.2%	9.0%																		12.8%	5.6%	7.8%	6.1%
Mexico	6.3%	7.6%	16.7%						16.3%																			35.9%	18.3%	7.1%
Philippines	16.4%	11.5%	10.1%						9.5%																			9.3%	5.1%	15.5%
South Africa	14.0%	11.3%	14.3%	16.6%				16.7%	16.6%																	16.0%	24.1%	13.9%	14.7%	13.5%
Taiwan	9.7%	5.3%	6.6%						5.8%																			3.9%	0.9%	6.1%
Thailand	8.1%	10.2%	6.1%					10.7%	11.6%																		27.3%	-2.4%	8.7%	11.4%
BOND																														
India	8.1%	6.0%	9.9%	7.6%	6.1%	5.4%	5.1%	8.4%	8.0%	5.7%	6.3%	5.3%	5.5%	4.6%	3.0%	5.1%	4.2%	4.1%	3.1%	2.3%	0.5%	5.9%	8.0%	4.2%	3.0%	4.2%	4.9%	4.4%	14.1%	8.5%	6.1%
Korea	5.0%	5.6%	9.8%	16.8%				13.2%	6.5%																	28.5%	27.2%	22.1%	15.6%	7.7%	5.8%
Malaysia	3.8%	3.9%	6.4%	7.2%				6.8%	5.3%																		11.3%	9.0%	7.6%	5.5%	4.5%
Mexico	5.9%	7.7%							12.5%																				14.5%	7.8%
Philippines	7.2%	8.2%							15.0%																				16.3%	10.3%
South Africa	7.2%	7.9%	13.0%	12.0%	8.2%	7.5%		13.7%	11.7%							4.6%	5.6%	3.7%	4.8%	2.0%	4.8%	4.8%	3.5%	5.3%	4.9%	7.4%	15.2%	17.5%	12.1%	8.6%
Taiwan	2.4%	2.8%							4.5%																				6.9%	2.0%
Thailand	3.4%	6.6%	9.2%					10.3%	6.9%																			13.6%	13.7%	7.9%	4.5%

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

Figure 52: Emerging Market Real Annualised Equity and Bond Returns

	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	Since 1800	Since 1980	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
EQUITY																															
India	6.5%	0.9%	5.0%						8.0%																				10.6%	8.6%	0.9%
Korea	1.5%	2.6%	4.9%	11.9%				7.0%	7.6%																	22.3%	20.3%	-0.9%	6.5%	1.6%
Malaysia	1.6%	4.4%	4.4%					5.1%	6.7%																		9.0%	1.7%	5.5%	3.9%
Mexico	3.5%	3.9%	7.6%						11.2%																			13.7%	12.7%	3.8%
Philippines	13.6%	7.6%	4.5%						5.0%																			0.5%	-0.2%	12.4%
South Africa	8.3%	5.1%	7.4%	7.1%				7.1%	10.5%																	5.4%	8.3%	4.2%	8.1%	8.0%
Taiwan	8.9%	4.1%	5.0%						4.8%																			1.0%	0.0%	5.1%
Thailand	9.2%	9.3%	3.5%					7.1%	9.9%																		21.1%	-6.9%	6.1%	11.2%
BOND																														
India	1.2%	-1.9%	2.6%	0.0%	0.7%	0.5%		0.4%	1.7%									3.1%	3.5%	1.3%	-4.5%	5.3%	11.4%	-5.2%	1.6%	-1.6%	-2.6%	-4.0%	4.2%	2.3%	-1.0%
Korea	3.9%	3.2%	6.4%	9.0%				8.1%	3.9%																	13.4%	10.5%	13.6%	9.5%	4.5%	4.0%
Malaysia	1.8%	1.6%	3.6%	3.7%				3.7%	3.1%																		5.4%	5.4%	3.6%	3.2%	2.3%
Mexico	3.1%	3.9%							7.5%																				9.1%	4.5%
Philippines	4.7%	4.4%							10.3%																				10.5%	7.3%
South Africa	1.9%	1.9%	6.3%	2.9%	2.5%	2.4%		4.3%	5.9%											6.0%	-3.0%	4.4%	5.3%	-1.2%	1.6%	2.2%	-2.4%	0.5%	7.5%	5.7%	3.4%
Taiwan	1.6%	1.6%							3.5%																				5.9%	1.0%
Thailand	4.4%	5.7%	6.5%					6.7%	5.3%																			8.1%	8.5%	5.3%	4.3%

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

Figure 53: Emerging Market USD Annualised Equity and Bond Returns

	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1900	Since 1800	Since 1980	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	2010-2016
EQUITY																															
India	8.7%	4.5%	8.3%						11.8%																			10.2%	14.5%	2.7%
Korea	3.4%	3.1%	6.7%	16.6%				9.5%	10.8%																	34.3%	24.9%	-0.7%	9.6%	4.0%
Malaysia	-1.5%	5.2%	5.5%					6.4%	8.6%																		10.4%	2.1%	8.9%	3.5%
Mexico	0.2%	1.9%	8.6%						12.3%																			19.8%	14.5%	1.7%
Philippines	14.8%	12.0%	7.2%						8.3%																			2.3%	3.6%	15.3%
South Africa	2.2%	4.0%	7.1%	9.9%				8.2%	11.2%																	14.3%	11.0%	4.2%	12.6%	3.7%
Taiwan	8.6%	5.6%	5.7%						5.8%																			2.0%	0.7%	6.2%
Thailand	6.0%	10.4%	4.8%					9.1%	11.8%																		24.3%	-6.0%	10.0%	10.8%
BOND																														
India	3.3%	1.7%	5.8%	3.0%	2.9%	2.7%		2.4%	5.3%				6.8%	3.7%	3.3%	4.7%	2.1%	2.7%	2.6%	2.3%	3.7%	3.8%	6.0%	0.5%	2.9%	-0.5%	4.3%	-3.2%	3.8%	7.8%	0.7%
Korea	5.8%	3.7%	8.2%	13.6%				10.7%	6.9%																	7.3%	21.4%	18.0%	9.8%	7.5%	6.5%
Malaysia	-1.3%	2.5%	4.7%	6.7%				5.0%	4.9%																		15.1%	6.7%	3.9%	6.6%	2.0%
Mexico	-0.2%	1.9%							8.6%																					10.9%	2.4%
Philippines	5.7%	8.6%							13.7%																					14.6%	10.1%
South Africa	-3.8%	0.8%	5.9%	5.6%	4.5%	4.3%		5.4%	6.5%								2.6%	5.6%	3.8%	4.8%	-0.6%	7.6%	2.6%	0.0%	5.3%	4.9%	5.9%	3.0%	7.6%	10.1%	-0.7%
Taiwan	1.3%	3.0%							4.6%																					6.7%	2.0%
Thailand	1.4%	6.8%	7.8%					8.7%	7.1%																			10.9%	9.5%	9.1%	3.8%

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

Figure 54: 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 1800	Since 1900	Since 1980	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	2.7%	4.8%	5.7%	8.7%				7.2%	5.8%																15.6%	13.8%	11.9%	5.1%	7.0%	4.0%
Austria	2.3%	2.6%	3.5%	5.9%			15.7%	4.5%	3.4%									0.8%	2.5%	11.5%					13.4%	8.6%	10.9%	6.3%	4.8%	3.5%	2.8%
Belgium	2.1%	2.5%	3.7%	6.0%			7.4%	4.6%	3.4%										1.5%	3.0%				21.7%	4.6%	8.0%	11.0%	6.6%	4.7%	3.6%	2.7%
Canada	2.7%	3.2%	4.4%	7.1%	6.7%		6.9%	5.3%	4.4%									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%	3.7%
Denmark	1.9%	1.8%	3.4%	6.9%	6.5%		6.6%	4.8%	3.0%									1.6%	3.2%	4.2%	12.3%	0.4%	3.4%	8.8%	7.1%	10.0%	14.0%	8.2%	4.6%	3.3%	2.3%
France	1.6%	1.9%	3.0%	6.9%				4.8%	2.9%														1.9%	32.5%	11.7%	10.1%	13.9%	9.6%	3.7%	3.3%	2.0%
Germany	3.0%	2.7%	2.9%	4.9%			35.0%	3.7%	2.6%							3.7%	3.6%	3.2%	3.4%	3.4%						10.0%	8.8%	4.8%	4.7%	1.8%	3.5%
Greece	-3.5%	-2.3%	5.2%	12.0%	52.2%		44.7%	10.0%	2.8%					-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%	-4.4%
Ireland	12.5%	5.4%	8.8%	11.6%	7.7%		7.0%	9.7%	8.0%								0.6%	0.2%	1.3%	-0.5%	9.9%				5.2%	9.0%	18.4%	12.4%	11.1%	6.2%	9.2%
Italy	0.3%	0.7%	3.3%	9.2%	12.1%		11.2%	6.6%	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%	0.8%
Japan	1.6%	0.1%	0.3%	5.2%	11.9%		11.0%	2.2%	0.0%										9.3%	5.0%	15.1%	0.5%	6.7%	58.8%	15.1%	17.1%	13.0%	6.1%	2.1%	-0.7%	1.1%
Netherlands	1.5%	1.8%	4.0%	6.4%	6.3%		6.2%	4.2%	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%	1.7%
Norway	2.1%	3.4%	5.7%	8.4%	7.0%		7.1%	6.9%	5.6%					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%	10.1%	6.2%	6.8%	3.5%
Portugal	1.1%	1.1%	4.9%	12.2%				10.3%	3.1%																	9.1%	20.0%	23.7%	11.1%	3.9%	0.8%
Spain	1.0%	1.1%	4.9%	10.0%	9.7%		8.8%	7.4%	4.2%							-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%	0.6%
Sweden	3.8%	3.5%	4.2%	7.4%	6.8%		6.7%	6.3%	4.1%								4.2%	1.6%	3.8%	4.1%	13.3%	-1.0%	2.9%	8.8%	7.9%	8.7%	11.8%	11.0%	5.4%	3.9%	4.2%
Switzerland	0.5%	1.7%	2.4%	4.7%			4.8%	3.8%	2.2%											3.7%			-1.0%	7.5%	6.2%	9.1%	6.9%	7.0%	3.4%	3.1%	1.1%
UK	3.3%	3.1%	4.4%	8.1%	6.5%	4.1%	6.1%	6.2%	4.1%	3.1%	0.2%	0.2%	2.2%	0.7%	2.4%	2.6%	1.4%	2.1%	2.5%	1.3%	10.3%	-2.0%	2.3%	7.6%	7.1%	7.1%	15.6%	10.6%	5.5%	4.4%	3.6%
US	3.4%	2.9%	4.5%	6.4%	6.1%	5.1%	6.1%	5.3%	3.9%	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%	3.6%
Real GDP																															
Australia	2.6%	2.7%	3.3%	3.4%				3.1%	3.0%																		3.3%	3.4%	3.2%	3.1%	2.6%
Austria	0.7%	0.9%	1.6%	2.3%			3.3%	1.8%	1.6%									1.5%	2.6%	9.8%					10.7%	3.2%	5.2%	1.8%	2.3%	1.7%	1.2%
Belgium	0.9%	1.1%	2.2%	2.6%	2.1%		2.1%	2.2%	1.6%									2.4%	1.8%	2.0%	-1.4%	4.6%	0.6%	0.0%	2.0%	4.8%	3.5%	1.9%	3.5%	1.7%	1.2%
Canada	1.9%	1.6%	2.5%	2.9%	3.4%		3.7%	2.5%	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%	2.2%
Denmark	0.7%	0.1%	1.6%	1.8%	2.5%		2.6%	1.5%	1.0%									2.1%	3.2%	3.3%	1.8%	3.7%	2.5%	1.9%	3.6%	5.5%	2.0%	1.4%	2.7%	0.9%	0.9%
France	0.8%	0.7%	1.5%	2.5%	2.5%		2.3%	1.8%	1.4%									2.0%	2.4%	1.0%	-1.8%	7.0%	-1.1%	0.1%	5.0%	5.7%	4.5%	2.3%	2.0%	1.4%	1.1%
Germany	1.1%	1.2%	1.3%	2.1%			2.8%	1.7%	1.3%									2.5%	3.4%	2.7%					8.7%	4.8%	3.1%	1.8%	2.3%	0.8%	1.9%
Greece	-2.2%	-2.8%	0.7%	2.0%	3.1%		3.3%	0.7%	0.2%					-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%	1.7%	2.7%	-3.7%
Ireland	4.4%	2.2%	4.7%	4.5%				4.3%	4.2%																1.4%	4.5%	4.6%	3.0%	6.5%	4.0%	3.6%
Italy	-0.7%	-0.7%	0.6%	2.2%	2.6%		2.5%	1.3%	0.3%								1.0%	1.4%	1.3%	2.7%	0.0%	3.7%	1.5%	0.5%	6.4%	6.4%	4.0%	2.7%	1.6%	0.5%	-0.2%
Japan	0.9%	0.4%	0.8%	3.4%	3.7%		3.5%	2.2%	0.8%									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%	1.2%
Netherlands	0.6%	0.8%	2.0%	2.6%	2.8%		2.7%	1.9%	1.5%									3.0%	2.0%	1.4%	2.4%	4.7%	1.0%	1.4%	3.9%	5.7%	3.9%	1.6%	3.4%	1.6%	0.9%
Norway	1.8%	1.2%	2.4%	3.0%	3.1%		3.1%	2.5%	1.7%					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%	3.5%	1.9%	1.5%
Portugal	-0.3%	-0.2%	0.5%	1.6%				1.2%	0.6%																3.5%	4.8%	2.7%	2.6%	1.2%	0.9%	-0.2%
Spain	0.7%	0.4%	2.1%	2.9%	2.8%		2.7%	2.3%	1.9%							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%	3.0%	2.7%	0.4%
Sweden	2.3%	1.7%	2.4%	2.4%	2.8%	2.5%	2.9%	2.2%	2.4%	-0.1%	1.3%	2.5%	0.9%	2.2%	2.5%	0.9%	4.2%	2.2%	3.1%	3.0%	4.0%	3.4%	2.3%	3.7%	2.8%	4.3%	2.4%	2.3%	2.0%	2.0%	2.8%
Switzerland	1.3%	1.5%	1.6%	1.6%	2.3%		2.3%	1.5%	1.8%											2.8%	0.4%	5.0%	0.3%	2.6%	4.5%	4.7%	1.6%	1.2%	1.1%	2.0%	1.6%
UK	2.1%	1.2%	2.2%	2.3%	2.1%	2.0%	2.0%	2.2%	2.0%	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%	3.1%	3.4%	2.6%	2.7%	2.1%	1.8%	2.0%
US	1.9%	1.3%	2.5%	2.8%	3.2%	3.7%	3.2%	2.6%	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%	2.0%

Source: Deutsche Bank, GFD

Figure 55: Developed Market Nominal and Real GDP Growth for Different Time Horizons in USD

	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1800	Since 1900	Since 1980	Since 1999	GDP Growth 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	2010-2016
Nominal GDP																															
Australia	-3.2%	4.4%	5.7%	7.9%				6.1%	7.1%																15.6%	13.7%	8.1%	3.2%	10.5%	1.6%
Austria	-0.6%	0.9%	2.9%	7.5%			5.1%	4.5%	3.1%								0.9%	2.2%	11.6%					13.5%	8.7%	19.3%	6.8%	3.4%	7.2%	-0.8%
Belgium	-0.9%	0.8%	3.1%	6.7%			5.7%	3.8%	3.1%									1.5%	3.0%				15.6%	4.6%	8.1%	17.5%	4.1%	3.5%	7.3%	-0.9%
Canada	-2.3%	2.1%	3.9%	6.7%	6.4%		6.7%	5.0%	5.3%								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%	0.6%
Denmark	-1.1%	0.1%	2.9%	7.0%	5.9%		6.1%	4.2%	2.7%								1.6%	3.2%	4.2%	8.6%	3.8%	0.1%	5.7%	7.1%	9.1%	17.8%	6.0%	3.5%	7.0%	-1.2%
France	-1.3%	0.2%	2.5%	6.5%				3.7%	2.7%													-3.7%	7.9%	8.0%	8.7%	17.7%	5.7%	2.4%	7.0%	-1.5%
Germany	0.0%	1.0%	2.3%	6.6%			5.3%	3.7%	2.3%							3.5%	3.5%	3.1%	3.4%	3.5%					11.3%	17.4%	5.0%	3.3%	5.4%	-0.1%
Greece	-6.3%	-3.9%	3.0%	7.0%	6.6%		6.7%	3.8%	2.3%					-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%	-7.7%
Ireland	9.2%	3.7%	7.9%	10.1%	6.4%			8.5%	7.7%											7.1%					5.2%	7.3%	17.1%	8.8%	9.0%	10.0%	5.4%
Italy	-2.6%	-0.9%	1.6%	7.0%	6.0%		5.8%	4.4%	2.1%								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%	-2.7%
Japan	-4.0%	1.6%	1.1%	7.9%	7.6%		7.4%	4.6%	0.6%									4.3%	5.0%	15.2%	0.4%	-0.9%	1.9%	15.1%	17.1%	17.7%	11.7%	5.7%	0.3%	-0.2%
Netherlands	-1.4%	0.1%	3.5%	7.7%	6.5%		6.4%	4.1%	3.4%		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%	-1.9%
Norway	-4.6%	0.4%	4.2%	8.1%	6.0%		6.3%	5.3%	5.0%					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%	6.9%	4.1%	10.3%	-1.9%
Portugal	-1.9%	-0.6%	3.7%	8.1%				6.5%	2.8%																9.2%	13.5%	10.9%	7.9%	7.6%	-2.7%
Spain	-2.0%	-0.6%	3.0%	8.0%	6.0%		6.0%	5.1%	3.9%							-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%	-2.9%
Sweden	-0.6%	1.3%	2.4%	6.4%	5.8%		6.0%	4.2%	3.8%								4.1%	1.6%	3.9%	4.0%	10.7%	1.4%	1.6%	6.6%	7.9%	8.7%	14.2%	6.7%	2.1%	5.7%	1.6%
Switzerland	-0.1%	4.0%	3.8%	7.8%			6.4%	5.2%	4.2%											3.8%			0.4%	7.9%	6.2%	9.1%	18.1%	7.4%	3.0%	7.6%	2.1%
UK	0.1%	-0.9%	3.0%	6.5%	5.1%	3.5%	4.9%	4.7%	2.8%	3.1%	0.4%	0.9%	2.2%	0.6%	2.5%	4.6%	-0.5%	2.1%	2.6%	1.2%	7.5%	0.6%	0.2%	4.0%	7.1%	5.5%	14.7%	7.1%	5.5%	4.4%	0.7%
US	3.4%	2.9%	4.5%	6.4%	6.1%	5.1%	6.1%	5.3%	3.9%	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%	3.6%
Real GDP																															
Australia	-3.3%	2.3%	3.3%	2.6%				2.1%	4.2%																	3.2%	0.0%	1.4%	6.4%	0.2%
Austria	-2.2%	-0.8%	1.0%	3.8%			-6.2%	1.8%	1.3%								1.7%	2.3%	9.9%					10.7%	3.2%	13.2%	2.3%	0.9%	5.3%	-2.4%
Belgium	-2.1%	-0.6%	1.6%	3.3%	0.6%		0.4%	1.5%	1.4%								2.4%	1.8%	2.0%	-8.4%	-7.1%	2.4%	-5.0%	2.0%	4.9%	9.6%	-0.5%	2.3%	5.3%	-2.3%
Canada	-3.0%	0.5%	2.1%	2.5%	3.1%		3.4%	2.2%	3.2%								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%	-0.9%
Denmark	-2.3%	-1.5%	1.1%	1.9%	1.9%		2.1%	0.9%	0.8%								2.1%	3.2%	3.4%	-1.5%	7.3%	-0.8%	-1.1%	3.7%	4.6%	5.5%	-0.7%	1.5%	4.5%	-2.6%
France	-2.1%	-0.9%	1.0%	2.2%	-2.1%		-1.8%	0.7%	1.1%								2.0%	2.5%	1.0%	-8.9%	-1.6%	-6.5%	-18.5%	1.5%	4.4%	7.9%	-1.3%	0.8%	5.0%	-2.4%
Germany	-1.8%	-0.5%	0.7%	3.8%			-19.8%	1.6%	1.0%								2.5%	3.4%	2.7%					8.8%	6.1%	11.3%	2.0%	0.9%	4.4%	-1.7%
Greece	-5.0%	-4.4%	-1.5%	-2.6%	-27.8%		-23.8%	-4.9%	-0.3%					-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%	-5.5%	6.1%	-7.1%
Ireland	1.4%	0.5%	3.9%	3.1%				3.1%	3.9%																1.4%	2.9%	3.4%	-0.3%	4.4%	7.7%	0.0%
Italy	-3.6%	-2.3%	-1.0%	0.1%	-2.9%		-2.4%	-0.8%	0.0%								0.3%	2.6%	0.8%	3.4%	-8.9%	-0.1%	1.1%	-28.8%	6.4%	6.3%	1.5%	-1.9%	-2.5%	4.1%	-3.6%
Japan	-4.7%	2.0%	1.7%	6.0%	-0.3%		0.1%	4.6%	1.3%									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%	-0.1%
Netherlands	-2.3%	-0.9%	1.4%	3.8%	3.1%		2.9%	1.8%	1.2%									3.1%	2.0%	1.4%	1.7%	5.5%	3.8%	-5.5%	3.9%	6.1%	10.8%	1.5%	2.0%	5.2%	-2.6%
Norway	-5.0%	-1.8%	1.0%	2.6%	2.3%		2.4%	1.0%	1.1%					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%	1.5%	5.3%	-3.9%
Portugal	-3.2%	-1.8%	-0.6%	-2.0%				-2.2%	0.4%																3.5%	4.9%	-2.9%	-8.1%	-1.7%	4.5%	-3.7%
Spain	-2.2%	-1.3%	0.4%	1.1%	-0.6%		0.0%	0.1%	1.6%							-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%	-1.2%	6.4%	-3.1%
Sweden	-2.1%	-0.5%	0.7%	1.4%	1.9%		2.2%	0.3%	2.1%			2.7%	0.8%	1.8%	3.0%	0.6%	4.1%	2.2%	3.2%	3.0%	1.6%	5.9%	1.0%	1.6%	2.8%	4.3%	4.6%	-1.7%	-1.1%	3.8%	0.2%
Switzerland	0.6%	3.9%	3.0%	4.7%	4.0%		3.8%	2.8%	3.8%											2.9%	-0.4%	5.9%	1.7%	3.0%	4.4%	4.6%	12.2%	1.5%	0.8%	6.4%	2.6%
UK	-1.1%	-2.7%	0.8%	0.8%	0.8%	1.4%	0.9%	0.7%	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%	3.1%	1.8%	1.8%	-0.6%	2.1%	1.8%	-0.9%
US	1.9%	1.3%	2.5%	2.8%	3.2%	3.7%	3.2%	2.6%	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%	2.0%

Source: Deutsche Bank, GFD

Figure 56: Emerging Market Nominal and Real GDP Growth for Different Time Horizons

	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1800	Since 1900	Since 1980	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	8.6%	12.9%	15.2%	12.7%				15.1%	12.7%																3.1%	7.6%	15.1%	18.5%	14.4%	11.3%
India	11.2%	13.5%	13.2%	13.2%				14.0%	12.5%														-2.3%	10.5%	5.1%	11.4%	11.0%	15.6%	14.7%	12.1%	13.3%
Korea	4.2%	5.4%	8.1%	15.9%	24.2%			11.2%	6.8%													0.0%			25.7%	31.1%	17.3%	13.2%	7.7%	5.1%
Malaysia	5.9%	7.0%	9.2%	10.2%				9.2%	8.0%																4.7%	7.3%	15.3%	8.2%	12.2%	8.6%	7.4%
Mexico	5.2%	6.3%	11.9%	24.4%	16.4%		15.1%	26.1%	8.1%											8.4%	6.4%	-0.1%	4.8%	16.0%	15.2%	10.9%	22.7%	68.3%	23.9%	8.0%	6.7%
Philippines	7.7%	8.4%	10.2%	13.4%				11.9%	9.1%																7.1%	10.4%	20.1%	15.4%	13.4%	9.5%	8.4%
South Africa	7.1%	8.6%	10.6%	13.2%	9.9%			12.7%	10.1%													1.7%	4.1%	9.6%	8.1%	9.8%	15.8%	17.6%	12.4%	11.5%	7.9%
Taiwan	3.5%	3.0%	5.1%	10.3%	24.1%			7.4%	3.4%													2.4%	5.7%	211.5%	33.4%	14.4%	19.8%	12.7%	9.4%	2.8%	4.0%
Thailand	4.4%	5.2%	7.1%	10.4%				9.1%	6.2%																8.0%	10.4%	15.8%	12.8%	9.9%	7.3%	5.4%
Real GDP																															
China	7.3%	8.9%	6.7%	7.2%				7.6%	9.3%																	2.5%	6.5%	9.9%	2.4%	10.3%	8.1%
India	6.7%	7.3%	6.7%	5.6%	3.5%			6.3%	7.0%												0.3%	0.2%	0.8%	0.5%	3.9%	4.0%	2.8%	5.9%	5.4%	6.8%	7.3%
Korea	2.8%	3.3%	4.8%	7.3%	4.5%			6.1%	4.5%													1.3%	3.8%	-2.9%	4.6%	4.0%	10.4%	8.7%	7.0%	4.7%	3.5%
Malaysia	5.1%	4.8%	6.3%	6.6%				6.4%	6.2%																	6.8%	7.9%	5.7%	7.2%	6.7%	5.5%
Mexico	2.5%	2.3%	2.8%	3.3%	3.3%		3.1%	2.7%	2.5%											3.2%	0.7%	0.9%	1.9%	1.8%	6.3%	7.1%	4.7%	1.8%	3.9%	2.0%	3.1%
Philippines	6.4%	5.5%	4.5%	4.1%				3.6%	5.1%																6.5%	4.7%	5.8%	1.9%	2.7%	4.4%	6.2%
South Africa	1.3%	1.8%	2.6%	2.6%	3.4%			2.2%	2.9%													1.3%	4.5%	4.4%	4.7%	5.3%	3.3%	2.0%	1.6%	3.5%	1.8%
Taiwan	1.7%	2.8%	4.1%	6.5%	5.6%			5.2%	3.7%												2.2%	4.5%	2.5%	-0.8%	9.4%	9.5%	10.2%	7.8%	5.6%	3.8%	3.2%
Thailand	3.5%	3.2%	6.4%	7.0%				6.8%	4.1%																3.9%	8.3%	7.3%	7.2%	11.1%	4.3%	3.7%

Source: Deutsche Bank, GFD

Figure 57: Emerging Market Nominal and Real GDP Growth for Different Time Horizons in USD

GDP Growth by Decade

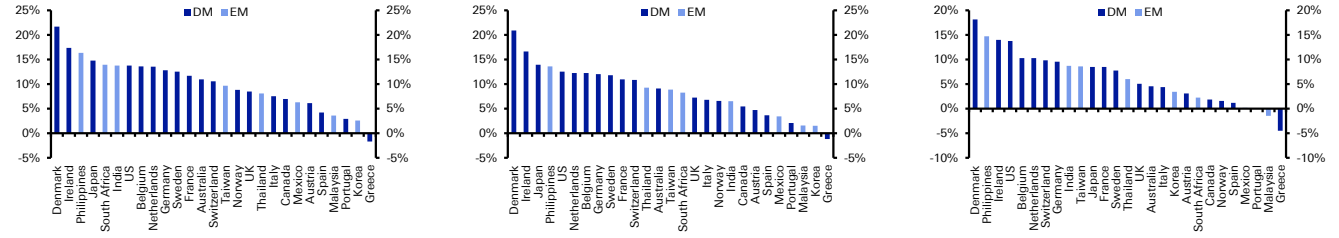
	Last 5yrs	Last 10yrs	Last 25yrs	Last 50yrs	Last 100yrs	Since 1800	Since 1900	Since 1980	Since 1999	1800-1809	1810-1819	1820-1829	1830-1839	1840-1849	1850-1859	1860-1869	1870-1879	1880-1889	1890-1899	1900-1909	1910-1919	1920-1929	1930-1939	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009	2010-2016
Nominal GDP																															
China	7.5%	14.8%	14.3%	10.5%				10.5%	14.1%																	3.1%	13.1%	2.6%	12.1%	16.6%	11.8%
India	6.2%	8.9%	8.9%	8.4%				7.6%	9.7%														-4.1%	6.6%	5.0%	6.4%	10.3%	7.2%	4.4%	11.3%	7.6%
Korea	5.1%	3.5%	6.5%	12.7%	8.8%			8.7%	7.3%													-0.3%				4.9%	25.2%	13.4%	7.6%	7.4%	5.8%
Malaysia	0.7%	5.5%	7.4%	9.5%				7.4%	7.6%																4.6%	7.2%	19.3%	6.0%	8.4%	9.7%	4.8%
Mexico	-0.8%	0.6%	4.1%	7.4%	6.2%		2.0%	5.1%	4.3%											8.7%	-35.4%	-0.6%	-4.9%	10.9%	11.0%	10.9%	15.5%	4.4%	9.3%	4.6%	1.3%
Philippines	6.2%	8.9%	7.4%	7.9%				6.3%	7.9%																7.1%	3.3%	13.2%	3.6%	6.2%	7.9%	8.2%
South Africa	-3.9%	1.4%	3.6%	6.7%	6.2%			4.4%	5.0%													4.4%	1.9%	5.9%	8.0%	9.8%	14.1%	5.2%	2.9%	9.5%	-1.4%
Taiwan	2.5%	3.3%	4.2%	10.8%	8.6%			7.8%	3.4%													2.1%	-1.8%	6.3%	7.2%	15.6%	21.1%	16.3%	7.4%	2.6%	4.0%
Thailand	2.3%	5.4%	5.8%	9.2%				7.5%	6.5%																8.9%	10.5%	16.3%	10.1%	5.9%	8.5%	4.8%
Real GDP																															
China	6.1%	10.7%	5.9%	5.1%				3.3%	10.6%																	2.5%	12.0%	-2.1%	-3.2%	12.4%	8.5%
India	2.0%	2.9%	2.7%	1.1%	0.4%			0.4%	4.4%												3.5%	-1.8%	-1.1%	-3.0%	3.9%	-0.6%	2.3%	-1.8%	-4.1%	6.1%	1.9%
Korea	3.7%	1.5%	3.3%	4.4%	-8.5%			3.8%	5.0%													1.0%	-3.6%	-43.2%	-30.0%	-13.2%	5.4%	5.1%	1.7%	4.4%	4.1%
Malaysia	0.0%	3.3%	4.6%	6.0%				4.6%	5.8%																	6.7%	11.6%	3.5%	3.6%	7.8%	2.9%
Mexico	-3.4%	-3.2%	-4.4%	-10.7%	-5.8%		-8.6%	-14.4%	-1.1%											3.5%	-38.9%	0.4%	-7.5%	-2.7%	2.4%	7.1%	-1.4%	-36.8%	-8.3%	-1.3%	-2.1%
Philippines	5.0%	6.0%	1.8%	-0.9%				-1.5%	3.9%																6.5%	-2.1%	-0.3%	-8.6%	-3.8%	2.9%	6.0%
South Africa	-9.1%	-4.9%	-3.9%	-3.3%	-0.2%			-5.3%	-1.9%													4.0%	2.4%	0.8%	4.7%	5.4%	1.9%	-8.8%	-7.0%	1.6%	-6.9%
Taiwan	0.7%	3.0%	3.2%	7.0%	-7.7%			5.6%	3.8%												2.4%	4.1%	-4.8%	-66.2%	-12.1%	10.6%	11.3%	11.3%	3.7%	3.6%	3.3%
Thailand	1.5%	3.4%	5.0%	5.9%				5.2%	4.3%																4.8%	8.3%	7.7%	4.7%	7.0%	5.5%	3.0%

Source: Deutsche Bank, GFD

Long-Term Asset Returns in Charts

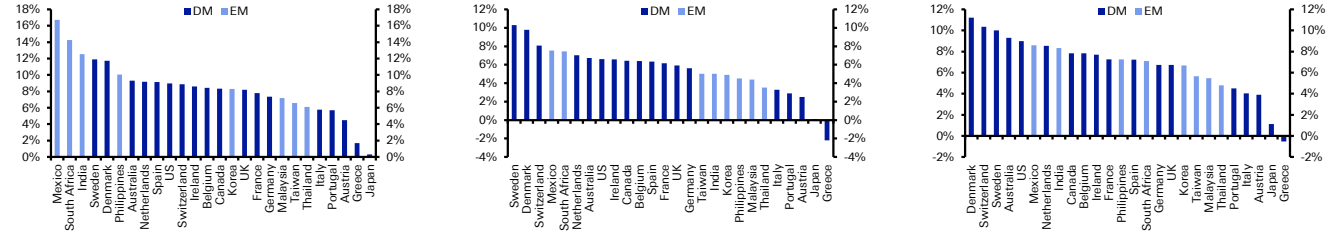
International equity return charts

Figure 58: Last 5 Years Annualised Equity Returns – Nominal (left), Real (middle), USD (right)



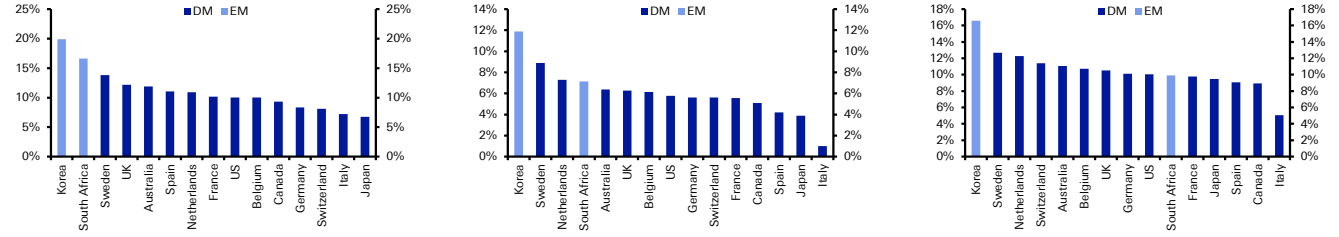
Source: Deutsche Bank, GFD

Figure 59: Last 25 Years Annualised Equity Returns – Nominal (left), Real (middle), USD (right)



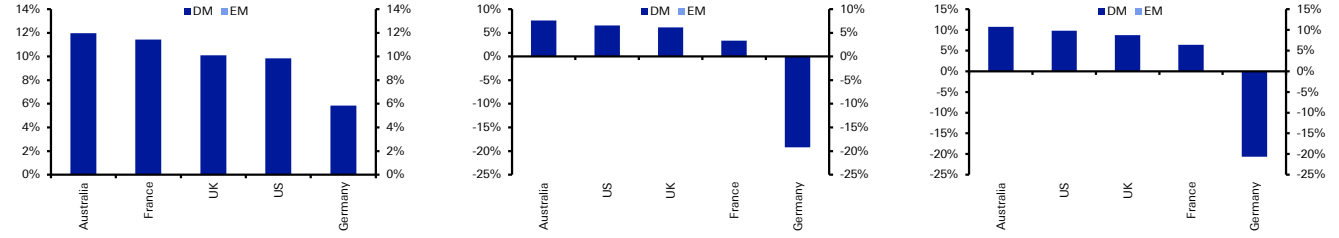
Source: Deutsche Bank, GFD

Figure 60: Last 50 Years Annualised Equity Returns – Nominal (left), Real (middle), USD (right)



Source: Deutsche Bank, GFD

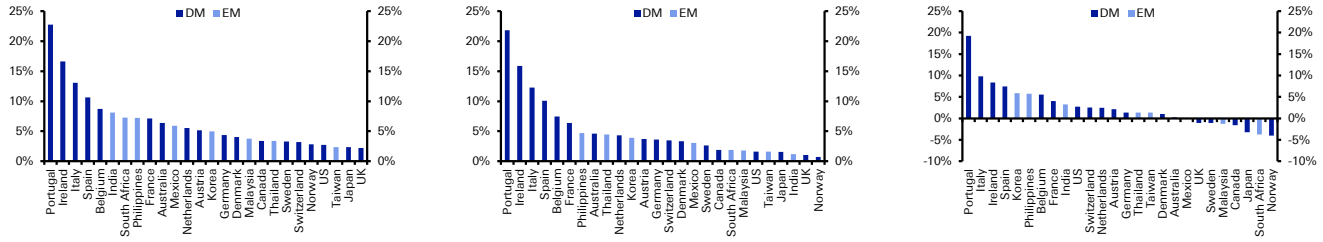
Figure 61: Last 100 Years Annualised Equity Returns – Nominal (left), Real (middle), USD (right)



Source: Deutsche Bank, GFD

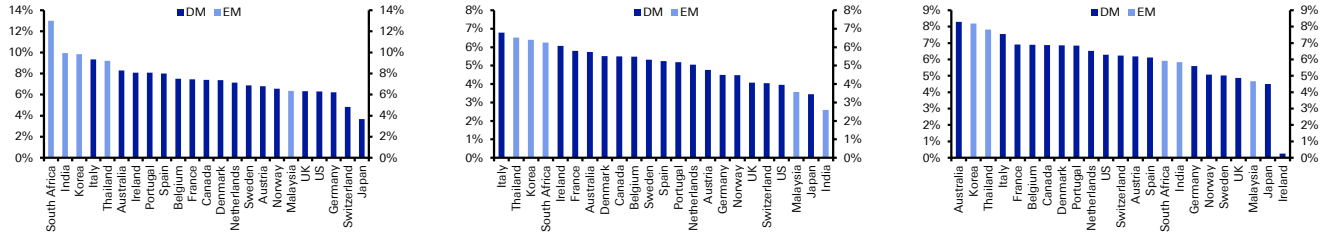
International 10 year government bond return charts

Figure 62: Last 5 Years Annualised 10 Year Government Bond Returns – Nominal (left), Real (middle), USD (right)



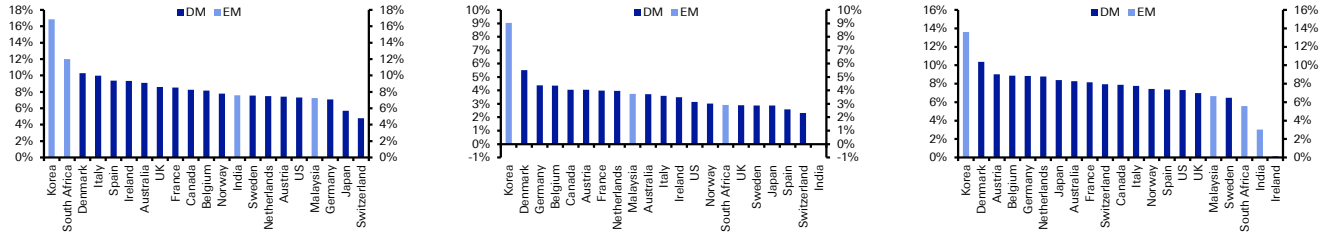
Source: Deutsche Bank, GFD

Figure 63: Last 25 Years Annualised 10 Year Government Bond Returns – Nominal (left), Real (middle), USD (right)



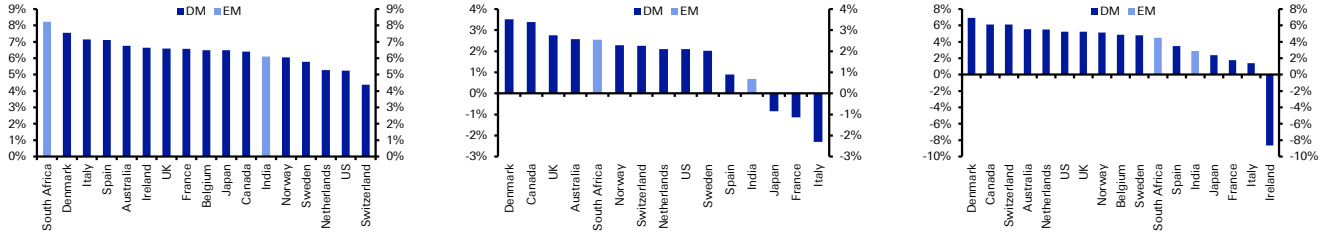
Source: Deutsche Bank, GFD

Figure 64: Last 50 Years Annualised 10 Year Government Bond Returns – Nominal (left), Real (middle), USD (right)



Source: Deutsche Bank, GFD

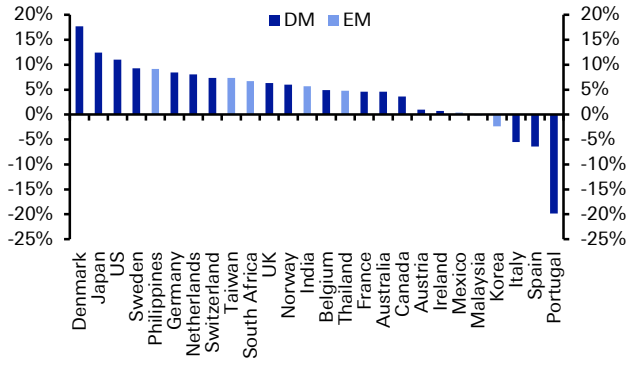
Figure 65: Last 100 Years Annualised 10 Year Government Bond Returns – Nominal (left), Real (middle), USD (right)



Source: Deutsche Bank, GFD

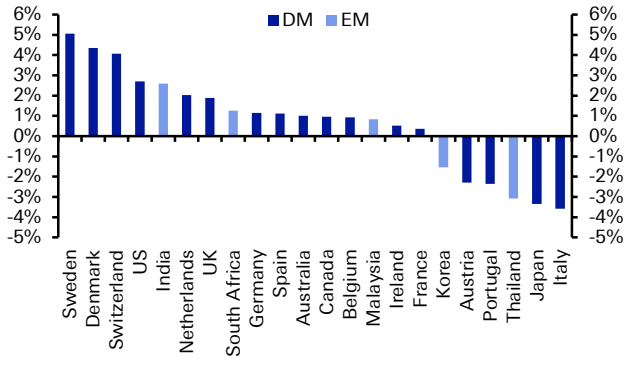
International equity minus bond return charts

Figure 66: Last 5 Yrs Annualised Equity-Bond Return



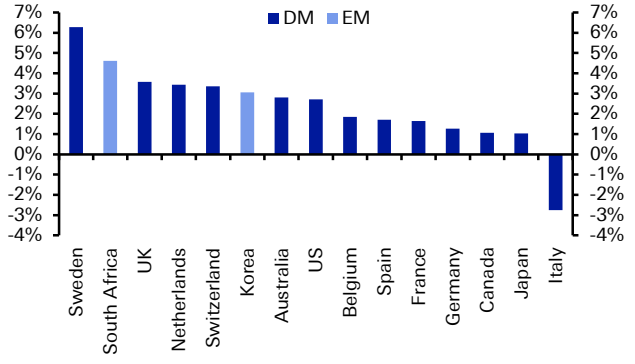
Source: Deutsche Bank, GFD

Figure 67: Last 25 Yrs Annualised Equity-Bond Return



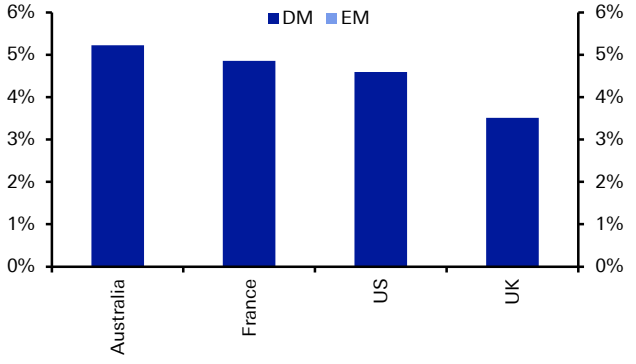
Source: Deutsche Bank, GFD

Figure 68: Last 50 Yrs Annualised Equity-Bond Return



Source: Deutsche Bank, GFD

Figure 69: Last 100 Yrs Annualised Equity-Bond Return



Source: Deutsche Bank, GFD

Figure 70: Long term asset valuation methodology (Figure 22-Figure 23)

This methodology refers to Figure 22-Figure 23. For more details see the 2015 Long-term Asset Return Study – "Scaling The Peaks" – September 7th 2015.

For this analysis we have looked at what are probably the largest and most influential assets for the global economy and financial markets. These are government bonds, equities and housing. To compare different periods through time we wanted to use data back as far as possible but also to use the same countries for each asset to standardise the analysis. We also wanted to use countries that were reasonably important to the global economy. We were left with 15 countries with a consistent long-term history across all three assets. These were; Australia, Canada, Denmark, Finland, France, Germany, Italy, Japan, Korea, Netherlands, Spain, Sweden, UK and the US. EM countries are difficult to include as data doesn't stretch back far enough for historical comparisons to be made. As such we've excluded them from this analysis. So this is essentially a DM exercise. Whilst the data for bonds and equities often stretches into the nineteenth century we don't have any consistent house price data (or income data to assess price to income) back beyond 1970. So the aggregated series has just bonds and equities until 1970 at which point we introduce housing into the analysis. We would contend that housing bubbles on the scale of that seen over the last three decades are a modern day, debt fuelled phenomenon so the fact that we cannot go back beyond 1970 is perhaps of only minor consequence to our overall conclusions. When valuing any assets, the methodology is always open to interpretation. As a rule we tried to use the most robust one that allows us to go back as far as possible. For bonds we have simply looked at where nominal yields are relative to their past. For housing we wanted to use price to income but found that we had more countries with data extending back to 1970 if we analysed how far each was away from its real adjusted trend. Whether we used price to income or real prices, the results were pretty similar so we decided to use the latter as it gave us more data points. For equities our valuation technique will probably be the most controversial. Here we used Nominal GDP as our deflator of long-term total return indices as PE ratios tend not to be available beyond the last few decades for more than a few countries.

Given that over the long run earnings should broadly be tied to nominal GDP, we think this is a good long-term valuation tool. We have then assessed where valuations are relative to their long-term trend. For some countries the results will look more realistic than others but over a wider sample these should even each other out. Where PEs are available the results are pretty similar to our methodology. For more on this please see a copy of 2015's long-term study – "Scaling the Peaks" for a full methodology.

Appendix 1

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Additional information available upon request

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