



# VETTING DEBT HOT SPOTS



**Eric Lascelles**  
Chief Economist

## HIGHLIGHTS

- As Fed tightening nears, the prospect of higher interest rates demands a closer inspection of the world’s debt hot spots.
- In the near term, the risks are “high” for Chinese credit, exuberant housing markets in a scattering of countries, and Greek public debt.
- Meanwhile, the risks are “elevated” – but somewhat lower than we had feared – for the world’s external, corporate and oil-oriented debt.
- Over a longer timeframe, these risks fade, only to be supplanted by mounting concerns over the developed world’s public debt – due more to untenable demographics than rising borrowing costs. Japan is an extreme example.
- Going forward, rising interest rates will undoubtedly ignite a debt brushfire somewhere in the world, but an inferno is less likely.

The world’s relationship with debt is conflicted. The post-crisis unfreezing of credit markets is celebrated as a milestone in the long march back to normal economic conditions. And yet we simultaneously cast a wary eye over a handful of global debt hot spots (Exhibit 1) that have emerged from a witch’s brew of ultra-low interest rates, a search-for-yield mentality (Exhibit 2) and the devastation caused by the financial crisis.<sup>1</sup>

With a rising rate environment now plausibly on the horizon, the International Monetary Fund (IMF) warns of a “super taper tantrum” – the possibility that bond yields might rise even more abruptly than in the original “taper tantrum” of mid-2013, with potentially damaging consequences for debtors<sup>2</sup> and creditors<sup>3</sup> alike. This is foreign territory after three decades of declining interest rates.

In an effort to understand the extent of this debt risk, this report sets out to do the following:

1. Acknowledge the likelihood of higher interest rates in the future
2. Identify key debt hot spots
3. Gauge the likelihood and severity of any negative fallout from each hot spot

<sup>1</sup>The financial crisis increased debt loads due to a mix of economic weakness and fiscal stimulus.

<sup>2</sup>All borrowers would be forced to direct money away from more productive ends to service their debt at higher interest rates. Some debtors would default if they were unable to afford the higher borrowing costs.

<sup>3</sup>Creditors would be hurt by a bond market sell-off, worse market liquidity and defaulting borrowers.

**Exhibit 1: Debt hot spots**

	Near-term risk (0-2 years)	Medium-term risk (3-10 years)	Long-term risk (>10 years)	Global significance
1) Developed-world public debt	Normal	Elevated	High	High
2) Greek public debt	High	High	Elevated	Low
3) Japanese public debt	Normal	Elevated	Elevated	Medium
4) External debt	Elevated	Normal	Normal	High
5) Corporate debt	Elevated	Elevated	Normal	High
6) Chinese credit	High	High	Elevated	High
7) Oil-oriented debt	Elevated	Normal	Normal	Low
8) Housing exuberance	High	Elevated	Normal	Low

Source: RBC GAM

## Rising interest rates are likely...

As the ravages of the 2008–2009 financial crisis fade, a developed-world economic recovery comes more fully into view. The U.S. and U.K. have clearly achieved economic liftoff. Europe and Japan seem to be finally following their lead. In turn, economic slack is gradually vanishing (Exhibit 3).

These economic developments, in turn, are reducing the risk of deflation (see our recent *Economic Compass* entitled “Dissecting Deflation”) and sparking nascent wage pressures (Exhibit 4).

Healthier growth paired with rising inflation argues for higher bond yields, at both the short and long end of the yield curve. Short-term rates are set primarily by central

banks. A classic model of central bank behavior argues that the U.S. Federal Reserve (Fed) – the world’s bellwether central bank – should now be raising rates (Exhibit 5). At latest count, 15 of 17 Fed officials believe this tightening will begin before 2015 is through. If implemented, this will mark the first fresh tightening cycle in the U.S. in an astonishing nine years. The U.K. is also clearly tilting toward tighter monetary policy.

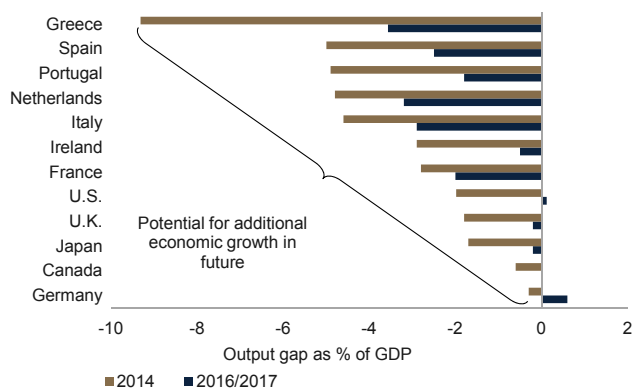
Further out the yield curve, yields have already begun to ratchet higher. Part of this move relates to expectations around central bank behavior. But part also reflects a normalization of long-term inflation expectations and upward pressure on unsustainably depressed term premiums (Exhibit 6). These upward forces are not yet exhausted.

**Exhibit 2: Search for yield drives coupons to rock-bottom levels**



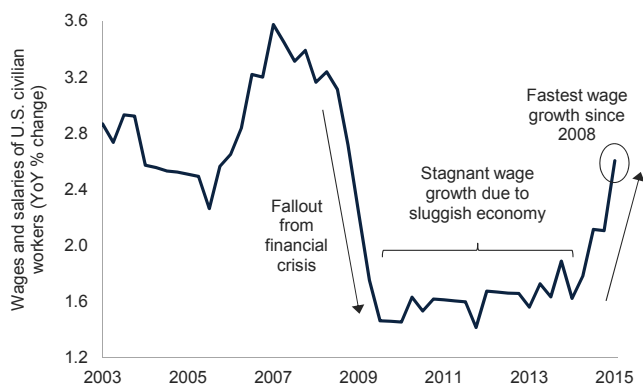
Note: U.S. investment grade corporate yield is effective yield. Source: Bank of America Merrill Lynch, Haver Analytics, RBC GAM

**Exhibit 3: Economic slack declining over time**



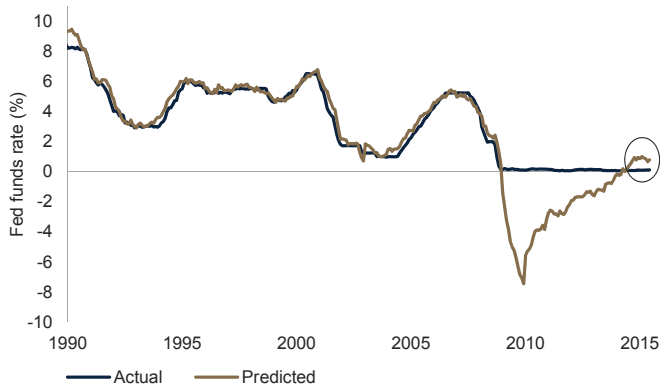
Note: IMF estimates for 2016 for Greece, Ireland, Netherland, Portugal and Spain; 2017 for all other countries. Source: IMF, Haver Analytics, RBC GAM

**Exhibit 4: U.S. economic recovery lifts wages**



Source: Bureau of Labor Statistics, Haver Analytics, RBC GAM

**Exhibit 5: Model calls for higher Fed funds rate**



Note: Predicted rates modelled using Koenig Taylor Rule. Source: Federal Reserve Bank of Dallas, Haver Analytics, RBC GAM

## ...but there is a limit to rising rates

Crucially, however, higher yields are not synonymous with high yields. There are several reasons why interest rates are unlikely to soar.

### Historical precedent

Historically, the “normal” yield is lower than popularly imagined. A review of the past 200 years reveals that the 1970s through mid-1990s were extreme outliers to the upside, with most of the rest of the period spent in the range of a 2% to 5% 10-year yield (Exhibit 7).

### Economic considerations

Although economic growth is beginning to revive, a combination of deteriorating demographics and diminished productivity growth<sup>4</sup> limits the rate of sustainable economic gains, and may also impose a slight downward tilt to inflation.<sup>5</sup> This, in turn, limits the level of nominal bond yields given a longstanding connection between the two.

### Policymaker pace

The Fed is on the cusp of raising rates, but this has already been telegraphed and partially priced in by markets. Furthermore, the Fed is unlikely to advance this agenda aggressively given an overriding desire not to undermine the long-awaited recovery. As such, it is willing to err on the side of low rates for fear of doing the opposite. Furthermore, most other central banks are considerably further from commencing a tightening cycle than are the Fed and the Bank of England.

Additionally, the heavy debt load under which the world now operates means that every rate hike will have a larger than normal effect in impeding economic activity. This limits how briskly and how far policymakers will elevate rates.

### Insufficient bond supply

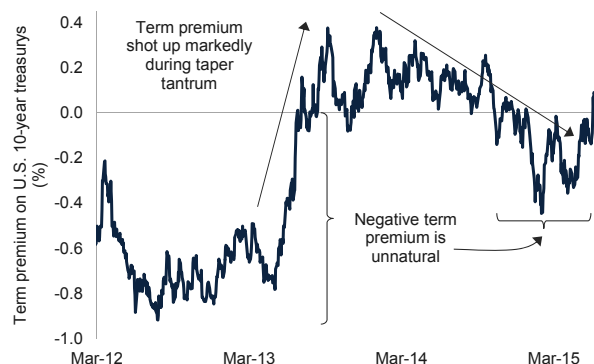
Although global debt levels have increased since the financial crisis, it is nevertheless possible to argue that there is a shortage of investible assets due to faltering equity and bond issuance (Exhibit 8).

Less controversially, there appears to be a particularly acute shortage of “safe” assets. The quantity of overall bonds outstanding still represents a normal share of total

<sup>4</sup>Productivity growth is permanently slowing for emerging economies as they near the technological frontier, and should advance at a normal clip for developed economies – if less than in the boom decade from the mid-1990s to the mid-2000s.

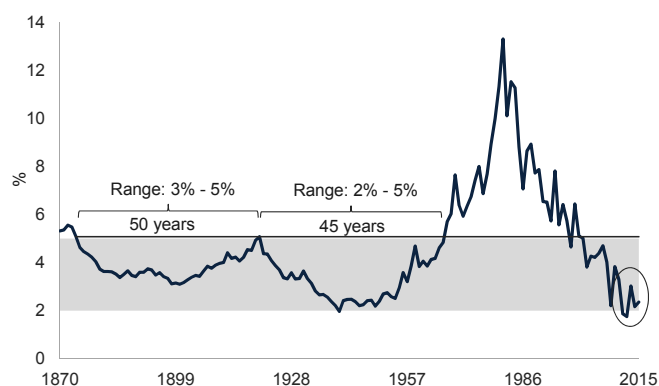
<sup>5</sup>Older populations are tentatively associated with lower inflation, though there continues to be a debate surrounding this subject.

**Exhibit 6: Bond investors receive insufficient term premium**



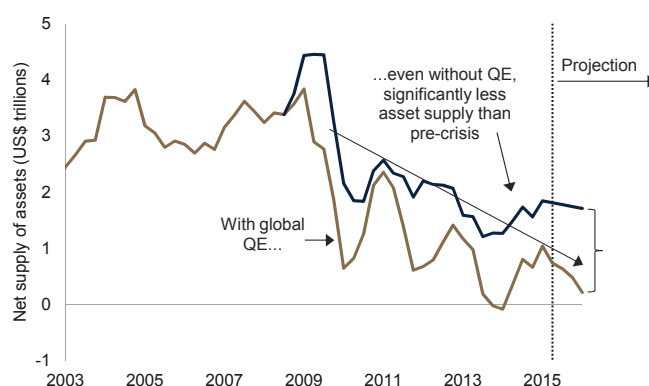
Source: Kim & Wright (2005). Federal Reserve. RBC GAM

**Exhibit 7: Historical U.S. 10-year yield is lower than most imagine**



Source: RBC CM, RBC GAM

**Exhibit 8: Asset shortage drives up prices**



Note: Rolling 12-month net supply of bonds and stocks in Eurozone, Japan and U.S. Source: Citi Research, Haver Analytics, RBC GAM

financial securities outstanding, but there are fewer “risk-free” bonds within this group due to broad-based ratings downgrades of debtors. The torrent of top-rated debt issued by sovereigns, financial institutions, municipalities and via tiered securitizations is now just a trickle.

Looking forward, the pace of sovereign bond issuance is set to slow as demonstrated by shrinking fiscal deficits (Exhibit 9).

### Excess bond demand

On the other side of the ledger, several factors argue for a greater demand for bonds. The very fact that stock, bond and home valuations have all been pushed substantially higher hints at demand outstripping supply.<sup>6</sup>

Three substitution effects should keep any interest rate increase in check by attracting additional demand. The first substitution effect is geographic: any increase in U.S. yields – the likely rate leader given the country’s monetary policy outlook – should be tempered by the inflow of investors fleeing the ultra-low yields paid in Europe and Japan. The second is the saving/spending decision: the private sector already has a higher savings rate than it did pre-crisis, and rising rates should strengthen this inclination. The third regards the asset allocation of investment products: investors will be more comfortable holding bonds as yields rise, at the expense of other asset classes.

Via these three mechanisms, every one-basis-point<sup>7</sup> increase in the U.S. 10-year yield theoretically generates a remarkable \$44 billion of additional demand for U.S. Treasuries. It shouldn’t take a huge sell-off to balance the market.

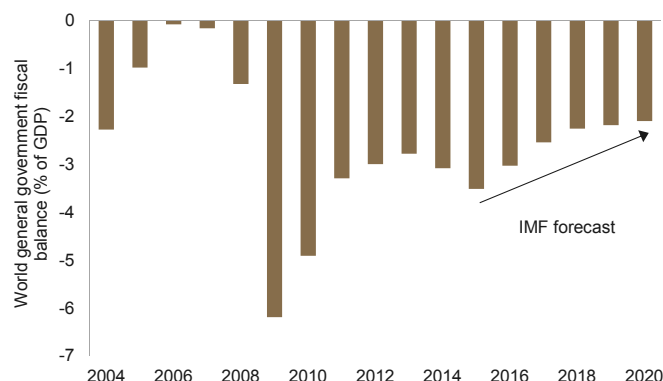
Demographics are also increasing bond demand in a few ways. During the first phase of an aging population – the position most developed countries now occupy – household saving actually rises as workers gird for retirement. It is only later that the dissaving kicks in. A recent study<sup>8</sup> puts numbers to this. For the U.S., its very young population in 1970 meant that households were theoretically justified in targeting a massive household net debt of 228% of GDP. In contrast, its rather older population of today should be targeting a household savings level of 52% of GDP. These additional savings must be parked somewhere.

<sup>6</sup>Though it is certainly fair to concede that an alternative interpretation is that bond yields have been depressed by extraordinary central bank actions, while stocks and home prices have – in most cases – merely recovered from depressed to normal levels.

<sup>7</sup>A basis point is 1/100<sup>th</sup> of a percentage point.

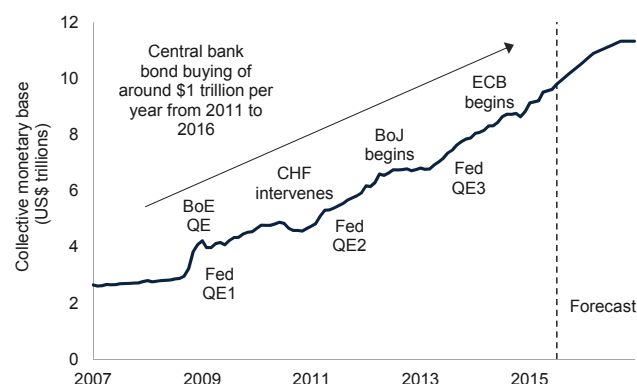
<sup>8</sup>“Secular Stagnation: Facts, Causes and Cures”, edited by Coen Teulings and Richard Baldwin, Centre for Economic Policy Research, 2014.

Exhibit 9: Shrinking world government deficits



Source: IMF, Haver Analytics, RBC GAM

Exhibit 10: Remarkably steady central bank bond buying



Note: Combines Fed, BoE, ECB, BoJ, SNB balance sheets. PPP exchange rate. Source: Bank of Japan, Federal Reserve Board, European Central Bank, Swiss National Bank, Haver Analytics, OECD, RBC GAM

An aging population also naturally reduces household risk appetite due to a shrinking investment time horizon. This tilts households toward relatively safer fixed income products, depressing yields.

Meanwhile, the remarkable economic growth of emerging economies has created another rising source of demand. Emerging-market investors have the same desire to allocate a fraction of their portfolio toward safe investments as the rest of the world, but they have few domestic options. As a result, they vie with the rest of the world over the same pool of low-risk developed debt.

The heavy regulatory burden that has been imposed on banks is further stimulating demand for government bonds given enhanced capital and liquidity requirements.

Lastly, at least for now, central bank bond buying continues unabated. True, the Fed and Bank of England have now backed away. But the ongoing expansionary efforts of the European Central Bank and Bank of Japan are sufficient to keep the global central bank balance sheet absorbing assets at the same torrid rate over the next few years (Exhibit 10).

### Identifying debt risks

Having concluded that yields are likely to rise – but not aggressively – the next step is to determine what sorts of problems may result.

A few broad-based concerns are entirely legitimate. For instance, rising yields do impose capital losses on bond investors and unquestionably make servicing debt more expensive for borrowers. However, for the most part, the challenges look to be manageable (Textbox A).

It is more useful to swivel our attention toward a handful of very specific debt hot spots<sup>9</sup> that show signs of stress or a vulnerability to stress in the coming years. Some of these concerns stem specifically from the prospect of rising rates, while others have their own unique triggers.

## 1. Developed-world public debt

Developed-world public debt rocketed higher in response to the financial crisis and accompanying recession. This period of rapid ascent now seems to be reaching an end (Exhibit 11), but the damage has been done. Developed governments now carry a staggering \$49 trillion in debt, roughly equivalent to their annual economic output.

This debt accumulation was arguably justified given the enormous economic hole it helped to fill and the role it played in restoring financial stability. International estimates place the fiscal multiplier during the financial crisis at close to two, meaning that every dollar of government spending managed to generate as much as two dollars of additional economic activity. This was money (mostly) well spent.

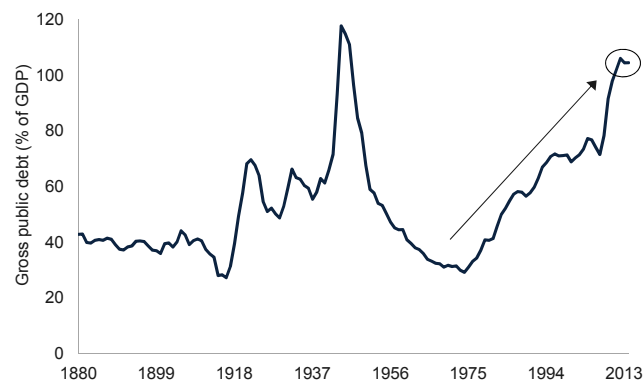
Some<sup>10</sup> have taken this argument even further, calculating that the special circumstances<sup>11</sup> surrounding the financial crisis may actually permit this additional debt to be “self-financing,” meaning that the economic boost it provided

<sup>9</sup>Alas, there is a limit to how many specific debt risks we can practically discuss. We have excluded some subjects (Argentina public debt, Venezuela public debt, Ukraine public debt, non-oil commodity-linked debt, U.S. student loans, the finances of some U.S. states) for a variety of reasons.

<sup>10</sup>“Fiscal Policy in a Depressed Economy,” DeLong and Summers, 2012.

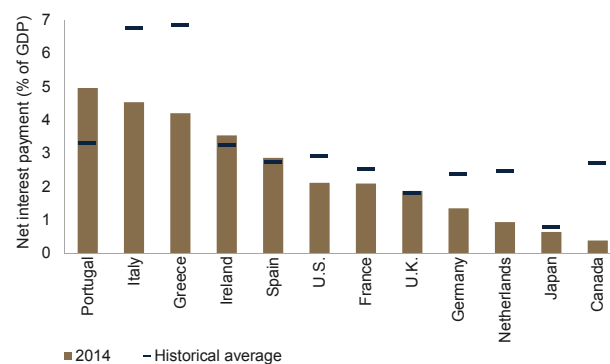
<sup>11</sup>A demand-constrained economy, the risk of hysteresis, low real interest rates and a fairly high fiscal multiplier.

**Exhibit 11: Ascent of developed-world government debt ending?**



Note: Gross government debt-to-GDP ratio of advanced economies. Source: IMF, RBC GAM

**Exhibit 12: Most nations enjoy unusually low debt-servicing costs**



Note: Average net interest payment as % of GDP from 1990 to 2014, where data is available. Source: IMF, OECD, RBC GAM

is more than sufficient to pay for the cost of servicing the additional debt forever.<sup>12</sup>

Given how well markets have tolerated the additional debt and how low borrowing costs remain, one can credibly argue that many governments would be wise to take advantage of this rare opportunity and borrow even more so as to address chronic infrastructure deficits that are undercutting economic growth. However, few governments seem willing to pursue this strategy.

While it is comforting that most of the additional public debt has rational underpinnings, it does not follow that all of this debt will be free of adverse consequences in the future. In fact, the risks grow significantly over time.

<sup>12</sup>To be clear, servicing all of this public debt is not free, but the economy may be on a permanently higher trajectory thanks to the deployment of that debt, more than paying its carrying cost on a counterfactual basis.

## TEXTBOX A

### WHY RISING YIELDS ARE MOSTLY MANAGEABLE

There are a number of reasons why higher yields should not be a broad-based disaster.

#### Creeping rather than leaping

Central banks are acutely aware of the implications of higher rates, which is why they seek a creeping rather than leaping advance. Should the increase in yields prove undesirably quick or unexpectedly burdensome on economic growth, central bankers can always adjust back downwards.

#### Unusual conditions

A cliché about low borrowing costs is that they are designed to steal spending from the future and pull it into the present. This naturally suggests a diminishment of future growth. Fortunately, it hasn't happened that way this time. The financial crisis was such a shock to confidence that households and businesses sought to defer spending into the future. Low rates simply managed to return that spending properly back to the present. In turn, there should not be a gaping hole of missing demand in the future.

#### Savers offset borrowers

While higher interest rates do impose a net drag<sup>1</sup> on economic growth, not everyone loses. For every borrower

<sup>1</sup>Why should there nevertheless be an economic drag, then? Because rising rates impose a higher bar for business expansion plans (a project will not be undertaken unless it can clear its financing cost). In addition, there is a fundamental asymmetry in the financial system: if a company or person descends across the threshold from solvency into insolvency, the negative consequences can be outsized.

punished by a higher borrowing cost, there is a lender rewarded by it. The interest payments remain within the economic system, if in different hands.

#### Virtuous debt

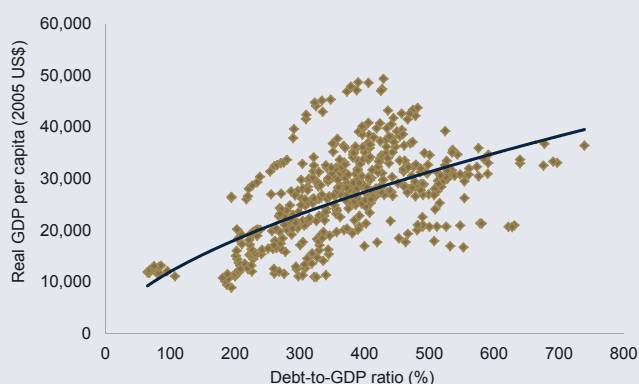
It is tempting to vilify rising debt levels. Some is unquestionably bad. But a significant part of global leveraging – or, more charitably, “financial deepening” – can actually be quite constructive. As poor countries become richer, it is both natural and sustainable for their leverage to rise, within reason (Exhibit A1). This is a manifestation of households gaining access to credit cards and mortgages, and businesses securing outside funding to implement good ideas.

#### Precedent and preparation

The global economy should also be reasonably well prepared for higher rates. It already went through a spurt of higher yields in mid-2013 during the original taper tantrum (Exhibit A2). It was unpleasant, but not apocalyptic. Helpfully, it was a useful learning experience, alerting investors and borrowers alike to the effects that rising yields and churning markets can have.

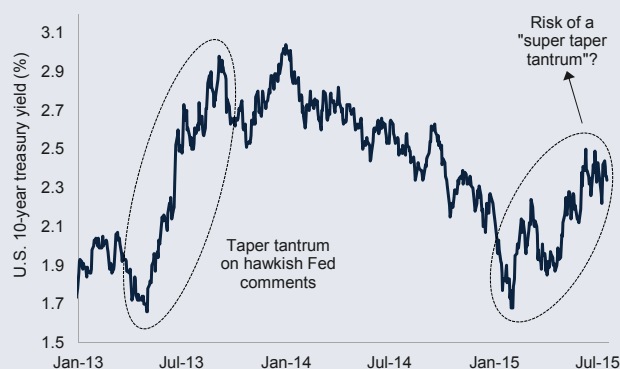
Even more importantly, the global economy learned a great deal from the 2008–2009 financial crisis. To the extent that financial institutions tend to be central players in

**Exhibit A1: Countries can increase their leverage as they grow wealthier**



Note: Scatterplot of longitudinal data for 32 countries. Source: Haver Analytics, RBC GAM

**Exhibit A2: Markets are better prepared for super taper tantrum**

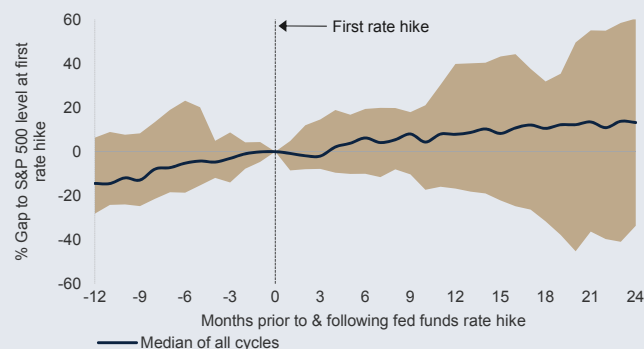


Source: Federal Reserve Board, Haver Analytics, RBC GAM

both the provision and purchase of credit, it is heartening that they are now eminently battle-tested and subject to much more careful oversight than in the past. There also appear to be fewer leveraged bond-holders than in the pre-crisis era.

Stocks will not love Fed tightening, but history demonstrates that they normally fare adequately both before and after the initiation of a tightening cycle (Exhibit A3).

**Exhibit A3: Equities don't mind start of tightening cycle**



Note: 17 tightening cycles from 1948 to present. Shaded area represents the maximum and minimum range. Source: Haver Analytics, RBC GAM

### Near-term risk: normal

In the near term (0 to 2 years), we assess no more than a “normal” risk level for developed-world public debt (outside a handful of special cases discussed in subsequent sections). The bond market has not complained; to the contrary – as we have already hypothesized – there may be too few bonds outstanding given the available demand.

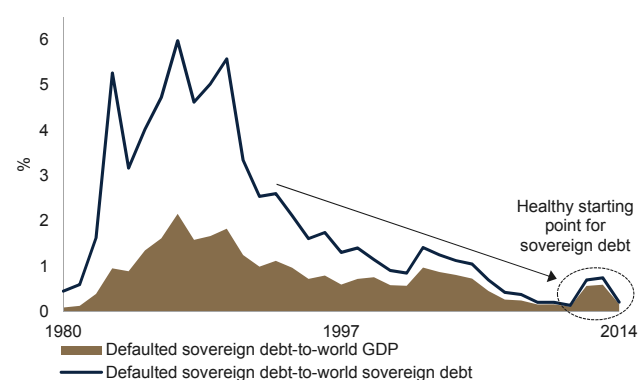
The cost of servicing all of this public debt is unusually tame as very low bond yields trump high debt loads (Exhibit 12). A lack of distress is evident in the minimal incidence of sovereign default (Exhibit 13).

The fact that international foreign-exchange reserve managers are now shrinking their footprint imposes some risk on this benign assessment, but only a limited amount (Textbox B).

We should concede that – as argued extensively by Reinhart and Rogoff<sup>13</sup> – high public debt levels tend to be associated with slower economic growth. However, this is a less compelling observation than it first seems, as it is unclear whether high debt induces slow growth or slow growth induces high debt. Further, even if high debt does impede growth, it is difficult to say whether the slower growth relates to the fiscal austerity necessary to halt runaway debt escalation (this hard work is now mostly done), the resources squandered on servicing the debt (this is fairly cheap in the present context), a higher sovereign risk premium

<sup>13</sup>The argument was not substantially weakened by the discovery of calculation errors in one of the Reinhart and Rogoff papers.

**Exhibit 13: Sovereign debt defaults are unusually low**



Source: Bank of Canada CRAG database, RBC GAM

(markets are not punishing countries for their high debt loads at present), or whether some other factor is at play. We are inclined to view the debt-growth channel as at best a secondary consideration, and not a significant impediment to financing public debt in the near term.

### Medium-term risk: elevated

Venturing into the medium term (three to 10 years), the public debt risk starts to ascend, to an “elevated” rating. This is because of two slow-brewing problems.

First, as interest rates rise, they will eventually bleed into the cost of servicing public debt. It is somewhat comforting that

the starting point is friendly and the transformation happens only slowly given the gradual process of government debt maturing and resetting at higher rates. Nevertheless, the current average U.S. public debt interest rate of 2.0% will eventually rise to something like 3.5%, with a similar path probable in much of the rest of the world. This almost doubles the cost of servicing public debt.<sup>14</sup> The risk has less to do with insolvency,<sup>15</sup> and more to do with the unfortunate squandering of a larger share of economic output on debt servicing costs.

The second problem is that there is an economic vulnerability that comes from maintaining a higher than normal public debt (Exhibit 14). When the next recession or financial crisis descends, policymakers will have much less leeway to mute the damage by delivering fiscal stimulus. Thus, future recessions and crises could be bigger or more frequent, a notion elaborated upon in an *Economic Compass* called “What To Do About Public Debt.”

### Long-term risk: high

The long-term risk (greater than 10 years) associated with developed-world public debt is outright “high.” Part of this is because the medium-term challenges remain.

But the main problem is specific to this longer timeframe. Whereas public debt loads have largely stabilized today and appear on a reasonable trajectory over the next few years, status-quo projections have the trend starting to deteriorate later in the decade and going badly off track in subsequent decades.

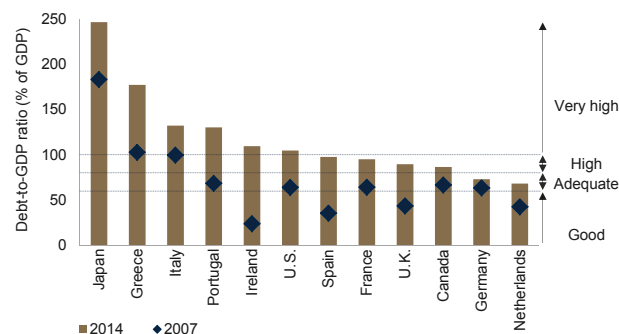
At its root, the problem is one of demographics. Slower population growth and an aging population (Exhibit 15) pair to form a tsunami of fiscal obligations. Revenues rise more slowly due to diminished economic growth. Expenses rise more quickly due to pressure on health spending and other entitlements. IMF calculations demonstrate that this trend rapidly becomes unsustainable, sending debt loads massively higher (Exhibit 16). Unaddressed, developed-world government debt rises from around 100% of GDP in 2014 to a frightening 186% in 2050.

This debt scenario would likely be unworkable, in a worst case resulting in widespread defaults and acute economic

<sup>14</sup>Note that the cost of servicing public debt is never as high as it first looks. Investors must pay taxes of as much as 50% on their interest income, which is recouped by the government. Central banks hold a significant fraction of government debt, and recycle their profits back to the government (rendering that portion of the debt effectively interest-free). Finally, lenders deploy their interest income into the economy by spending a fraction of it.

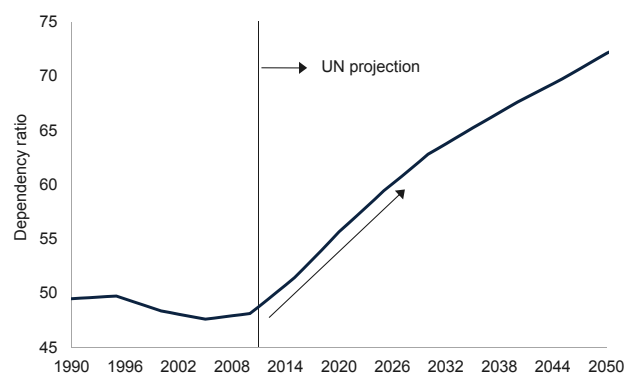
<sup>15</sup>Though some particularly indebted countries such as Japan – discussed in its own section later – may struggle under the weight of significantly higher rates.

**Exhibit 14: Most countries have high public debt post crisis**



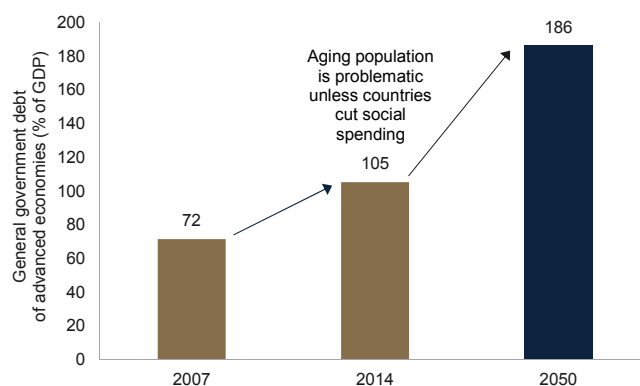
Source: IMF, RBC GAM

**Exhibit 15: Aging population raises fiscal obligations**



Note: Dependency ratio of more developed regions measured as population of age 0 to 14 and 65+ as a percentage of population of age 15 to 64. Source: United Nations, Haver Analytics, RBC GAM

**Exhibit 16: Long-term public debt challenge from aging population**



Note: 2050 forecast adds net present value of median age-related spending increase forecast by IMF from 2015 to 2050 onto 2014 public debt level. Source: IMF, RBC GAM



## TEXTBOX B FOREIGN EXCHANGE RESERVES

International currency-reserve managers are a traditional sponge for sovereign debt, particularly the debt of large developed sovereigns. Their appetite has helped keep bond yields low in major markets over the past fifteen years.

These government-directed entities accumulate foreign government bonds as a sort of protective shield. If their own currencies or local asset markets ever come under attack, they can sell the foreign bonds and use the proceeds to purchase their own currency and local assets. This action helps stabilize their financial systems and currencies.

Over the years, emerging-market nations in particular have built a truly extraordinary base of foreign exchange reserves (Exhibit B1). However, the tide may be turning. After a long period of growth that saw global reserves peak at \$12 trillion, the stock of reserves has now begun to fall. The outflow is a moderate U.S. \$389 billion so far, with around half of the major players cutting their reserves. Anecdotally, the pace may be increasing in 2015, and nine out of ten economists surveyed by the *Financial Times* expect the trend to continue.

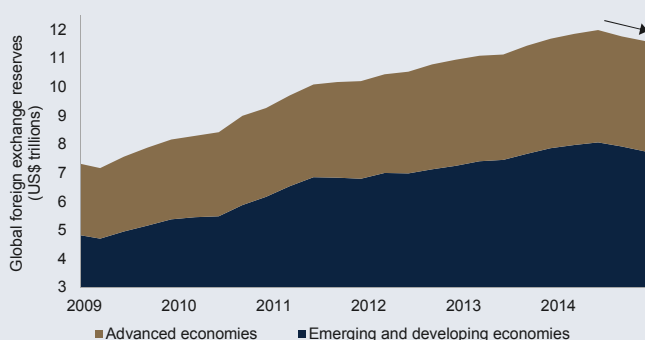
There are several reasons why this is happening. First, quite frankly, most countries have built up sufficient reserves. They are not likely to need more in even the most extreme circumstances. The urge to accumulate has faded.

Second, emerging-market nations – where much of the reserves are domiciled – no longer have the large current account surpluses that they once recycled into foreign buying. This is for a variety of reasons. A large number of emerging-market nations have gradually lost competitiveness over the years as their wages have outpaced productivity, such as China. Others have been undermined more recently, such as resource-exporting nations by the commodity correction (Exhibit B2). Even if they wanted to, the flow of money simply isn't there.

Third, some emerging-market governments have actually been using their currency reserves for the intended purpose: defending their currency. As capital outflows have occurred over the past year, they have plugged the gap by drawing down these reserves.

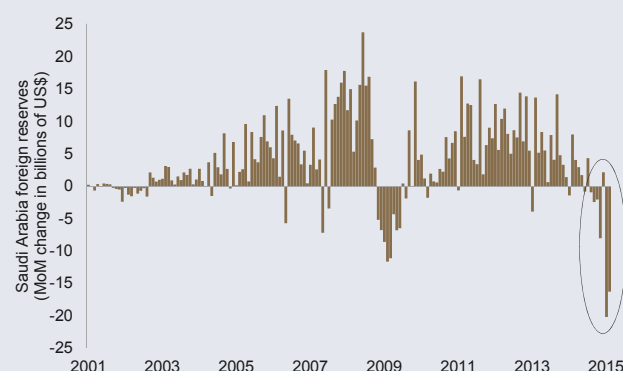
Fortunately, this shift need not be overly problematic for sovereign borrowers. The reality is that while currency reserves have stopped their rapid growth, borrowers themselves no longer have the same need for this foreign financing. Global imbalances are fading, with the result that countries are much more capable of financing themselves domestically. Case in point, the Chinese current account surplus is far smaller than it once was (meaning less money to recycle into Treasuries), but the U.S. current account deficit has also shrunk (meaning less need for foreign money to be recycled into Treasuries).

**Exhibit B1: Global foreign exchange reserves now declining**



Source: IMF, Haver Analytics, RBC GAM

**Exhibit B2: Saudi Arabia drawing down its foreign reserves**

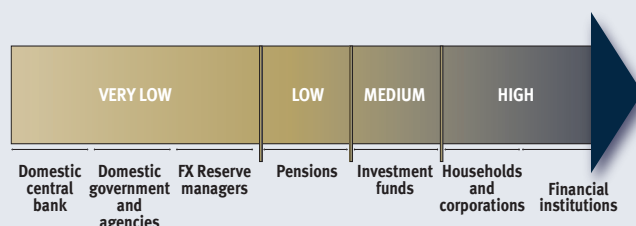


Source: Saudi Arabian Monetary Agency, Haver Analytics, RBC GAM

In fact, the entire setup is something of a closed system. If China were to shift its buying of U.S. Treasuries to German bunds, this would displace an erstwhile bund buyer, and a domino effect of consequences would eventually push someone into the hole in the Treasury market created by China's exit.

However, this is not to say that diminished buying by reserve managers is entirely consequence-free. This group is unusually inelastic in its demand. In other words, they buy no matter what the available yield. In contrast, the new buyers being asked to take their place – financial institutions, investment funds, corporations and households – are somewhat more interest rate sensitive (Exhibit B3). They demand an additional return, imposing a modest upward pressure on yields.

Exhibit B3: Interest rate sensitivity varies by buyer



Source: RBC GAM

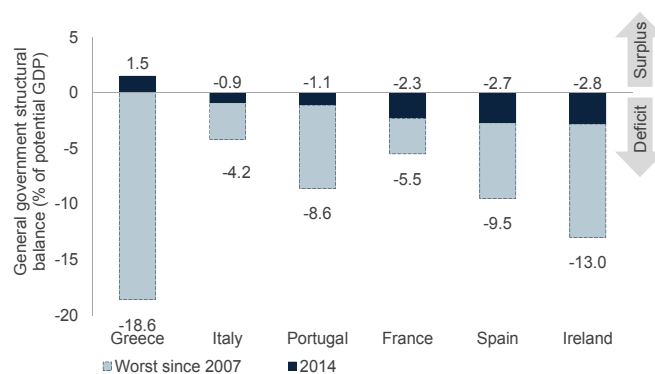
unless aggressive public policy remedies are pursued in the meantime. We suspect such remedies will ultimately be undertaken, but it is difficult to say how long policymakers will delay (and thus how high debt loads might become) before they acknowledge the inevitability of these actions.<sup>16</sup>

## 2. Greek public debt

Greece's public debt has soared to 177% of GDP, among the highest ratios in the world. This leaves little margin for error. Initially, Greece managed to walk this tightrope: the country laboured diligently from 2011 through 2014, restoring economic growth and achieving a semblance of fiscal stability (Exhibit 17).

Alas, all of this has now been squandered. A seemingly trivial quarrel in late 2014 over the appointment of a figurehead president resulted in a snap election and the unfortunate elevation of a far-left political party (Syriza) that abandoned the final stage of the country's austerity and reform agenda. The resultant decline in confidence and tax compliance sent the Greek economy and budget badly off track.

Exhibit 17: Significant progress made in European government balance sheets



Source: IMF, Haver Analytics, RBC GAM

Prime Minister Tsiparis eventually blinked after a summer of high-stakes maneuvering – highlighted by a referendum that rejected the European creditors' terms – striking a tentative deal for additional funding that permits the country to remain a Eurozone member for now.

The intensity of the market's fear has rightly faded. But even with an agreement, it is highly likely that Greece will default on its public debt. The real question is whether this will be a coordinated default, an uncoordinated default, or one followed by the other.

We assign a 75% probability to Greece's creditors granting coordinated debt relief over the next year by lowering the country's borrowing costs and extending the maturity of its

<sup>16</sup>An almost infinite number of options and scenarios exist. Health care inflation has recently helpfully slowed, but it is unclear whether this slower rate of ascent can be sustained. We are inclined to think it may be, as health care providers respond to fiscal conditions, permitting faster expense growth when government coffers are looser, and slower expense growth when the fiscal situation is tighter. Some entitlements might be de-indexed from inflation, or at least become less generously indexed to inflation. The paid-in cost of some entitlements might need to be increased. Entitlements might also be means-tested, though this risks creating a rift among beneficiaries that could ultimately undermine the programs.

debt. To be clear, Greece's official debt-to-GDP ratio won't be helped by this action, but it nevertheless qualifies as a default in our eyes given that the creditors will take a loss in net present value terms, and the burden will feel much lighter for Greece going forward. The creditors have not officially agreed to debt restructuring yet, but this step is nevertheless likely given the IMF's strong endorsement and the precedent set when the very same creditors granted this form of debt relief to Greece in 2012.<sup>17</sup>

Furthermore, we assign a 40% chance of a large uncoordinated default by Greece over the next few years (the risk is arguably higher than this over a longer time horizon). This could occur if Greece fails to secure coordinated debt relief, but is also conceivable if it does obtain coordinated debt relief and then stumbles in its reform implementation or is confronted by other economic obstacles. This is an entirely plausible scenario: Greece has repeatedly proven unwilling or incapable of fully delivering the austerity and reforms it promises its creditors.<sup>18</sup> Were another significant miss to occur, it becomes increasingly difficult to imagine short-tempered creditors and their electorates providing still more assistance. The creditors might stop funding Greece, ultimately forcing the country out of the Eurozone. In such a scenario, Greece would be foolish not to repudiate a large fraction of its public debt as it exited.<sup>19</sup>

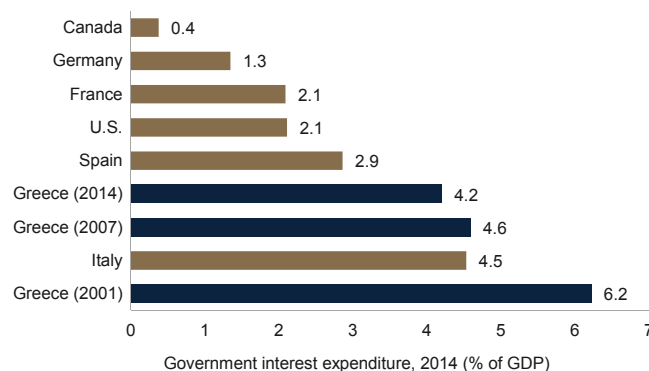
Lastly, with squinted eyes, there is perhaps a 10% chance that Greece manages to trundle along without any form of debt relief. Despite perceptions to the contrary, the country is not actually diverting an unusually large fraction of its GDP to servicing public debt. In fact, Greece's current public debt-servicing costs are lighter as a fraction of its GDP than Italy's, and less than Greece itself was paying

<sup>17</sup>The creditors wiped out \$130 billion in Greek debt in March 2012.

<sup>18</sup>Part of this is arguably the creditors' fault for setting unrealistically aggressive targets, but the fact remains that Greece has regularly missed its targets.

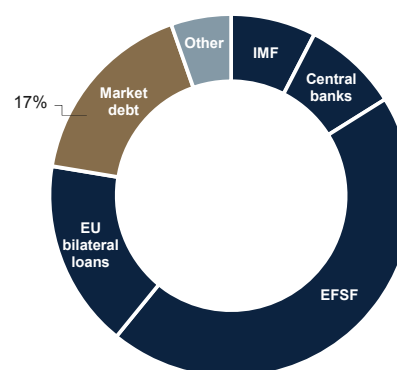
<sup>19</sup>Greece would likely default as part of an exit from the Eurozone for three reasons. First, in severing its relationship with the Eurozone, Greece would no longer feel as beholden to its creditors. Second, the exit itself would be sufficiently traumatic that Greece would need all of the fiscal help it could get. Third, the new drachma would be worth much less than a euro, making the existing debt burden suddenly feel much heavier.

**Exhibit 18: Greek interest burden is high but not unprecedented**



Note: Government interest expenditure for 2014 unless otherwise indicated.  
Source: Haver Analytics, RBC GAM

**Exhibit 19: Very little Greek debt is privately held**



Note: Share of total outstanding Greek debt (%) held by various stakeholders.  
Source: Financial Times Jan 2015, RBC GAM

before the financial crisis and before its entry into the Eurozone (Exhibit 18).

What does this mean for bond investors? On the one hand, we have just assessed the risk of a default at almost 100%, meaning that the risk is "high" over the short and medium term, before beginning to fade over the long run. On the other hand, this may not matter very much in the global context: the country is small and most Greek public debt is now held by official institutions (Exhibit 19). As such, we assign it a global significance of "low." To be fair, an uncoordinated default might have outsized consequences given the surprise factor, the larger scale of such a default, the likelihood of knock-on private-sector defaults within Greece, and the potential for contagion. Fortunately, contagion fears are greatly diminished due to the special programs, procedures

and precedents implemented by European policymakers in recent years.

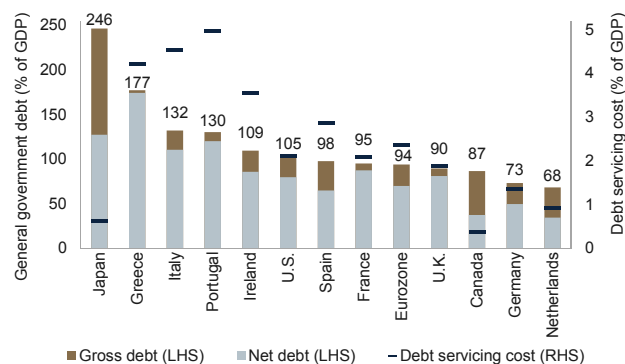
### 3. Japanese public debt

Japan is saddled with the world's largest public debt load, at 246% of GDP (Exhibit 20). This is well beyond even downtrodden Greece. Japan's public debt was already creaking before the financial crisis given the country's poor demographics and history of anemic economic growth (Exhibit 21). The subsequent economic downturn and 2011 tsunami haven't helped. In contrast to Greece, which is a small country, Japan is a nation of considerable global significance given its status as the world's third-largest economy.

So far, Japan has managed to dodge anything resembling a sovereign debt crisis. There are several reasons why it may manage to continue this streak, justifying our "normal" risk assessment for the country in the near term:

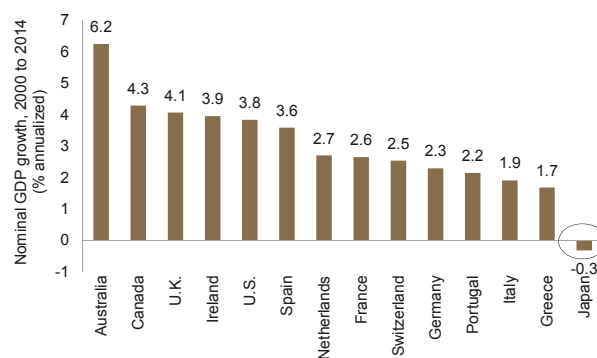
- The country has already weathered two decades of high public debt,<sup>20</sup> without any obvious distress.
- The Japanese government is now making an – admittedly incomplete, as yet – effort to close its fiscal gap, mainly via a 2014 sales tax hike and a campaign to increase the economic base.
- Japan's overall public debt load is very high, but its net debt – which adjusts for the government's unusually large asset holdings – is far lower at 130% of GDP (refer back to Exhibit 20), a hefty figure but well short of the highest in the world.
- Japanese bond yields have long been among the world's lowest, allowing for unusually cheap financing even by modern-day standards (refer again back to Exhibit 20).
- A remarkable 93% of Japanese government bonds are held domestically, providing a large base of stable funding.
- The Bank of Japan already holds nearly 30% of Japanese government bonds and remains an aggressive buyer. Its coupon earnings on these investments are funneled back to the government, making these holdings effectively interest-free for the government.
- At the national level, the Japanese economy is the biggest creditor in the world. This means that the country's prodigious public debt is more than offset by an enormous reservoir of private savings (Exhibit 22).

**Exhibit 20: Japanese gross debt is high, but better by other metrics**



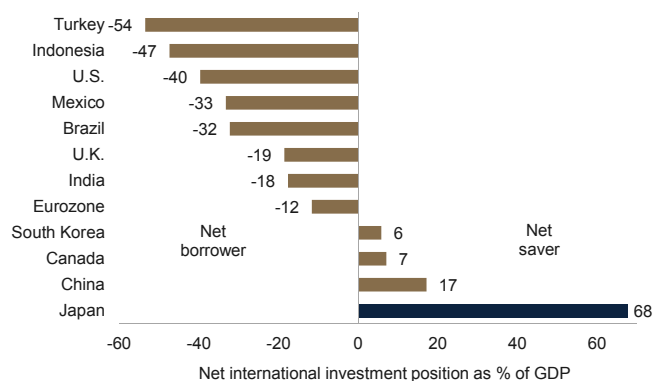
Note: Numbers shown in chart are gross debt as % of GDP. Source: IMF, RBC GAM

**Exhibit 21: Lagging Japanese economy has hurt debt trajectory**



Source: IMF, Haver Analytics, RBC GAM

**Exhibit 22: Despite its public debt, Japan is a huge net saver**



Note: Data based on latest available year. Source: IMF, Haver Analytics, RBC GAM

<sup>20</sup> "High" defined as a gross public debt-to-GDP ratio of 100% or more.

But the Japanese debt outlook becomes considerably less stable over the medium and long run, as reflected by a recent Fitch downgrade of Japan's sovereign debt rating from A+ to A. We believe the risks surrounding Japanese public debt are "elevated" over longer time periods for three reasons.

First, Japan's demographic deterioration continues unabated. This is problematic: fewer workers translate into sluggish economic growth, a diminished tax base and greater social spending on retirees. Meanwhile, unlike the rest of the developed world, Japan seems incapable of mitigating its demographic problems by absorbing (young, fertile and educated) immigrants.

Second, Japan still has not fully addressed its gaping structural deficit. The potential solution exists via higher taxes, reduced entitlements and faster economic growth. But a planned second sales tax hike was recently delayed after the first proved economically disastrous and a recent estate tax increase has proven of limited effectiveness; still more measures are needed. Although Japanese entitlements are more generous than those provided by its peers, it is no easy task to cut entitlements in a democracy. Additional economic growth would go a long way toward filling the fiscal hole, but it is still unclear whether burgeoning structural reforms will succeed in lifting growth to a sufficient degree (Exhibit 23).

Third, Japanese borrowing costs could rise materially, a potentially fatal development for a country with such an enormous stock of debt. If economic reforms succeed, the resultant increase in growth and inflation should theoretically drive yields higher. Shifting patterns of asset allocation present a similar argument as Japanese government bonds prove less popular: Japanese pension funds are now tilting away from domestic government debt and toward equities and international assets; a rising risk appetite in the Japanese private sector could further this trend.<sup>21</sup> Lastly, Japan's population is now shifting from the aggressive household savings mode of late middle age to the drawing down of savings that characterizes old age. The risk of higher interest rates isn't just that public debt will become more expensive to service. The associated bond sell-off could also drain Japanese banks of capital given their enormous sovereign bond holdings. Given these risks, it stands to reason that the Bank of Japan will continue to aggressively defend low yields, but its success – and the long-term consequences of these actions – are uncertain.

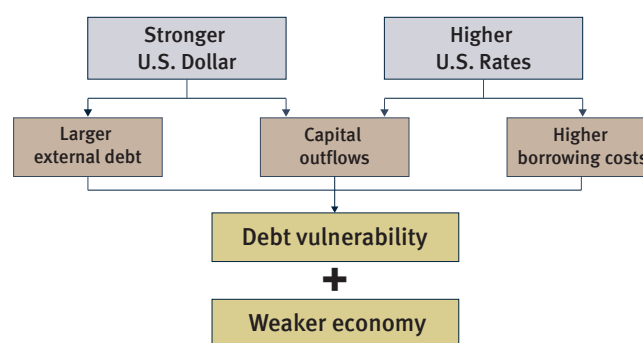
<sup>21</sup>On the other hand, if Japan government bonds were ever marketed internationally, they might attract significant currency-reserve interest.

### Exhibit 23: Japanese reforms

Labour	<ul style="list-style-type: none"> <li>• Efforts underway to reduce two-tier nature of labour market</li> <li>• Underutilized pools of potential workers being tapped</li> </ul>
Governance	<ul style="list-style-type: none"> <li>• Tokyo Stock Exchange mandates independent directors on boards</li> </ul>
Trade	<ul style="list-style-type: none"> <li>• Trans-Pacific Partnership implementation now likely</li> </ul>

Source: RBC GAM

### Exhibit 24: Debt vulnerability channels



Source: RBC GAM

To be clear, we believe it is more likely that Japan continues to shoulder its public debt than not. But a messy situation involving very large sums is a risk that grows with time.

## 4. External debt

External debt – money borrowed from foreigners – serves a useful purpose in allowing companies and countries to tap investors outside their borders, injecting additional capital into their economies, reducing their borrowing costs and improving the liquidity of their debt markets.

However, external debt also comes with risks. Foreign investors are not as stable a source of capital as domestic investors. They are more inclined to flit in and out of the market, and to rush for the exits at the first sign of trouble. This is especially true with emerging-market external debt,

occasionally resulting in sudden increases in borrowing costs and a shortfall of capital (Exhibit 24).<sup>22</sup>

### Big numbers...

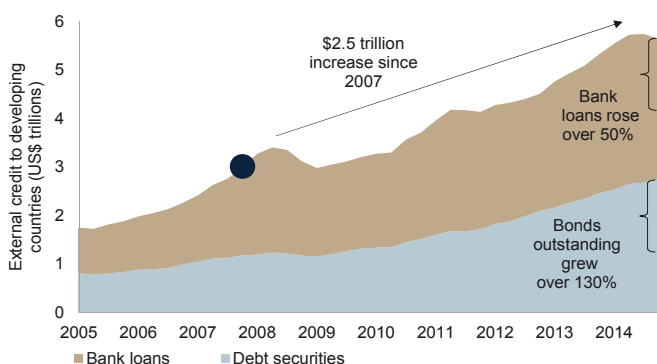
On an absolute basis, the amount of external debt owed by emerging economies has grown by an eye-watering \$2.5 trillion since 2007, nearly doubling the amount outstanding (Exhibit 25).

A subset of external debt – debt borrowed not just from foreigners, but in a foreign currency – merits particularly close attention. The U.S. dollar is by far the most popular foreign funding currency for external debt.<sup>23</sup> U.S. dollar

<sup>22</sup>Modern emerging-market investors may be somewhat less volatile than those of decades past as their composition shifts from hedge funds and distressed investors to mutual funds and institutional investors.

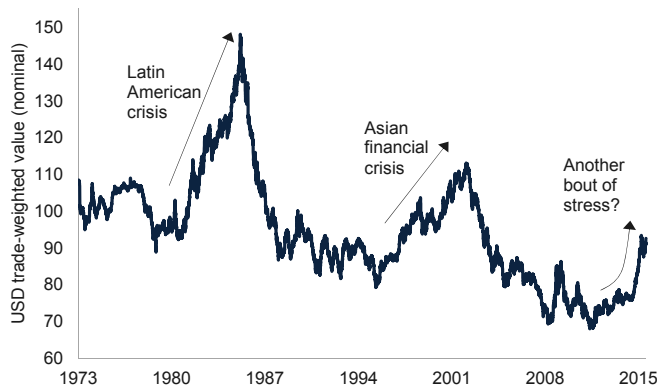
<sup>23</sup>More than half of corporate foreign-currency borrowing is in U.S. dollars.

**Exhibit 25: Staggering growth of emerging-market external debt**



Note: External bank loans to and international debt securities issued by all sectors of developing countries. Source: BIS, Haver Analytics, RBC GAM

**Exhibit 27: Strong dollar doesn't bode well for emerging-market debt**



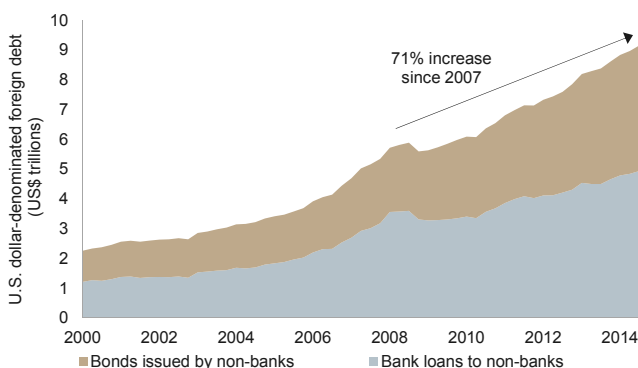
Source: Federal Reserve Board, Haver Analytics, RBC GAM

funding has increased by a massive 71% since 2007, bringing the total debt owed by foreigners in U.S. dollars to a gargantuan \$9.2 trillion (Exhibit 26).

For borrowers, the particular attraction of foreign-currency external debt is its direct access to vastly deeper foreign debt markets. For investors, the attraction is the greater certainty of an investment denominated in their home currency. Of course, the currency risk is not eliminated altogether – rather, it is shifted from investor to borrower. As a result, a borrower's effective debt load can grow quite suddenly when their funding currency rises.

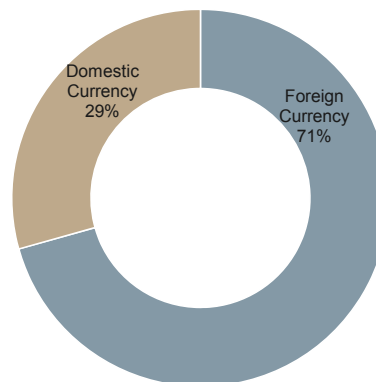
This currency risk has been a key determinant of emerging-market debt crises in the past, mainly when the U.S. dollar

**Exhibit 26: Foreign borrowers load up on dollar-denominated debt**



Note: US\$-denominated debt of non-U.S. borrowers. Source: BIS, RBC GAM

**Exhibit 28: Majority of emerging-market external debt is in foreign currencies**



Note: Gross external debt of 19 EM countries in foreign currency for 2014 as percentage of total. Source: Haver Analytics, RBC GAM

has appreciated (Exhibit 27).<sup>24</sup> This is an ominous pattern given the U.S. dollar's recent strength versus emerging-market currencies, and our estimate that 71% of emerging-market external debt is denominated in a foreign currency (Exhibit 28).

### ...smaller percentages

Fortunately, the external debt risks are not quite as big as they first look. It is important to recognize that the global economy is also very large and has grown significantly over the same time period.

Wedding the two concepts together, the global external debt-to-GDP ratio is 62% – high on a historical basis, but actually on a steady downward trend since the financial crisis (Exhibit 29). Key to our relative calm on this matter is that developed-world external debt doesn't matter very much: foreign holdings tend to be unresponsive to all but the most extreme events. The real theoretical concern is in the emerging-market space, where foreign investors demonstrate more volatile behaviour. Fortunately, the emerging-market external debt-to-GDP ratio has long been steady at a much tamer 27%.<sup>25</sup>

Additionally, a natural hedge exists in that many emerging-market borrowers are intentionally taking loans in currencies in which they already earn significant foreign profits. In the context of moving currencies, the losses from one exposure are offset by the gains from the other.

### A safer environment

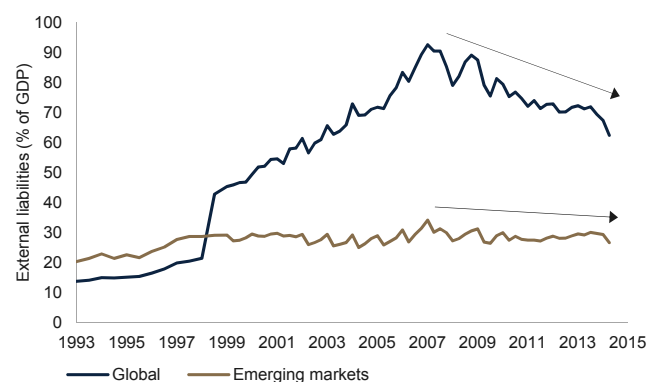
Broadening our gaze for a moment, it is helpful that emerging markets have sounder financial positions than in the run up to the debt crises of the 1980s and 1990s. The average emerging economy of today has a larger pool of currency reserves with which to defend itself (Exhibit 30), less public debt, deeper domestic financial markets, an improved current account balance, a more credible central bank and a greater inclination toward freely floating exchange rates.<sup>26</sup> Empirically, these newfound strengths allowed emerging-market nations to weather the 2008–2009 financial crisis and the 2013 taper tantrum rather well, all things considered. It seems unlikely that future market dislocations will be any more severe than these.

<sup>24</sup>A recent IMF study finds that – regardless of debt implications – emerging economies perform poorly with a rising U.S. dollar and rates.

<sup>25</sup>Moreover, the foreign currency share has declined over time as domestic markets have grown.

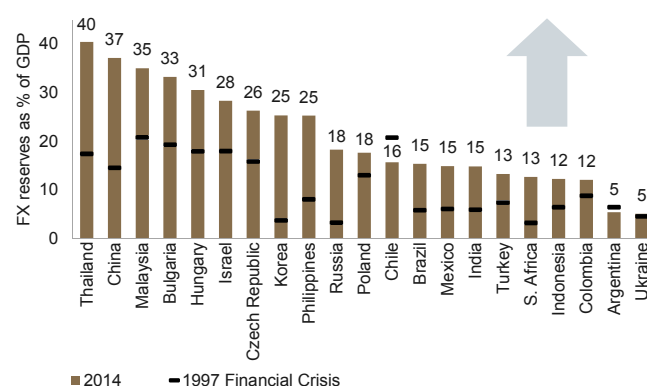
<sup>26</sup>The advantage of freely floating exchange rates may be counterintuitive given concerns about foreign-currency debt, but countries with fixed exchange rates are much more likely to be attacked by speculators and ultimately suffer sharp and unexpectedly market dislocations.

**Exhibit 29: Emerging-market external debt tame relative to GDP**



Note: Measured as external debt securities and loans of all reporting countries. Source: BIS, IMF, Haver Analytics, RBC GAM

**Exhibit 30: Enlarged foreign-exchange reserves help financial stability**



Note: Numbers displayed are 2014 figures. Source: IMF, RBC GAM

### Sources of risk

External debt is not at serious risk of spontaneous combustion. However, it does suffer from vulnerabilities to a variety of potential shocks, spanning a major risk-off event like a financial crisis, a faster-than-expected increase in interest rates,<sup>27</sup> a sharp appreciation of the U.S. dollar and further domestic weakness at home.

We evaluate the vulnerability of individual emerging-market economies in Textbox C using seven screening tools. Synthesizing the results across these seven criteria, we detect the greatest risks among Eastern European nations given their high external debt loads and materially weaker currencies, among Latin American economies given sharply

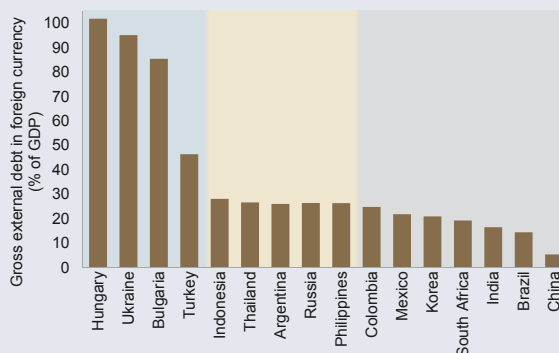
<sup>27</sup>Rising rates would increase the cost of borrowing, render the search for yield less acute and make carry trades funded in the developed world and deployed into emerging markets less attractive.

## TEXTBOX C SEVEN TESTS FOR EXTERNAL DEBT RISK

- When evaluating external debt risks for individual nations, the natural starting point is simply to determine which countries have the highest foreign-currency external debt loads (Exhibit C1). The implication is that a handful of Eastern European countries – Hungary, Ukraine and Bulgaria – plus Turkey are in the worst position according to this metric, although much of their external debt is likely denominated in euros, a currency that has not replicated the dollar’s strength and is likely partially hedged by these countries’ economic exposure to Europe.
- Of course, in the short run, the issue is not so much who has the greatest debt – since much of it will not mature for years and so presents little risk of sudden withdrawal by foreign investors – but rather which countries must do the greatest debt issuance in the immediate future (Exhibit C2). With the caveat that these numbers reflect total government financing needs – not a perfect match for the subject of this debt hot spot – we find that Hungary again tops the risk charts, but with a different subsequent cast of characters: Ukraine, Brazil, South Africa, India, Argentina and Poland.
- Another useful stress test is whether a country’s exchange rate is in serious decline (Exhibit C3), since this determines the effective weight of foreign-denominated debt. Almost every currency has fallen over the past year relative to the U.S. dollar, with especially sharp declines from Ukraine, Russia, Colombia and Brazil that have taken many to multi-decade lows.<sup>1</sup>
- Another test determines which regions are suffering the greatest economic distress. Economic problems make debt servicing more problematic and also push foreign investors away. In the current context, there has been a general deceleration across the emerging market space, with especially abrupt declines in Latin America due to collapsing commodities, Eastern Europe given Eurozone softness and Russian sanctions, and China given that country’s domestic economic and credit challenges.

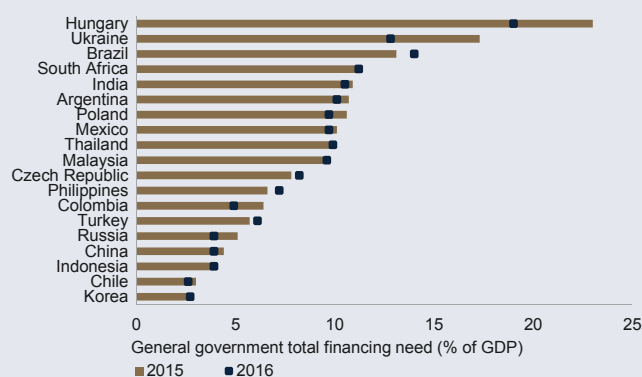
<sup>1</sup>This is an imperfect test, however, since it fails to reflect potential future currency movements. Furthermore, it compares all countries versus the U.S. dollar. This is reasonable given that more than half of all foreign-currency external debt is priced in U.S. dollars, but nevertheless imprecise, especially for Eastern European countries with a greater orientation to the euro or Swiss franc.

**Exhibit C1: Some countries have large foreign-currency debt**



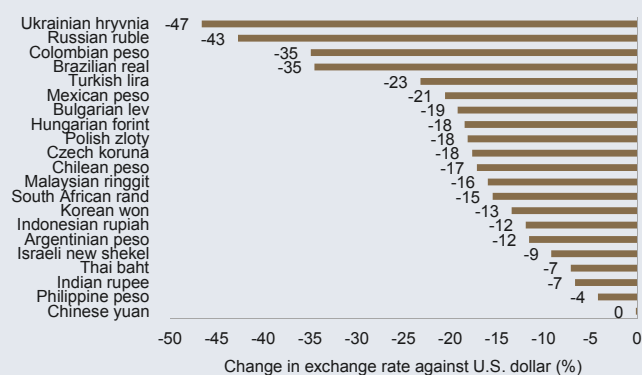
Note: 2014 data shown in chart. Intercompany loans in foreign currencies not included for Brazil; only registered external debt in foreign currency included for China. Source: BIS, IMF, national authorities, Haver Analytics, RBC GAM

**Exhibit C2: Some countries are set for heavy bond issuance**



Note: Amount of borrowing necessary to offset maturing debt and budget deficit. Source: IMF, RBC GAM

**Exhibit C3: Many currencies are sharply lower versus U.S. dollar**

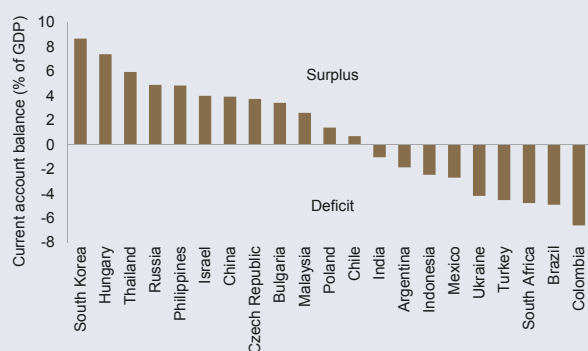


Note: As at 7/27/2015. % change since July 1, 2014. Source: WSJ, Haver Analytics, RBC GAM



5. Evaluating countries based on their current account balance proved quite useful during the taper tantrum (Exhibit C4). Countries with significant current account deficits were punished most by markets given their implicit reliance on foreign financing. Colombia, Brazil, South Africa, Turkey and Ukraine are particular laggards in this regard. Fortunately, many have improved their current account position since the taper tantrum, and some such as Hungary and Russia partially redeem themselves with large current account surpluses.
6. The size of a country's foreign-exchange reserves determines in significant part how well it can fight back

**Exhibit C4: Investors frown on large current account deficits**

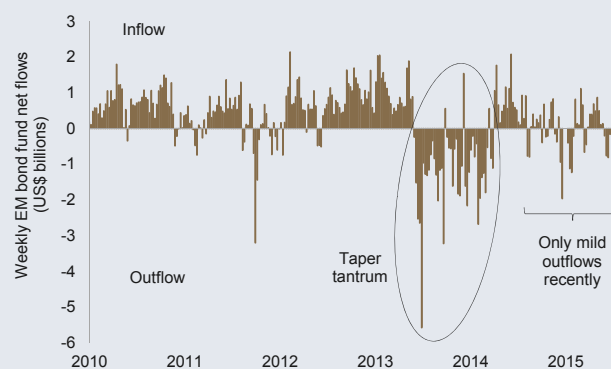


Note: Based on latest data available. Source: Haver Analytics, RBC GAM

against adverse financial flows (refer back to Exhibit C3). Most countries have substantially improved their resilience on this front, but a few remain under-protected, such as Ukraine, Argentina, Colombia, Indonesia, South Africa and Turkey.

7. A final test of external debt vulnerability is whether capital is actively fleeing the market. We detect a mild \$2.4 billion outflow from the emerging-market debt space since August 2014. This is a far, far cry from the aggressive \$52.4 billion outflow associated with the taper tantrum of mid-2013 (Exhibit C5).

**Exhibit C5: Recent emerging-market bond outflows quite modest**



Source: EPFR, RBC GAM

lower currencies and economic weakness, and in Turkey and South Africa given gaping current account deficits.

While the risk in some individual nations is high, particularly as the U.S. dollar strengthens and borrowing costs rise, the market seems better able to differentiate among countries than in the past, keeping contagion risk in check. When combined with the fact that external debt levels are not especially lofty relative to the size of emerging-market economies, we merely ascribe an “elevated” risk to external debt from a global perspective. This risk then descends to a “normal” level in the medium and long term once near-term catalysts for stress fade. In our view, this is a risk that has “high” global significance were it to trigger.

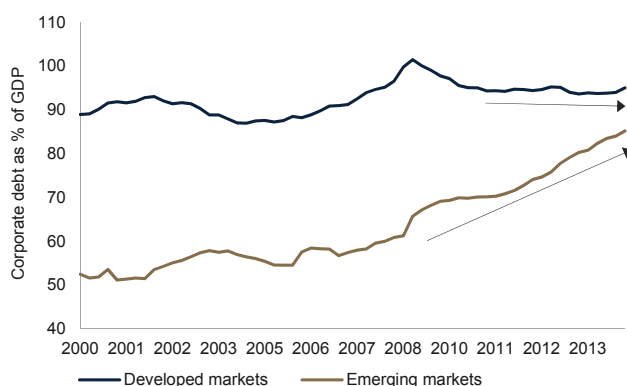
## 5. Corporate debt

The corporate sector provides a grab bag of debt vulnerabilities. In the developed world, the level of non-financial corporate indebtedness is steady, but high. For emerging markets, the level is lower, but rising rapidly (Exhibit 31).

### Emerging-market corporate debt

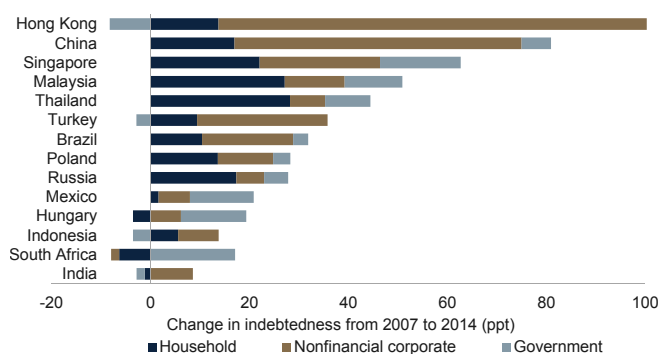
The most obvious corporate debt threat rests with emerging markets given their striking debt growth, from 52% of GDP at the turn of the millennium to 85% today. At the national level, Hong Kong, China, Turkey, Singapore, Brazil, Malaysia, and Poland have particularly levered up (Exhibit 32).

**Exhibit 31: Corporate debt in both developed and emerging markets is high**



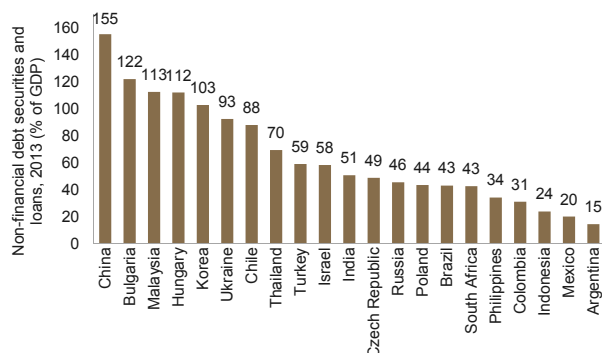
Source: IIF, RBC GAM

**Exhibit 32: Some emerging markets pile on debt**



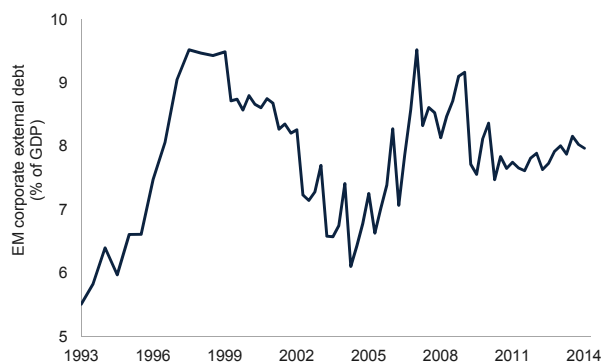
Note: Debt expressed in % of GDP. Change for Malaysia from 2008 to 2014. Source: BIS, Morgan Stanley, IMF, RBC GAM

**Exhibit 33: Corporate debt especially high in some countries**



Note: Debt securities and loans of nonfinancial corporations for 2013. Source: Haver Analytics, RBC GAM

**Exhibit 34: Emerging-market firms have surprisingly limited external debt**



Note: External debt securities and loans of nonfinancial corporations of emerging economies. Source: BIS, IMF, Haver Analytics, RBC GAM

These are concerning trends given that a key predictor of future credit stress is the rate and recency with which debt is acquired. Another key test is the extent to which debt-servicing costs have increased. These are still reasonable today, but will shift higher in a rising rate environment.

As a result of this increase in debt, several corporate debt-to-GDP ratios are now quite high (Exhibit 33), with China, Bulgaria, Malaysia, Hungary<sup>28</sup> and Korea now carrying more corporate debt than they generate in annual economic output.

Fortunately, there are two mitigating observations. First, the great majority of emerging-market corporate debt is in (relatively stable) domestic hands: the external debt fraction is just 8% of GDP – a mere one-tenth of the total corporate debt (Exhibit 34).

Second, a general decline in emerging-market public debt helpfully buffers this increased corporate indebtedness:

- Deploying credit into the private sector is theoretically more efficient than putting it into public spending.
- Governments are now better positioned to rescue the private sector should the need ever arise.
- It is probably safer to have debt spread across many firms rather than in a single sovereign (defaults will be less lumpy; there is less of a contagion risk between companies than between sovereigns).

### Developed-market corporate debt

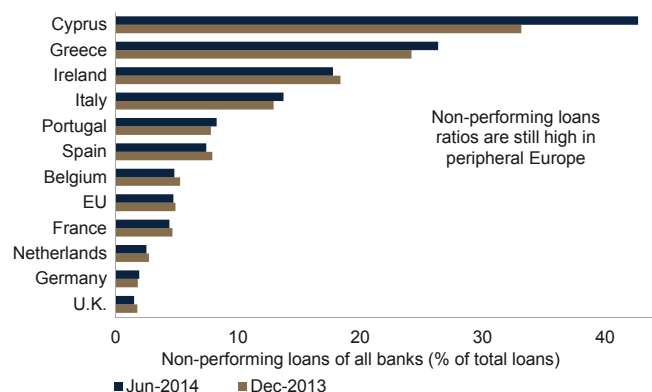
The corporate debt burden in the developed world is more nuanced. Technically, the developed world's corporate sector is more levered than emerging markets, but they are also more capable of handling that debt and often hold significant cash buffers.

From a sector perspective, most banks have deleveraged in response to the financial crisis and subsequent regulations, but fewer non-financial firms have.

Europe remains a focal point for developed-world corporate debt worries. The level of non-performing

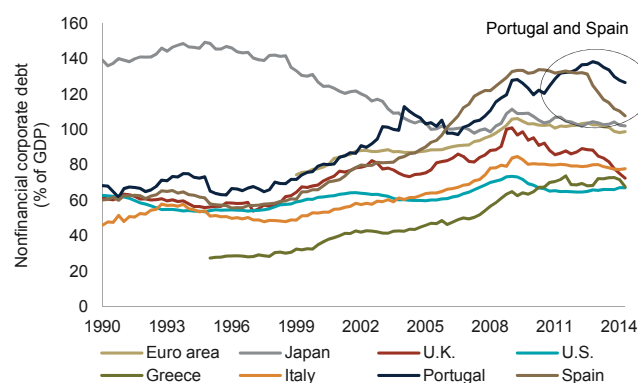
<sup>28</sup>In the case of Eastern Europe, some of this corporate debt is intercompany loans from parent corporations that are not at serious risk.

Exhibit 35: European banks still vulnerable



Note: EU average for all domestic banks. Source: ECB, Haver Analytics, RBC GAM

Exhibit 36: Corporate debt by country



Source: IMF, RBC GAM

loans at European banks is still astonishingly high (Exhibit 35), pointing to lingering risks on bank balance sheets,<sup>29</sup> and indirectly acknowledging a legacy of past problems for European business borrowers.

At a national level, many countries have finally begun to trim their corporate leverage, but some, such as Portugal and Spain, remain in very levered positions (Exhibit 36), rendering them more vulnerable to rising interest rates or economic shocks.

### Granular corporate concerns

Another way of sniffing out corporate debt risks is via a bottom-up approach of analyzing corporate balance sheets.

<sup>29</sup>In fairness, most European banks are now on a reasonably firm footing having recapitalized and de-risked. However, some continue to sport very high non-performing loan levels, in part because the regulatory environment disinclines them to acknowledge that many of these delinquent loans will never be paid.

The classic way of gauging corporate debt vulnerability is via what is called “debt at risk.” The standard test assesses what fraction of corporations have an interest coverage ratio of less than two (profits that run less than twice their debt servicing costs).<sup>30</sup> These companies are classified as being at risk, signaling a considerable degree of vulnerability to rising interest rates or stumbling profits. The result of this analysis again highlights a truly worrying situation in Portugal and Spain,<sup>31</sup> with substantial risks in a number of other markets including Nigeria, India and Italy (Exhibit 37).

To be fair, these companies have managed to muddle along in this unfortunate situation for a number of years without blowing up. It is also reasonable to expect the profitability of most of these firms to rise as the economic recovery takes hold. But should interest rates rise and other negative shocks persist (such as lower commodity prices for resource-exporting nations), conditions could deteriorate.

### Corporate wrap up

Providing additional perspective on private-sector<sup>32</sup> credit risks, the Bank of International Settlements vets different regions based on a mix of credit growth and debt servicing cost criteria (Exhibit 38). Through this lens, China’s private-sector credit risk tops the charts (the subject of our next debt hot spot), with Turkey, Brazil, Asia (ex China and Japan) and Switzerland all quite vulnerable as well. Canada, the Nordic countries and the Netherlands are tightly clustered as secondary concerns, though their challenges have more to do with excessive household debt and hot housing markets – discussed in the final debt hot spot.

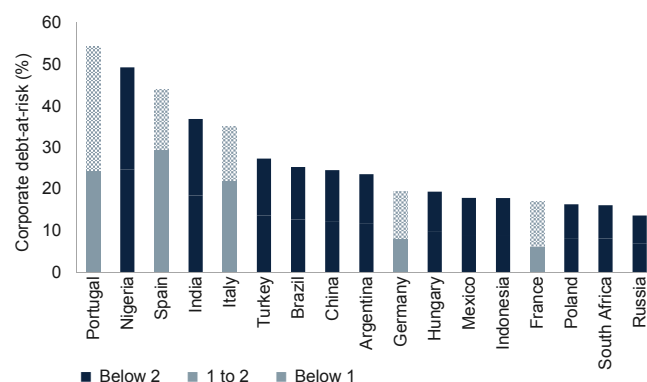
Our conclusion on corporate debt is that there are some very clear risks in a handful of developed economies (mainly Portugal and Spain), but that the main downside lies on the emerging markets side. Many of these countries have undertaken rapid leveraging and will find this debt more difficult to afford as their economies slow and rates rise. Thus, although we see only modest evidence of distress at present, we assign an “elevated” risk for both the near and medium term, and view the global significance of this corporate debt threat as “high.”

<sup>30</sup>In some countries, we also have the data necessary to gauge what fraction of companies have debt servicing costs that actually exceed their profits – an inherently unsustainable situation.

<sup>31</sup>This helps to explain the non-performing loans at Portuguese and Spanish banks.

<sup>32</sup>This means both corporate and household debt is included.

**Exhibit 37: Some markets have a large proportion of “at risk” companies**



Note: Measured as percentage of corporate debt with EBITDA-to-interest expense ratios that fall within the specified ranges. 2013 data for France, Germany, Italy, Spain and Portugal; 2014 last-twelve-month data for all others. Source: IMF, RBC GAM

**Exhibit 38: Early warning of private credit risks**

	Credit-to-GDP risk	Debt servicing risk	Debt servicing stress test risk
China	High	High	High
Turkey	High	Moderate	High
Brazil	High	Moderate	High
Asia	High	Low	Moderate
Switzerland	High	Low	Moderate
Canada	Moderate	Low	High
Nordic countries	Low	Low	High
Netherlands	Low	Low	High
Korea	Moderate	Low	Moderate
Japan	Moderate	Low	Low
Mexico	Moderate	Low	Low
France	Moderate	Low	Low
Germany	Low	Low	Low
India	Low	Low	Low
Italy	Low	Low	Low
Spain	Low	Low	Low
U.S.	Low	Low	Low
U.K.	Low	Low	Low

Note: Calculations by BIS of deviation from normal credit metrics as predictor of future credit problems. Data for private-sector non-financial debt (corporate plus household). Asia is ex China and Japan. Stress test assumes 250bps increase in rates. Source: BIS, RBC GAM

## 6. Chinese credit

China's growth miracle over the past few decades was the happy consequence of an isolated economy suddenly thrust into the global supply chain and securing for itself the role of manufacturer to the world. Unfortunately, two things now challenge that narrative. First, Chinese wages have risen significantly, rendering the country a less attractive destination for low-value manufacturing. Second, a significant part of China's growth over the past decade came on the wings of rapidly expanding credit. This isn't sustainable, and signs of stress are now emerging. We focus on the second development.

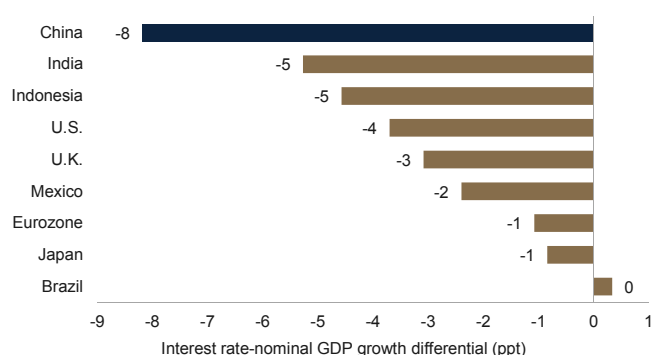
China's credit excesses are largely self-inflicted, the product of a massive stimulus effort in 2008–2009, interest rate

repression (Exhibit 39), a housing boom, and a reluctance of policymakers to accept that the Chinese economy is naturally decelerating as it matures.

The results are quite remarkable. The growth in China's private credit has easily outstripped other countries in recent years, even as a share of its gargantuan GDP (Exhibit 40). Private financing<sup>33</sup> now totals a lofty 200% of GDP (Exhibit 41) – not an unprecedented figure, but far higher than other developing nations. It is worrying to reflect back on Exhibit 38 and recall that a high level of freshly acquired private-sector indebtedness is a key criteria for future credit stresses.

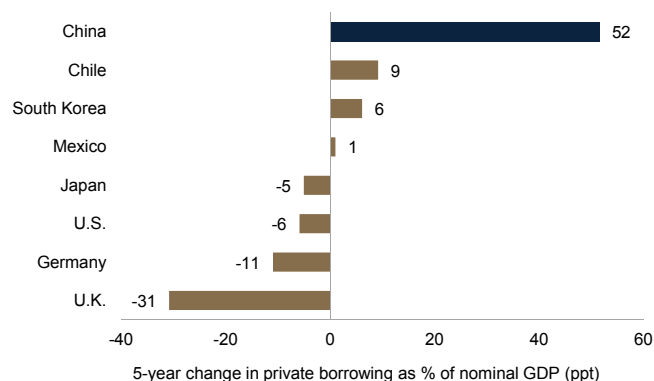
<sup>33</sup> Total private financing (or "total social financing", as the Chinese call it) is arguably not the ideal measure for this evaluation since it excludes the debt of governments and banks, and includes equity financing. It is nevertheless the main credit measure used and published in China.

Exhibit 39: Chinese interest rates especially repressed



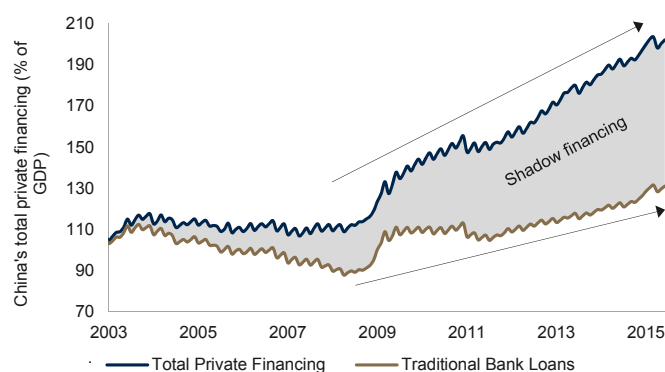
Note: Based on latest data available. Differential defined as 5-year average central bank benchmark interest rate minus 5-year average nominal GDP growth rate. Source: Haver Analytics, RBC GAM

Exhibit 40: China's worrisome credit growth



Note: June 2015 data for China, 2013 for Chile and 2014 for all others. Source: Haver Analytics, RBC GAM

Exhibit 41: Chinese market flush with financing



Note: Total private financing is often called "total social financing", which includes bank loans and an expansive shadow finance definition that incorporates equities, but excludes government debt and borrowing by the financial sector. Source: CNBS, PBoC, Haver Analytics, RBC GAM

Exhibit 42: Private sector in China starts to go abroad for funding



Note: Private sector external debt in natural logarithmic scale. Source: BCA, Haver Analytics, RBC GAM

China's reliance on relatively more dangerous foreign credit has exploded from almost nil several years ago to over \$1 trillion today (Exhibit 42). That said, this is still a small fraction of the total, at roughly 10% of GDP. The fraction denominated in a foreign currency is even smaller, at around 5% of GDP (refer back to Exhibit C2). Similarly, the Bank of International Settlements calculates that China's share of cross-border bank lending has spiked from just 6% of the emerging market total in 2008 to 28% in 2014.

### Housing credit

Fortunately, Chinese credit growth has now started to slow. The most obvious consequence has been the reversal of the country's credit-fuelled housing boom – a necessary if painful development given that by some measures the property market now makes up a third of China's GDP. Construction activity and home prices (Exhibit 43) are both significantly lower.

China's housing risks cascade in several directions: toward home buyers, builders, local governments and – eventually – Chinese banks.

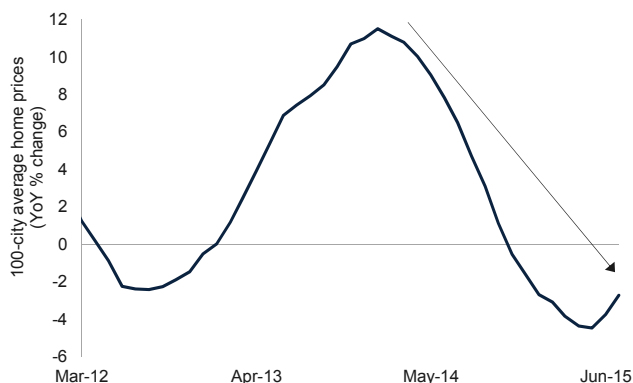
Home buyers are clearly not immune to this slowdown, but may actually be the least worrisome of the groups. Chinese households – especially the relatively prosperous that are buying new dwellings – enjoy a tight labour market and are unlikely to be hit by a sharp increase in interest rates given China's monetary policy orientation. Lower home prices are not pleasant, but do not materially change households' ability to finance mortgage debt.

Builders represent a large share of China's ample corporate debt, and furthermore many non-corporate borrowers have used their buildings as collateral in securing loans.<sup>34</sup> Some builders are now struggling significantly, as demonstrated by the recent default of Kaisa Group Holdings Ltd. – the first Chinese corporation to default on a foreign-currency bond. Around 10% of Chinese companies have interest coverage ratios of less than one, meaning debt servicing costs that exceed a company's earnings. Thus, a significant subset is vulnerable to a negative shock.

Local governments are also tightly linked to the housing market. They lack the revenue tools necessary to balance their budgets using conventional means, and so have come to rely heavily on a mix of unconventional debt vehicles and land sales to remain solvent. This is problematic during a housing bust. Chinese local governments now have

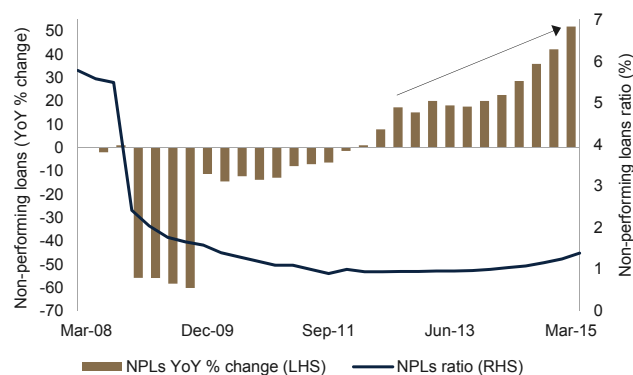
<sup>34</sup> Ratings agency Fitch reports that corporate loans backed by buildings are up by a factor of five since 2008.

**Exhibit 43: Chinese home prices have softened**



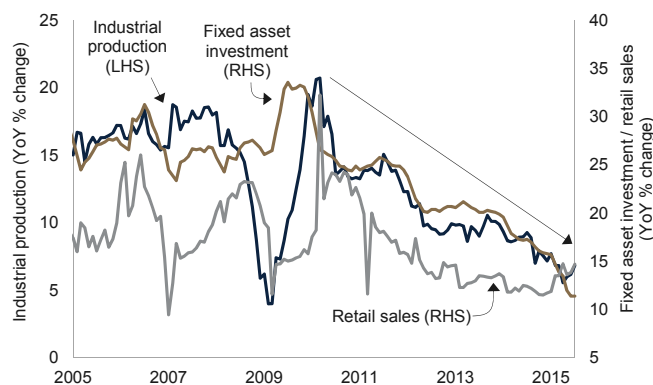
Source: China Index Academy/Soufun, Haver Analytics, RBC GAM

**Exhibit 44: Non-performing loans in China rising**



Note: Non-performing loans (NPLs) of commercial banks.  
Source: China Banking Regulatory Commission, Haver Analytics, RBC GAM

**Exhibit 45: Chinese economic slowdown on all fronts**



Source: CNBS, Haver Analytics, RBC GAM

around \$3 trillion in local government debt – a figure that has been rising rapidly and is now substantially larger than the debt of China’s national government. A few local governments were recently obliged to cancel bond auctions due to insufficient demand.

Much of the risk experienced by home buyers, builders and local governments eventually lands on the Chinese banking sector given its central role in providing credit to the economy. Bank non-performing loans are now growing at a startling 52% per annum (Exhibit 44). Fortunately, this is not quite as bad as it looks, as these non-performing loans are still a mere 1.4% of the total loan book according to official figures. Some private-sector analysts<sup>35</sup> peg the real fraction at more like 5% to 6%, which if true would indicate a significantly larger risk. Either way, the rapid growth in non-performing loans will become material over the next few years.

### Government to the rescue

It is clear that China has serious debt excesses that are now beginning to buckle. Fortunately, China has a long history of outmuscling prior bouts of excess debt via a combination of rapid economic growth<sup>36</sup> and government intervention. This will be a more difficult trick to pull off in the future given swooning economic growth (Exhibit 45). Nevertheless, the national government remains amply motivated and endowed to mop up any future mess given a national public debt of just 22% of GDP and currency reserves of \$3.7 trillion.

Already, China has cut interest rates and reserve ratios (a questionable decision given credit concerns, but one that will help economic growth in the short run) and enacted programs designed to support local governments and banks. It is also pushing corporations to shift their financing strategies from debt to equity.<sup>37</sup>

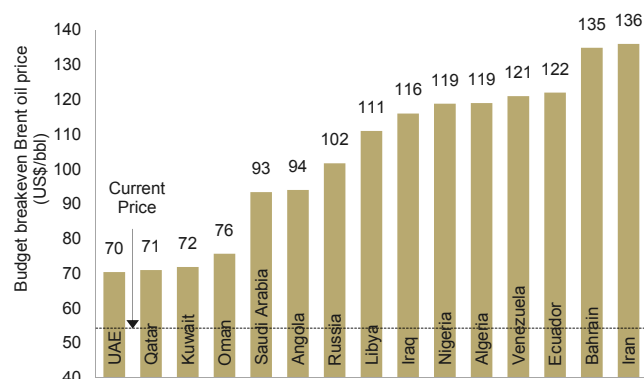
This spring, the central government initiated a \$161 billion debt swap that serves to delay the maturity and reduce the borrowing cost of local

<sup>35</sup>Goldman Sachs, for instance.

<sup>36</sup>The rapid economic growth renders the stock of bad debt increasingly trivial over time as the bad debt-to-GDP ratio falls ever lower.

<sup>37</sup>Though this effort, in turn, is creating concerns of stock market overvaluation.

### Exhibit 46: OPEC nations cannot balance budgets with low oil



Note: Brent oil prices required for oil-producing countries to balance government budgets. Source: Deutsche Bank, Haver Analytics, RBC GAM

government debt. This may be expanded in the future to encompass a larger fraction of the market. A liquidity program was subsequently set up to encourage banks to purchase the debt and post it as collateral at the central bank. There are rumours that the People’s Bank of China is also contemplating directly buying the debt itself.

Meanwhile, China is pursuing another of its tested-and-true strategies by allowing ten provinces to set up special asset management firms that will purchase bad loans from Chinese banks, as needed. The country already has four asset management firms at the national level that have done exactly that in response to prior debt misadventures, and these also stand at the ready to participate in bank de-risking/recapitalizing in the future.

### Global implications

Even with the reasonable expectation of government intervention, we characterize China’s near- and medium-term credit risks as “high” given the broad nature of the risk and the significant sums involved. Similarly, given China’s status as the world’s second-largest economy, the global significance of this risk also warrants a “high” assessment.

Providing somewhat of a twist, however, the transmission mechanism to the rest of the world is unlikely to be via credit markets given China’s fierce capital controls. Instead, the main risk extends from the economy itself. Slower Chinese economic growth dampens global growth, with implications that extend from there into financial markets. Additionally, China has been a disproportionate driver of commodity prices, even relative to its ample size. A slowing China therefore has seriously negative implications for commodity prices.

## 7. Oil-oriented debt

Another potential debt hot spot arises from the oil collapse that has unfolded since the middle of 2014. Oil prices are lower due to U.S. shale oil boosting supply, the prospect of higher Iranian production as a nuclear détente is signed, and decelerating emerging-market economic growth that constricts demand.

Lower oil prices are a net positive for the global economy, but the winners are diffuse whereas the losers are quite concentrated. These concentrated losses can create problems at both the sovereign and corporate levels.

### Sovereign oil

Oil-exporting nations naturally dislike a low oil price because it constrains corporate profitability, business investment, employment and government revenues.<sup>38</sup> The price today is so low that OPEC nations can no longer balance their budgets (Exhibit 46). Russia is another country with a heavy oil exposure that has seen its fiscal position deteriorate sharply.

Emerging-market oil exporters are especially vulnerable given their exposure to more volatile foreign capital flows. Developed oil-exporting nations such as Canada have also experienced economic and fiscal deterioration, but without the same loaded consequences for their debt markets.

So far, most oil exporters have been able to manage their deteriorating fiscal positions thanks to the \$1.3 trillion in foreign-exchange reserves they collectively built up over the past decade.<sup>39</sup> For more on the state of global currency reserves, refer back to Textbox B.

Of course, national-level oil challenges are not yet over. The price of oil has recently slid lower once again, and government finances will continue to deteriorate for some time. Naturally, any increase in global interest rates will also challenge the sector.

### Corporate oil

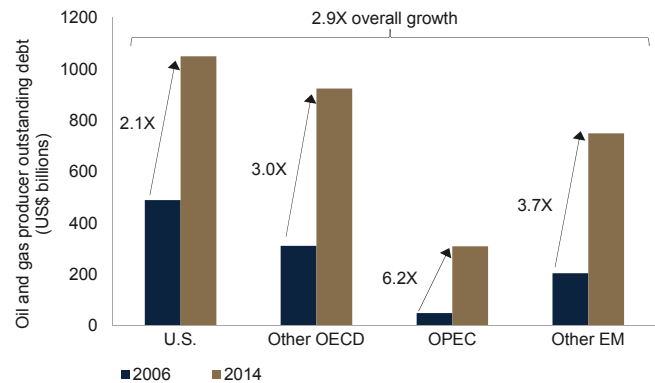
Oil companies also have their work set out for them given the combination of low oil prices, rising indebtedness and the prospect of higher interest rates.

The sums involved are quite large: the IMF calculates that the value of bank loans and corporate debt to the energy sector is worth about \$3 trillion. This is nearly triple the level of 2006, with some regions experiencing even faster debt growth (Exhibit 47). Given the current state of excess

<sup>38</sup>A similar assessment could be made with regard to other commodity prices that have declined sharply.

<sup>39</sup>Oil-exporting nations hold around 15% of the world's currency reserves.

Exhibit 47: Low oil price and rising debt threaten energy producers



Source: BIS, Bloomberg, CFTC, Dealogic, RBC GAM

global oil, some of this credit was arguably squandered on unneeded capacity.

The U.S. shale oil sector has been an especially aggressive user of debt, such that a remarkable 14% of the U.S. high-yield bond market is now energy-oriented.

History shows that corporate debt distress in the energy space usually arrives around a year after an oil shock, meaning that the most intense period of pain should be over the coming six to nine months. This lag is in part because hedges initially blunt the full effect of declining oil prices, and in part because creditors take time to restrict the sector's access to capital. This squares with reports that banks are set to tighten their lending to energy companies, and with evidence that credit quality is deteriorating in most segments of the energy space. Thus, there are additional challenges to come for oil-oriented borrowers, wherever the price of oil goes.

Mitigating these risks, most large global banks have just 2% to 4% of their loan books exposed to the energy sector. And – with some admitted exceptions, particularly in the shale oil space – corporate oil borrowers are actually supported by fairly healthy interest coverage figures (their earnings are on average more than ten times their debt servicing costs). Energy sector balance sheets may also be repaired by an expected surge of mergers, acquisitions and asset sales.

### Oil debt risk

Our overall assessment is that oil-oriented debt represents an “elevated” risk in the near term, mainly because of corporate-level uncertainties. Sovereigns appear to have



sufficient reserves to fend off serious problems. We suspect these risks will fade back to a “normal” reading over the medium and long term. To global investors, the significance of these oil-oriented risks is arguably “low.”

## 8. Housing exuberance

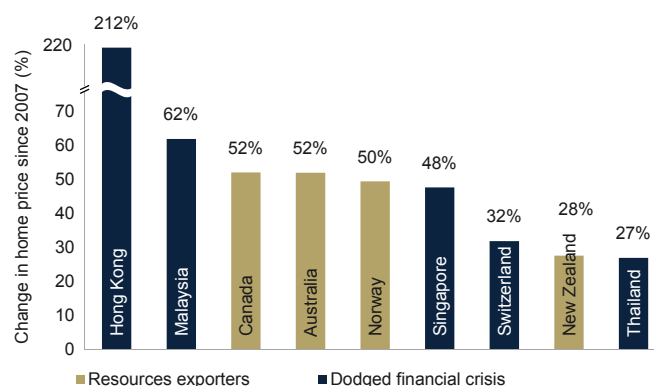
The eighth and final debt hot spot relates to the housing exuberance and related household debt excesses in a select number of countries such as Canada, Norway, Switzerland, Australia, New Zealand, Hong Kong, Singapore, Malaysia and Thailand.

As interest rates plummeted during the financial crisis, most countries were unable to take full advantage of the borrowing opportunity as their credit markets were effectively frozen. There were two exceptions to this rule. The first was in the case of jurisdictions that largely dodged the financial crisis, such as Singapore and Hong Kong. The second exception was for countries in the midst of a resource boom, such as Canada and Australia. These two sets of countries revealed in the combination of ultra-low rates and available credit, and not surprisingly experienced an aggressive run-up in their housing markets (Exhibit 48).

Normally, these countries might have sought to neutralize boom tendencies by raising interest rates, but some of these countries effectively peg their monetary policy to the U.S. (Hong Kong and Singapore, notably), while most of the rest could not afford to deviate significantly from the global interest rate trend for fear that their currencies would rocket higher. Macroprudential rule adjustments – changing the conditions under which people qualify for mortgages – have been a serviceable substitute, but have not totally succeeded in dampening housing market enthusiasm.

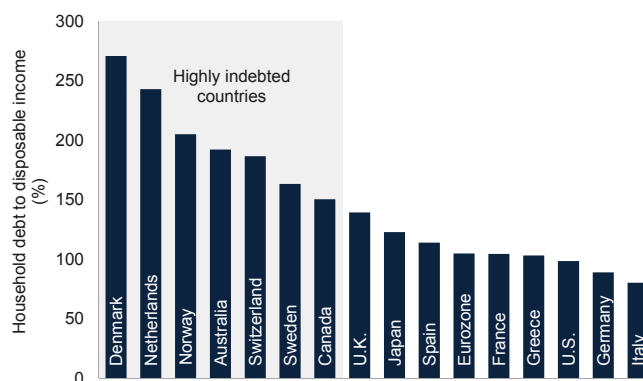
The housing boom has led directly to elevated household indebtedness (Exhibit 49). Despite high household debt-to-income ratios, households show few signs of distress thanks to low borrowing costs. But, in an environment of globally rising rates, debt-servicing costs will climb and housing affordability will deteriorate. The Bank of International Settlements finds that the single

**Exhibit 48: Housing exuberance has two drivers**



Note: Malaysia and Thailand data to Q2 2014. Source: McKinsey Global Institute, Australian Bureau of Statistics, Reserve Bank of New Zealand, Hong Kong Ratings and Valuations Department, Swiss National Bank, Urban Redevelopment Authority, Haver Analytics, RBC GAM

**Exhibit 49: Nations with high household debt exposed to rising rates**



Note: Based on latest data available. Debt for households and non-profit institutions serving households. Figures differ slightly from made-in-Canada calculations. Source: Haver Analytics, RBC GAM

best predictor of financial crises is a high debt-service ratio. Accordingly, many of these countries should experience material housing corrections and a higher-than-normal incidence of household default. Regulators are beginning to demand that banks hold additional capital against this risk.

So far, this scenario looks to be unpleasant but ultimately manageable for banks and policymakers. However, it could become significantly more problematic if these markets were simultaneously hit by other headwinds. This is actually quite conceivable. Of the countries listed in Exhibit 48, the resource exporters are now floundering with lower commodity prices, while a significant fraction of the rest are tightly linked to China’s deceleration.

In this light, we assign a “high” near-term risk for countries experiencing housing exuberance. This then fades to

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an “elevated” risk over the medium term, and then eventually back to a normal risk over the long run. It is worth acknowledging that the global significance of these developments is likely “low” since the debt is mostly held by the domestic banking sectors of each country, and there is limited scope for contagion outside of national borders. However, for the countries involved, this is obviously a very significant risk.

## Bottom line

The world is awash in debt, but this observation is not actually very useful in gauging the degree of risk in the debt market today. The fact is that the vast majority of borrowers can and will continue to service their debts quite comfortably. For a true understanding of credit risks, it is necessary to probe more deeply into individual debt markets.

The eight debt hot spots we have identified all have their challenges, but none guarantees global disaster. It is hard to quantify the exact risk associated with each threat given unclear threshold effects and the uncertain influence of political decision-making. As such, the hot spots need to be viewed through a prism of risk, as opposed to as a base-case forecast.

To summarize our near-term findings:

- Chinese credit is in a very precarious position, with great global significance.
- Greek public debt is still very much in play and likely to be written down, if with diminishing global significance.
- Rising interest rates will spell trouble in some of the world’s more exuberant housing markets.
- On the other hand, we have emerged from this exercise with a bit less concern about external debt. The debt sums are large in an absolute sense and there are still very clear risks – particularly for individual nations – if the dollar continues to strengthen and interest rates rise. But relative to the size of the global economy, the risk looks much smaller, and emerging-market nations have put in significant work to shield themselves from future busts. These mitigating factors argue that the risk here is merely “elevated” rather than “high” from a global perspective.
- The corporate debt risk is similar – big numbers and some real risks for individual nations, but ultimately an “elevated” rather than “high” risk at the global level.
- Oil debt risks are “elevated,” though mainly in the corporate rather than the sovereign space.

Over the medium term:

- Most of the aforementioned risks remain in place, with the exception that the external debt, oil debt and housing debt risks should fade somewhat once the initial impulse of higher rates has been absorbed.
- On the other hand, some other risks start to come into greater focus. Developed-world public debt will gradually become less tolerable in a high interest rate environment. Naturally, this is a highly significant development for global investors.
- Japanese public debt could also become a much more serious concern, depending upon the progression of the Japanese economy and rates over the next few years. We view this as a development of “medium” significance.

In the long run, two risks stand out:

- Developed-world public debt could become extremely problematic without significant entitlement reform.
- Japanese debt may also remain a pressing risk.

## Varied catalysts

It is useful to recognize just how varied the potential catalysts are for each debt hot spot. Indisputably, the prospect of rising interest rates is at least marginally relevant in almost all cases. But, really, it is only the main catalyst for concern in two cases – for corporate debt and housing debt.

The others are influenced by quite a varied set of actors. Developed-world public debt is primarily driven by demographics. The forward path for Greek public debt comes down to a series of political decisions in Europe. The Japanese public debt trajectory mainly hinges on how Japanese economic reforms proceed from here. External debt concerns have at least as much to do with the U.S. dollar as the level of rates. Chinese credit will depend on China’s willingness to blow bubbles and then mop them up. Oil debt is naturally beholden to the price of oil above all else.

The diversity of drivers means not all will flare up at the same time. This is somewhat reassuring, and contributes to our sense that near-term credit risks in particular are less extravagant than we had feared. That said, there are still several very real risks in the bunch, and rising interest rates will undoubtedly ignite a debt brushfire somewhere in the world. It is most likely that any such blaze will be put out by firefighting policymakers, but problems have been known to leap from one market to the next, making them more difficult to extinguish. We continue to invest with an appreciation of these risks and prospects.

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