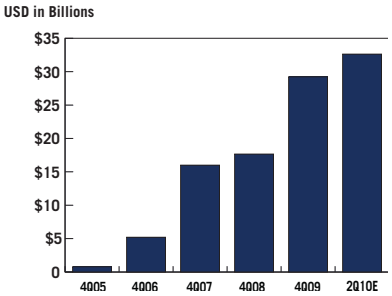
Fundamentals

Rob Arnott

RAFI® Managed Assets*



*Includes RAFI assets managed or sub-advised by Research Affiliates® or RAFI licensees.

research® affiliates
620 newport center drive, suite 900
newport beach, ca 92660 usa
phone +1 (949) 325-8700
fax +1 (949) 554-0192
info@rallc.com
www.rallc.com

MEDIA CONTACTS
Tucker Hewes
Hewes Communications
+1 (212) 207-9451
tucker@hewescomm.com

Joel Chernoff
Research Affiliates
+1 (949) 325-8729
chernoff@rallc.com

DEBT BE NOT PROUD[1]

We live in a world profoundly addicted to debt-financed consumption. Today, many people, companies, and countries borrow with no evident intention to repay. When the debt comes due, they will replace it with new (and often larger) debt. Kick the can down the road, again and again. But inevitably the road ends abruptly with a wall, much like the ones at the end of a crash testing site.

Debt crash test dummies abound—take, for example, the home buyers during the late U.S. housing bubble or the Iceland banks that borrowed seven times the country's GDP. These dummies hit their walls a couple of years ago. Soon, many governments—who have thrown money they don't have, ostensibly borrowing from future generations, into the breach—will approach their walls. Greece recently hit a wall and had to break a lot of promises to its citizens, notably the retirees and prospective retirees from government employment. Greece certainly won't be the last. The looming sovereign debt crisis will be one of—if not *the*—defining influences on capital market returns over the next 10 years.

In this issue we explore the relationship between sovereign debt levels and the economic might of the debtor nations. This simple exercise paints a scary picture, particularly for those who rely on cap weighting their government bond market exposure. Bond investors are lenders. Why should we deliberately choose to lend more to those who are most deeply in debt?

Measuring Sovereign Capacity to Service Debt

Measuring a sovereign's ability to service debt is not easy. There is no direct measure, so we estimate the capacity to service debt by comparing a sovereign's outstanding debt to its economic size. We measure a country's economic size using four metrics that proxy the key factors of production in a capitalist economy. Economics literature typically identifies two or three factors of production: capital, labor, and resources (a subsector of capital). Our fourth factor is energy, the most important subsector of resources, which we treat as a separate factor of production, given its importance. We measure these factors as follows:

Capital: GDP is the most widely-used gauge of the size of an economy.
Labor: A nation's population is the simplest gauge of labor.[2]
Resources: A nation's landmass is a very crude gauge of access to resources.[3]
Energy: The aggregate energy consumption of a nation is a measure of the energy that goes into production of goods and services. One caveat is that this may be sourced externally through petroleum imports.

continued on page two

Building on our Fundamental Index® work in equities, we calculate country weights for each metric separately, then equally weight each country's weight in these metrics to arrive at a Research Affiliates Fundamental Index (RAFI®) weight. The fundamental measures of size for various economies are presented in **Table 1**, color-coded to highlight the relative debt burdens with green signifying the financially sound countries and red signifying the debtor nations.

We believe a country's ability to service their debt is a function of the debt-level-to-economic-size ratio. Thus, we categorize countries into five categories, from light to heavy debt burden, as follows:

Dark Green	Fundamental Weight > Cap Weight by more than 100%
Light Green	Fundamental Weight > Cap Weight by more than 25%
No Color	Fundamental Weight approximately equal to Cap Weight
Light Red	Cap Weight > Fundamental Weight by more than 25%
Dark Red	Cap Weight > Fundamental Weight by more than 100%

There's a lot of red ink in the developed economies of the world, and a lot of green in the emerging markets. Many developed countries carry debt—not even counting often vast off-balance-sheet debt—which is out of proportion with their scale in the world economy.

There are pockets of discipline. Australia, Poland, and Slovakia show no "red" at all, meaning that the national debt isn't 25% above their economic factors of production on any of the four metrics. Canada, Finland, New Zealand, Norway, Slovenia, and Sweden are "out of bounds" on only one of the four measures.[4] Collectively these "Prudent Nine" comprise less than 4% of world sovereign bond debt, and yet they encompass 6% of world GDP, 18% of world land mass, and 8% of world RAFI weight.[5] Furthermore, several of the "Prudent Nine" have less hidden debt than the G–5. For instance, Australia, New Zealand, Norway, and Sweden largely prefund their future pension obligations.

One might argue that Portugal, Ireland, Italy, Greece, and Spain (derisively—and unfairly—characterized as the PIIGS) are bankrupt states seeking shelter from larger bankrupt states. The collective bond debt of the PIIGS is 2.6 times their collective RAFI weight in the world economy, which arguably relates to their ability to service debt. That's an acknowledged problem. *Isn't it a sad irony to note that the G–5 economies have a near identical ratio of debt to our ability to service our debts as the so-called PIIGS. And yet we have the temerity to label the Mediterranean rim countries "the PIIGS"?!*

The Emerging Markets Debt Conundrum

How precarious are the debt burdens in the emerging economies, economies typically viewed as the most risky in the world? Surprisingly benign! Consider the so-called BRICs.[6] As we can see in Table 1, they collectively comprise 22% of world GDP, and yet have only 5% of world bond debt. The G–5 collectively has bond debt six times as large, relative to GDP, as the BRICs.

Even this overstates the debt picture from a global investor's perspective. The elephant that's

Table 1. Developed and Emerging Markets, Share of Global Sovereign Debt

Region/Country	Debt Outstanding (USD, 000)	Market Weight	GDP Weight	Population Weight	Land Area Weight	Energy Weight	RAFI Weight
All Developed	$16,720,826,622	89.5%	62.4%	19.1%	35.3%	54.1%	42.2%
United States	$4,339,456,000	23.2%	23.6%	5.9%	5.9%	24.1%	14.7%
G–5	$12,381,370,622	68.3%	43.7%	12.5%	10.6%	37.8%	25.8%
PIIGS	$2,087,458,574	11.2%	6.7%	2.5%	4.1%	4.2%	4.3%
Prudent Nine	$674,570,421	3.6%	6.4%	2.4%	17.7%	7.2%	8.3%
All Emerging	$1,957,586,938	10.5%	37.6%	80.9%	64.7%	45.9%	57.8%
BRICs	$980,357,442	5.2%	21.9%	54.0%	22.6%	30.9%	31.9%
Emerging ex BRICs	$977,229,496	5.2%	15.7%	26.9%	42.1%	15.1%	25.9%

Note: Debt Outstanding excludes debt that is not publicly-traded, GSEs (Fannie Mae, Freddie Mac, etc.), state and local debt, unfunded government pensions, off-balance-sheet-debt and unfunded entitlement programs. These non-public debts can be very large. GDP Weight is equal-weighted blend of Purchasing Power Parity GDP from the IMF and Exchange Rate GDP from the CIA. RAFI Weight is the equally weighted average of GDP Weight, Population Weight, Area Weight, and Energy Weight. Developed and Emerging Countries are determined using United Nations definitions.
Sources: Research Affiliates, IMF, CIA World Factbook.

not in the room also bears mention: there are some countries with no *net* debt. China and Russia have foreign reserves larger than their respective bond debt. Saudi Arabia, Kuwait, Qatar, the Emirates, as well as tax havens like Cayman Islands, Monaco, and Liechtenstein all have no *net* debt. Most such countries, as with China and India, have no bond debt that any foreign investor would be permitted to buy. These "net creditors" would have a significant collective "fundamental weight" if only there were bonds to buy!

If the BRICs can comfortably support more debt than they carry (based on their GDP, their population, their resources, or their energy consumption), then surely there must be trouble spots in the emerging markets. Indeed, there are some pockets of trouble: Singapore and Taiwan each have a share of world bond markets rivaling their fundamental economic footprint in the world economy.[7] According to the United Nations, Singapore and Taiwan are emerging markets, though many experts and some index calculators consider them to be part of the developed world.

Let's consider the rest of the emerging markets list. *Not one* of the other 43 emerging markets, which spans *all* countries that are included in *any* of the EM debt indexes, has as much debt as *any* of the G–5 countries, whether measured relative to GDP or relative to the RAFI fundamental economic footprint of these countries. In almost all cases, emerging markets debt is modest relative to their respective ability to carry debt based on the four factors of economic production.

Developed markets account for 62% of the world's GDP and owe 90% of the world's sovereign bond debt. The emerging markets collectively produce 38% of the world's GDP and owe just 10% of world sovereign bond debt. Does hidden debt and off-balance-sheet debt change this picture? Yes. *In the wrong direction!*[8] The emerging markets have, for the most part, little off-balance-sheet debt. The developed economies have, in many instances, vast off-balance-sheet debt.

One might reasonably argue that—absent political risk—emerging markets are collectively more creditworthy than U.S. Treasuries. Which invites a provocative question: when will U.S. Treasuries be priced to offer a "risk premium" (higher yield) more than the most stable and solvent sovereign debt that money can buy: Emerging Markets?[9]

The Ad Council in 1985 released a series of public service announcements with two crash test dummies, Vince and Larry, promoting safety belt usage in automobiles. The tagline of the successful campaign was "You can learn a lot from a dummy… Buckle your safety belt."[10] But have we learned the proper restraints in our investment portfolios from our two most recent debt crash dummies—Greece and the U.S. homeowner? Doubtful. Let's take a close look at our bond allocations and the index funds that comprise them. The wall is coming. Are we buckled up?

Endnotes

1. With apologies to John Donne: "*Debt* be not proud, though some have called thee / Mighty and dreadful, for thou art not so / For those, whom thou think'st, thou dost overthrow / Die not, poor *debt*, for yet canst thou kill me." This issue is an excerpt from a research paper we expect to publish, likely under the same title.
2. The working age population might be a better gauge. We chose total population because it's universally available for all countries.
3. We chose to use the square root of land mass in order to avoid grossly rewarding big, sparsely populated countries like Russia, Australia, and Canada, or penalizing small, crowded countries like Hong Kong and Singapore. For midsize countries like Argentina or Germany, this adjustment makes little difference.
4. Interestingly, in each case, the population is the sole outlier; it would appear that their debt is well within bounds on three factors of production: capital, resources, and energy.
5. It's interesting to note that these countries also largely skated through the "Global Financial Crisis" better than the countries with more debt. They enjoyed average real GDP growth of 1.7% in 2009, double the levels of the G–5 and of the Eurozone.
6. We've long found this label puzzling: four countries with almost nothing in common but a shared acronym! Even though China shares borders with Russia and India, the three countries have less in common—culturally, economically, or legally—than essentially *any* countries on the developed economies list.
7. Singapore has a sovereign wealth fund and Taiwan has gold and foreign currency reserves, in both cases larger than their aggregate debt. So, as with Russia and China, their net debt is nonexistent.
8. See "The 3-D Hurricane: Deficit, Debt, and Demographics," *Fundamentals*, November 2009 (http://researchaffiliates.com/ideas/pdf/Fundamentals_200911.pdf). In the United States, the combination of GSE debt, state and local debt, unfunded pensions and entitlements, all add up to just under $60 trillion, roughly 10 times the official U.S. public debt.
9. On June 30, 2010, the Merrill Lynch USD Emerging Markets Sovereign Plus Index, which spans the dollar-denominated debt of the emerging markets, was priced to yield 6.0%. This was 3% higher than U.S. 10-year Treasuries.
10. Since the ad campaign began in 1985, usage of seatbelts increased from 14% to 79%, saving an estimated 85,000 lives. http://www.adcouncil.org/default.aspx?id=138

Performance Update

TOTAL RETURN AS OF 7/31/10	BLOOMBERG TICKER	YTD	12 MONTH	ANNUALIZED 3 YEAR	ANNUALIZED 5 YEAR	ANNUALIZED 10 YEAR	ANNUALIZED 10 YEAR VOLATILITY
FTSE RAFI® 1000 Index[A]	FR10XTR	3.64%	20.16%	-4.24%	1.97%	5.12%	17.98%
S&P 500[B]	SPTR	-0.11%	13.84%	-6.78%	-0.17%	-0.76%	16.31%
Russell 1000[C]	RU10INTR	0.11%	14.51%	-6.51%	0.02%	-0.39%	16.61%
FTSE RAFI® US 1500 Index[D]	FR15USTR	6.72%	27.39%	0.03%	4.27%	10.90%	22.90%
Russell 2000[E]	RU20INTR	4.79%	18.43%	-4.32%	0.47%	4.03%	21.11%
FTSE RAFI® Developed ex US 1000 Index[F]	FRX1XTR	-4.62%	6.46%	-7.39%	4.87%	5.80%	19.61%
MSCI EAFE[G]	GDDUEAFE	-4.67%	6.72%	-9.83%	2.58%	1.92%	18.28%
FTSE All World Series Developed ex US[H]	FTS5DXUS	-3.86%	7.57%	-8.69%	3.55%	2.79%	18.51%
FTSE RAFI® Developed ex US Mid Small[I]	FRSDXUS	-0.66%	13.61%	-6.21%	4.45%	9.15%	18.29%
MSCI EAFE Small[J]	MCUDEAFE	-0.47%	11.04%	-12.62%	-0.23%	4.38%	19.98%
FTSE RAFI® Emerging Markets[K]	TFREMU	2.25%	20.35%	2.47%	18.34%	20.54%	25.39%
MSCI Emerging Markets[L]	GDUEEGF	1.85%	20.24%	-1.28%	13.35%	11.81%	25.02%
FTSE RAFI® Canada[M]	FRCANTR	3.24%	10.40%	0.27%	7.00%	9.14%	14.35%
S&P/TSX 60[N]	TX60AR	0.33%	7.49%	-2.38%	5.71%	2.89%	16.49%
FTSE RAFI® Australia[O]	FRAUSTR	-7.35%	9.78%	-3.78%	5.62%	9.20%	13.03%
S&P/ASX 200 Index[P]	ASA51	-5.91%	10.14%	-5.84%	4.90%	7.62%	13.50%
FTSE RAFI® Japan[Q]	FRJPNTR	-4.75%	-8.30%	-17.07%	-3.01%	-0.22%	18.36%
MSCI Japan[R]	GDDLJN	-6.15%	-8.79%	-19.77%	-4.58%	-4.02%	18.22%
FTSE RAFI® UK[S]	FRGBRTR	-1.02%	12.75%	-3.71%	3.50%	3.98%	17.29%
MSCI UK[T]	GDDUUK	-0.97%	17.98%	-2.53%	3.54%	1.72%	15.15%
RAFI Investment Grade[U]		8.12%	13.75%	9.20%	6.71%	7.31%	6.04%
Merrill Lynch US Corporate Master[V]	C0A0	8.26%	14.20%	7.73%	5.82%	7.05%	6.22%
RAFI High Yield[W]	RAFIHY	8.37%	25.28%	12.17%	9.13%	10.17%	11.25%
Merrill Lynch US High Yield BB-B Rated[X]	H0A4	8.17%	20.32%	7.49%	6.57%	6.74%	10.23%

Definition of Indices: (A) The FTSE RAFI® 1000 comprises the 1000 largest companies selected and weighted using our Fundamental Index methodology; (B) The S&P 500 Index is an unmanaged market index that focuses on the large-cap segment of the U.S. equities market; (C) The Russell 1000 Index is a market-capitalization-weighted benchmark index made up of the 1,000 highest-ranking U.S. stocks in the Russell 3000; (D) The FTSE RAFI® 1500 comprises the 1001st to 1500th largest companies selected and weighted using our Fundamental Index methodology; (E) The Russell 2000 is a market-capitalization weighted benchmark index made up of the 2,000 smallest U.S. companies in the Russell 3000; (F) The FTSE RAFI® Developed ex US 1000 Index comprises the largest 1000 non US-listed companies by fundamental value, selected from the constituents of the FTSE Developed ex US Index; (G) MSCI EAFE (Morgan Stanley Capital International Europe, Australasia, Far East) is an unmanaged index of issuers in countries of Europe, Australia, and the Far East represented in U.S. dollars; and (H) The FTSE All World ex-US Index comprises Large and Mid-Cap stocks providing coverage of Developed and Emerging Markets excluding the United States. It is not possible to invest directly in any of the indexes above; (I) The FTSE RAFI® Developed ex US Mid Small Index tracks the performance of small- and mid-cap equities of companies domiciled in developed international markets (excluding the United States), selected based on the following four fundamental measures of firm size: book value, cash flow, sales, and dividends. The equities with the highest fundamental strength are weighted according to their fundamental scores. The Fundamentals Weighted® portfolio is rebalanced and reconstituted annually. Performance represents price return only; (J) The MSCI EAFE Small Cap Index targets 40% of the eligible small-cap universe (companies with market capitalization ranging from US$200 to US$1,500 million) in each industry group of each country in the MSCI EAFI Index; (K) The FTSE RAFI® Emerging Markets Index comprises the largest 350 companies selected and weighted using the Fundamental Index® methodology; (L) The MSCI Emerging Markets Index is an unmanaged, free-float-adjusted cap-weighted index designed to measure equity market performance of emerging markets; (M) The FTSE RAFI® Canada Index comprises the Canadian stocks represented among the constituents of the FTSE RAFI® Global ex US 1000 Index, which in turn comprises the 1,000 non-U.S.-listed companies with the largest fundamental value, selected from the constituents of the FTSE Developed ex US Index; (N) The S&P/Toronto Stock Exchange (TSX) 60 is a cap-weighted index consisting of 60 of the largest and most liquid (heavily traded) stocks listed on the TSX, usually domestic or multinational industry leaders; (O) The FTSE RAFI® Australia Index comprises the Australian stocks represented among the constituents of the FTSE RAFI® Global ex US 1000 Index, which in turn comprises the 1,000 non-U.S.-listed companies with the largest fundamental value, selected from the constituents of the FTSE Developed ex US Index; (P) The S&P/ASX 200 Index, representing approximately 78% of the Australian equity market, is a free-float-adjusted, cap-weighted index; (Q) The FTSE RAFI® Japan Index comprises the Japanese stocks represented among the constituents of the FTSE RAFI® Global ex US 1000 Index, which in turn comprises the 1,000 non-U.S.-listed companies with the largest fundamental value, selected from the constituents of the FTSE Developed ex US Index; (R) The MSCI Japan Index is an unmanaged, free-float-adjusted cap-weighted index that aims to capture 85% of the publicly available total market capitalization of the Japanese equity market; (S) The FTSE RAFI® UK Index comprises the U.K. stocks represented among the constituents of the FTSE RAFI® Global ex US 1000 Index, which in turn comprises the 1,000 non-U.S.-listed companies with the largest fundamental value, selected from the constituents of the FTSE Developed ex US Index; (T) The MSCI UK Index is an unmanaged, free-float-adjusted cap-weighted index that aims to capture 85% of the publicly available total market capitalization of the British equity market; (U) The RAFI® Investment Grade Master Index is a U.S. investment-grade corporate bond index comprised of non-zero fixed coupon debt with maturities ranging from 1 to 30 years issued by publicly traded companies. The issuers held in the index are weighted by a combination of four measures of their fundamental size—sales, cash flow, dividends, and book value of assets; (V) The Merrill Lynch U.S. Corporate Master Index is representative of the entire U.S. corporate bond market. The index includes dollar-denominated investment-grade corporate public debt issued in the U.S. bond market; (W) The RAFI®High Yield Master is a U.S. high-yield corporate bond index comprised of non-zero fixed coupon debt with maturities ranging from 1 to 30 years issued by publicly traded companies. The issuers held in the index are weighted by a combination of four measures of their fundamental size—sales, cash flow, dividends, and book value of assets; (X) The Merrill Lynch U.S. High Yield Master II Index is representative of the U.S. high yield bond market. The index includes domestic high-yield bonds, including deferred interest bonds and payment-in-kind securities. Issues included in the index have maturities of one year or more and have a credit rating lower than BBB-/Baa3, but are not in default.

Source: All index returns are calculated using Total Return data from Bloomberg except for the FTSE RAFI Developed ex US Mid Small (FRSDXUS) and the MSCI EAFE Small (MCUDEAFE) which uses price return data.