PIMCO

QUANTITATIVE RESEARCH

July 2016

Seven Salient Left Tail Scenarios

AUTHOR

Jamil Baz
Managing Director
Head of Client Analytics

In the wake of Brexit, eight years after the onset of the great financial crisis, now seems an apt moment to reassess a few economic themes. At PIMCO we do not foresee Brexit leading to calamity for markets or the global economy. Furthermore, even before the historic vote, we had determined at our annual secular-focused investment forum in May that middling global economic growth is likely to continue for the next few years, but with greater risks to the status quo.

Here I would like to expound on what some of these risks to the status quo could be, with a particular focus on seven "left tail" outlier risks. While none of the potential tail events are our base case over the typical investable horizon, these scenarios are worth considering in a time of insecure stability, if only because they offer an alternate viewpoint to market consensus.

THEME #1 – LEVERAGE: DESPERATE, BUT NOT SERIOUS

One may think, with all the persistent rumors about deleveraging, that leverage within advanced economies has fallen decisively since the beginning of the crisis. Not quite so. With the exception of Germany (down 34 percentage points) and the U.S. (roughly flat), leverage as expressed by the total debt-to-GDP ratio has increased in every country in our sample of 10 advanced economies. At 387%, the GDP-weighted ratio has increased by 19 percentage points since the beginning of the crisis.

On the basis of these numbers, there is good reason to believe that 1) if the global financial crisis was a crisis of excess leverage and leverage has actually increased, the crisis may not have yet begun in earnest; 2) deleveraging will be long-winded, if only because, based on existing literature, we may have to delever by 100 percentage points at a pace no faster than 10 points a year, which means reasonable estimates of the deleveraging process are 10 years at least; 3) the economy will be marred by ugly negative multiplier effects when the deleveraging happens and 4) the stock market will suffer substantially as a result.

Figure 1: Rising debt to GDP

Total debt/GDP, (general government debt/GDP)

	Jun-07	Dec-15
U.S.	333% (78%)	332% (127%)
Japan	541% (170%)	615% (236%)
Germany	324% (65%)	290% (77%)
France	378% (80%)	476% (126%)
UK	442% (42%)	462% (104%)
Italy	318% (100%)	390% (146%)
Spain	403% (50%)	428% (137%)
Canada	240% (58%)	320% (85%)
Sweden	383% (47%)	465% (51%)
Korea	279% (31%)	363% (45%)
Total	368% (82%)	387% (128%)

Source: Haver Analytics, PIMCO

It can be argued that leverage is more sustainable in an environment of super-low interest rates. Leverage matters less than debt servicing, does it not? This is only true if low interest rates are sustainable in the face of very loose monetary policy. The jury is still out on this issue. Yet, one needs to remember that it is low interest rates that encouraged debt building in southern Europe before the crisis. The same is true in Japan where, as we shall argue later, fiscal dominance and potentially hyperinflation may be the only way to avoid an explicit default on Japanese government bonds (JGBs). It is difficult to see stable low rates in these conditions.

Worse, anyone inclined to optimism because of the German and U.S. numbers should remember that these numbers exclude social entitlements and other "contingent" liabilities. Laurence Kotlikoff, an expert in generational economics and fiscal policy at Boston University, calculates that the infinite horizon U.S. fiscal gap (defined as the net present value of deficits) stands at $200 trillion – that is 11 times GDP. Of course, this dwarfs the $13–$14 trillion official public debt number, which only accounts for accruals.

What is the annuity equivalent of the U.S. fiscal gap? Kotlikoff estimated this number at 13.7% of GDP in 2012. Note that the same study shows substantially lower numbers in Europe: 5.4% in the UK, 4.8% in Spain, 1.6% in France and -2.3% in Italy.

To some, this topic is an old chestnut: It is sometimes said that all the U.S. government needs to do is renege on Medicare and Medicaid commitments. But, it may be objected, if it were that easy, why did no previous administration do it? And besides, if entitlements stopped being paid, wouldn't the baby boomers' savings rate have to increase substantially, possibly causing a serious economic crisis? The increase may be sudden, if the government fully reneges, or slow and steady if it gradually ratchets down benefits. Similarly, Germany is plagued with contingent liabilities, not the least of which being the financing of past (Target2 and existing debt write-offs) and future current account deficits in southern Europe.

In the words of an Austrian adage, the situation is desperate, but not serious. It is not serious, as there seems to be a consensus among decision-makers not to take it seriously – and, for a while, at least in policy matters and otherwise, you are who you pretend you are. The situation is desperate because there does not seem to be a way to duck a serious economic crisis should this left tail risk materialize in the real economy.

THEME #2 – EQUITY VALUATIONS: OSTRICHES EVERYWHERE

A cursory look at U.S. P/E ratios may inspire confidence. After all, the earnings yield on the S&P 500 is 5.0%. The 30-year real bond yield stands at 0.6%. A 4.4% implied equity risk premium is nothing to sneer at and is close to fair value. However, there are two problems: First, other valuation metrics point to equity market expensiveness; second, the level of earnings is likely unsustainable in the long run.

Figure 2: Sustainable valuation?

	CAPE	DY	Q
Value	23.3	2.06%	1.575
Average	16.5	4.32%	1.08
Percentile	86	90%	88
Percentile vs pre-1996	95	100%	94

S&P 500 metrics. CAPE is cyclically adjusted P/E, DY is dividend yield and Q is Tobin's Q

Sources: Robert Shiller online data, Stephen Wright, Andrew Smithers, Federal Reserve Z1 report and PIMCO as of June 2016.

Figure 2 compares the cyclically adjusted P/E, the dividend yield and Tobin's Q to their sample average. The dataset start date is 1881 for dividend yields, 1900 for Tobin's Q and 1901 for CAPE (cyclically adjusted price to earnings). Stocks appear to be expensive to the tune of 46% to 107%. The valuation metrics are in the 86 to 90 percentile range when benchmarked against the entire period. If we restrict the sample to the pre-1996 period, percentiles vary between 94 and 100. Other valuation metrics, such as the market-cap-to-GDP ratio and the price-to-sales ratio, are similarly stretched.

This is only part of the story. When looking at a P/E ratio, investors will often think about the distortion in the price level, given earnings. But what if earnings are distorted? Figure 3 suggests they may well be.

A lot of ink has been spilled on the reasons behind rising profits-to-GDP ratios – and the culprits are many: free trade, outsourcing, robots, quantitative easing, loose tax regimes etc. But leverage has received short shrift.

Why would leverage be a factor? Think about the identity of sector balances in a closed economy (trade balances do not materially affect our conclusions): Private surplus – that is savings minus investment – equals government deficit. However, savings are profits plus household surplus. This boils down to:

Profits = Investments + Household deficit + Government deficit

To a first approximation, government deficit is the change in public debt; household deficit is the change in consumer debt. Then, if leverage is defined as government and consumer debt to GDP:

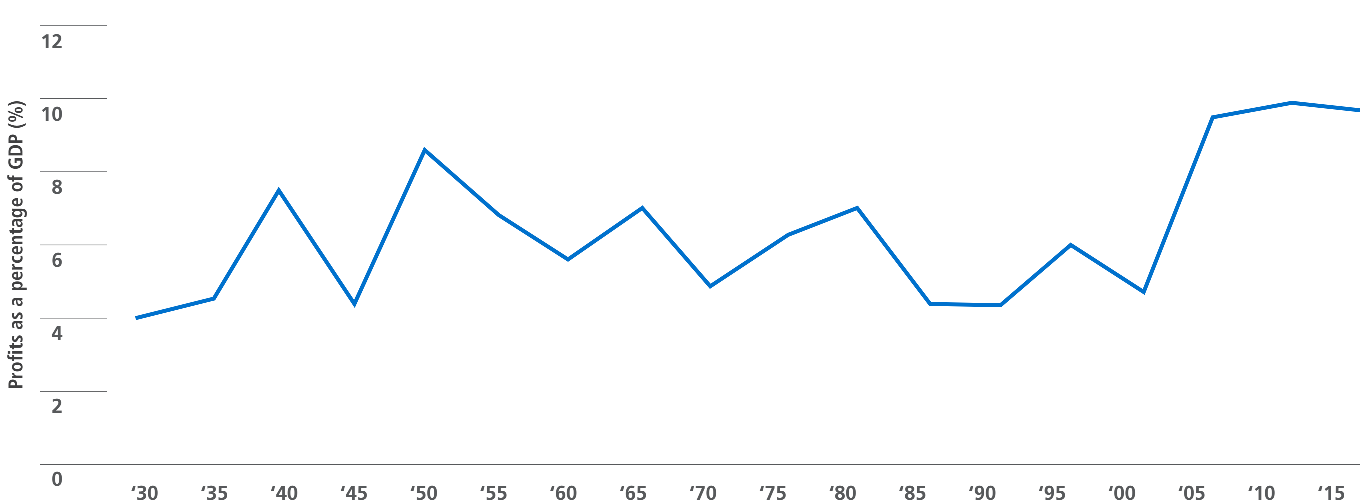
Profits/GDP = Investments/GDP + change in leverage

If you believe, as I do, that leverage needs to decline steeply over the long horizon, then, all else equal, the share of profits in GDP should also decline.

So in this tail risk scenario, not only are valuations stretched; earnings are as well. And this combination is not auspicious to U.S. equity markets.

Figure 3: Profits to GDP ratio has risen to high plateau

U.S. after-tax profits to GDP, % (without inventory valuation and capital consumption adjustment): Five-year sampling frequency



Source: Haver Analytics as of Dec 2015

Of course, in large parts of the equity market, the ostrich strategy reigns supreme. Italians say: “Occhio non vede, cuore non duole” (When the eyes can’t see, the heart can’t suffer).

THEME #3 – POLICY: WHEN THE SOLUTION BECOMES THE PROBLEM

There is little doubt that the existence of a lender of last resort can prevent bad equilibria like bank runs – remember 1907 or 2008 – by insuring the market against liquidity droughts. But there can be too much of a good thing, as we came to discover subsequently.

For all the real and imaginary virtues attributed to quantitative easing (QE), it is hard to see the positive impact of QE on growth and inflation.

Start with growth: By restricting the net supply of Treasury securities, QE causes lower yields. Lower yields, in turn, force people to bring consumption forward. It is easy to see how this policy can become time-inconsistent: As consumers spend more, the only way to keep growth going is to take real yields even lower against fundamentals. Today is yesterday’s tomorrow – and growth will only happen at the cost of an ever more expensive TIPS (Treasury Inflation-Protected Securities) market, unless people are fooled about their wealth and about the valuation of risk assets. And, for safety, central banks have worked hard at creating a steady, but likely unsustainable, bid for both equities and bonds – hence the success of risk parity funds. Of course, with so much consumption brought forward, one should not be surprised to see *decreasing returns to ever more frantic attempts to resuscitate growth*. With real rates largely negative, one can think that authorities are pretty much at the end of their tether. So why is the steady state for bonds and stocks unsustainable? Because it is difficult to reconcile higher prices with higher risk of policy failure.

What about inflation? There again, one can make the counter-intuitive case of QE leading to deflation. A bunch of serious economists, called the neo-Fisherites, have claimed exactly that. Why would it ever happen? With QE flooding money markets with liquidity, the only way people want to hold additional cash at equilibrium is to be paid higher real interest rates on this cash. Still, with nominal rates stuck at or near zero, real rates will only go higher if inflation goes lower. Of course, it is argued that economic theory can always be counted on to rationalize something and its opposite. But there is nothing in the data to dispel the notion that QE results in deflation: Higher doses of QE have been, by and large, accompanied with lower inflation.

We are left with the only positive consensus view about QE: namely, that QE has pushed risk asset prices higher. But what about the prices of liabilities? As discussed above, the U.S. fiscal gap, defined as the net present value (NPV) of assets minus liabilities, may stand today at ten times GDP. In no small part, this may be due to lower real yields. Remember that the NPV of social entitlements is the projected real outlay discounted at the real interest rate. Remember also that the 30-year real yield at 0.6% today is just a fifth of its high of 2008–2009. Viewed from that angle, there is the possibility that *even the wealth generated by QE may be illusory when household assets are measured against their effective liabilities.*

In summary of this risk scenario, one can’t help but have this eerie feeling that maybe, just maybe, *monetary authorities are getting the sign of their first derivative wrong* – in which case policy is a solution in search of a problem.

THEME #4 – CHINA: GROWTH FIXATION

Chinese growth is the stuff of dreams. Think about a population of 1.2 billion growing at double-digit figures. This compares rather favorably to the gold standard of economic growth in history: an English population of ten million growing at 2% a year in 1800.

In 2008, China decided to counter the world recession by increasing its capital stock by 20%. Because the capital stock amounted to 50% of GDP, simple arithmetic meant that an administrative decision to overinvest could result, all else being equal, in 10% GDP growth. This is the short term.

Evidently, overinvestment means lower returns. The incremental capital-output ratio has increased by about 70% in less than six years: It took $3.5 of capital to produce a dollar of GDP, versus $6 of capital today. The cement, aluminum and steel sectors are in chronic overcapacity. This in turn puts substantial pressure on producers in advanced economies.

So the new arithmetic is simple: If China can now only grow its capital goods sector at 2% and if it has to rely largely on consumption – currently 40% of GDP – to reach its 6.5%–7% growth target, then consumption needs to grow at 13.25%–14.5%

a year. This is nearly impossible for a number of reasons. To begin with, consumption growth has never come close to those levels in the history of advanced economies. Furthermore, consumption growth cannot be very robust when the largest sector in the country – the capital goods sector – is flat. Also, the dependency ratio (the ratio of non-working to working population) is expected to double to 0.75 over the next 45 years, as the single-child policy starts affecting the population pyramid. This will hinder consumption growth. Similarly, the undersupply of social protection schemes favors precautionary savings at the expense of consumption. Lastly, on conservative estimates, China's total debt-to-GDP ratio is close to 250%. This is about 100 percentage points more than 10 years ago. Both the level – far too high given the GDP per capita – and the growth mean this risk scenario offers cause for serious worry. In particular, *fast credit growth predicts weak activity levels for years to come.*

THEME #5 – JAPAN: THE BELLWETHER

In the 1980s and 1990s, Japan experienced irrational exuberance and its consequences before everyone else; its population aged ahead of Europe and the U.S.; it was a pioneer in the art of QE and was frustrated by its results before other countries even considered QE. It may well be the first country to monetize properly its public debt. As such, Japan is the canary in the coal mine. By being at the cutting edge of policy experiments and policy mistakes, it is offering a critical public service to other advanced economies.

The Japanese public debt stands at 250% of GDP. Hedge funds, Paul Krugman and the IMF worry in unison about this number: Japan is clearly close to red alert. The budget deficit has fluctuated between 6% and 9% from 2009 to 2015. At best, the primary deficit would shrink to 2.2% according to the Ministry of Finance and even this number would be hardly sufficient to stabilize the debt trajectory. In the absence of further deficit reduction measures, the Organization for Economic Cooperation and Development (OECD) projects a government debt ratio of more than 400% of GDP by 2040.

One can go through risk scenarios ad nauseam, but the issue boils down to a few simple questions: Can a country remain solvent when total debt is more than 600% of GDP (see Figure 1), when the population is aging, the domestic savings pool declining and when there is extreme political aversion to hurt the old by shrinking social security? Can the 10-year JGB yield trade below zero for long under these conditions? Won't capital flight and a melt-up in the currency wreak havoc in the JGB market? *And in this scenario, is there any alternative to fiscal dominance/hyperinflation or a default on JGBs – both of which would undermine the stability of the country if not that of the international monetary system?*

THEME #6 – EMU ECONOMICS: FAULTY LOGIC

With Europe's Economic and Monetary Union (EMU) becoming the new Japan, is this theme a rehash of the previous one?

Not quite. The debt numbers are less daunting, as evidenced by Figure 1. Yet, the problem is at least as significant. First, the European Central Bank must, for all the known reasons, show considerably more restraint than the Bank of Japan. Second, it is difficult to reconcile the strictures of a monetary union with the absence of fiscal transfers.

An example will clarify this last point. A number of European countries – including France, Italy and Portugal – suffer from a competitiveness gap against Germany. To take the example of Italy, it may take a 20% cut in Italian wages to become competitive. Assuming away social problems, if this wage cut were to take place over five years, then yearly wage inflation in Italy would need to be roughly 4% lower than in Germany. If wage inflation is 1.5% in Germany, then it would need to be -2.5% in Italy where the average nominal cost of public borrowing is 3.5%. The real cost of borrowing would hence be 6%. In other words, should Italy want to become competitive, it would need to pay a 6% real rate on its public debt – currently at 135% of GDP. This sounds like a tall order, and leaves us with an unsavory choice: *If Italy remains uncompetitive, debt ratios will keep soaring; and if Italy cuts its wages, debt financing becomes prohibitive.* All obvious alternatives are politically unworkable: High inflation is anathema to German savers, a large sell-off in the euro will not fly in a beggar-thy-neighbor currency environment and hints of fiscal union will trigger a voter revolt in Germany.

Absent a radical right tail event, the EMU is in a serious pickle.

THEME #7 – EMU POLITICS: DEMOCRACY SHATTERED

Picture the menu faced by policymakers in the EMU. How can they improve the lot of their citizens? They cannot weigh on the exchange rate. They cannot cut the interest rate. Certainly the latter and largely the former are the prerogative of the European Central Bank. They cannot do much about the budget: The fiscal straitjacket has been tailored in Maastricht. So what can be done to improve competitiveness? The only policy left on the menu is wage cuts. It would seem that the equilibrium of the EMU game is one of competitive wage disinflation. If you are a right-wing government, you conduct a right-wing policy; and if you are a left-wing government, you conduct a right-wing policy as well. Ask François Hollande or Alexis Tsipras.

This hardly boils down to a democratic choice. The only option to break the stalemate is to resort to anti-EMU third parties. No wonder two-party systems have morphed into three-party systems in most EMU countries. And we all know from history that third parties are not always a factor of stability.

In light of this scenario perhaps it is no surprise that the UK, country of the Magna Carta, habeas corpus, rule of law and property rights, has voted to secede from the broader Economic Community.

Evidently, Brexit invites more questions than answers: How does one trade off identity against bigotry, political freedom against uncertainty, or sovereignty against economic deadweight costs? All perplexing, but one thing is for sure: History is about to revisit Europe. And that may not be such a good thing.

EPILOGUE: THE TRIGGER?

At least two questions remain about our seven left tail themes: Which is the most likely trigger of an event, and how can you hedge your portfolio for it and others?

The latter will be a topic of future papers.

For the former, as everyone knows, a true black swan is a theme whereof one cannot speak. The day a big commotion happens, it may be none of the discussed themes are triggering it. It will probably be something no one is thinking about. The trigger – think 1929 or 1987 – may be "nothing." *Never underestimate the value of "nothing" as a major market mover.*

PIMCO

Newport Beach Headquarters
650 Newport Center Drive
Newport Beach, CA 92660
+1 949.720.6000

Amsterdam

Hong Kong

London

Milan

Munich

New York

Rio de Janeiro

Singapore

Sydney

Tokyo

Toronto

Zurich

pimco.com
blog.pimco.com

CMR2016-0701-196842