MSCI Barra RESEARCH BULLETIN

GDP Weighting in Asset Allocation | February 2010

Introduction

The country factor is an important driver of equity market returns. A traditional passive approach for capturing this factor has been through market capitalization weights. However, a number of alternative weighting schemes have emerged and became part of the asset allocation toolbox. Recently, there is an increased interest in weighting schemes based on economic size rather than market capitalization, especially given the divergence between economic size and market size of countries with the faster growing economies.

In this Research Bulletin, we examine the effects of one such scheme that weights countries by their Gross Domestic Product (GDP). Despite recent increased interest, it is actually one of the oldest alternative weighting schemes; MSCI GDP Weighted Indices were launched more than 20 years ago.

GDP weighted index characteristics

MSCI Barra introduced the MSCI GDP Weighted Indices in 1988 to address the issue of the large weight of Japan in the MSCI World Index. The GDP weighted indices were extended in 2005 to cover the MSCI Emerging Markets (MSCI EM) and MSCI All Country World (MSCI ACWI) Indices. GDP weighted indices reflect the country factor by weighting the countries by their GDP.

Exhibit 1: Five top over-and underweighted countries in the MSCI ACWI GDP Weighted Index

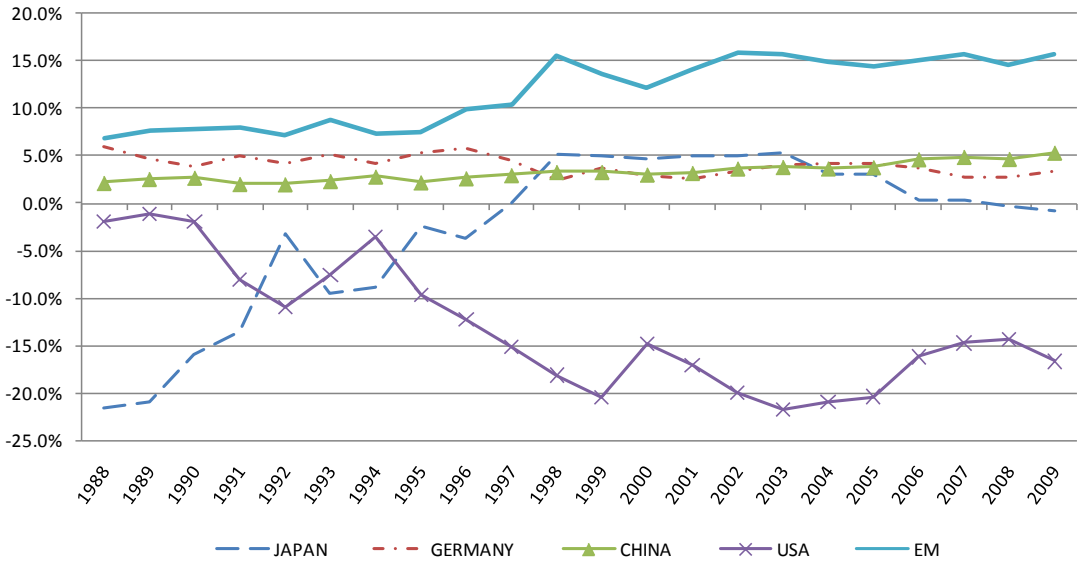
	Country	Weight Difference (GDP - Market Cap)
Top Overweights	China	5.3%
	Germany	3.4%
	Italy	2.6%
	Russia	2.1%
	Mexico	1.6%
Top Underweights	USA	-16.8%
	United Kingdom	-4.0%
	Switzerland	-2.3%
	Canada	-1.6%
	Australia	-1.2%

Source: MSCI Barra; data as of November 30, 2009

The MSCI GDP Weighted Indices overweight (underweight) countries with economic weight greater (smaller) than the market capitalization weight. Exhibit 1 summarizes the effects of GDP-weighting: the largest current overweights in the MSCI ACWI GDP Weighted Index include several emerging markets (China, largest overweight at 5.3%, Russia at 2.1% and Mexico at 1.6%), as well as Germany (3.4%) and Italy (2.6%). The list of largest underweights includes only developed markets. Interestingly, the US has an economic weight that is significantly lower than its market capitalization weight (-16.8%).

For additional insight into the MSCI GDP Weighted Indices, we can look at the historical evolution of these weight differences. Exhibit 2 displays the difference between the GDP weight and the market capitalization weight of select countries and emerging markets in MSCI ACWI.

Exhibit 2: Difference between GDP and market capitalization weights of select countries and emerging markets in MSCI ACWI (1988-2009)



Source: MSCI Barra. Based on annual data. The MSCI ACWI GDP Weighted Index is simulated before 2005.

Over the last 21 years, the overweight of emerging market countries in MSCI ACWI has grown from 6.8% to 15.8 %; the EM GDP weight has been growing significantly faster than the market capitalization weight. Note that the difference between the GDP and market capitalization weights of China (largest overweight) has grown only modestly during the same period (2.2% to 5.4%), meaning that the overweight is due to emerging markets as a whole rather than any individual country.

We observe other interesting patterns in the evolution and distribution of weight differentials. Japan starts 1988 as a large underweight in the GDP index – its GDP weight is 19.3% while its market-capitalization weight is 40.8%. However, after the burst of the asset price bubble, this underweight is progressively reduced and Japan becomes one of the top overweighted countries in 1998.

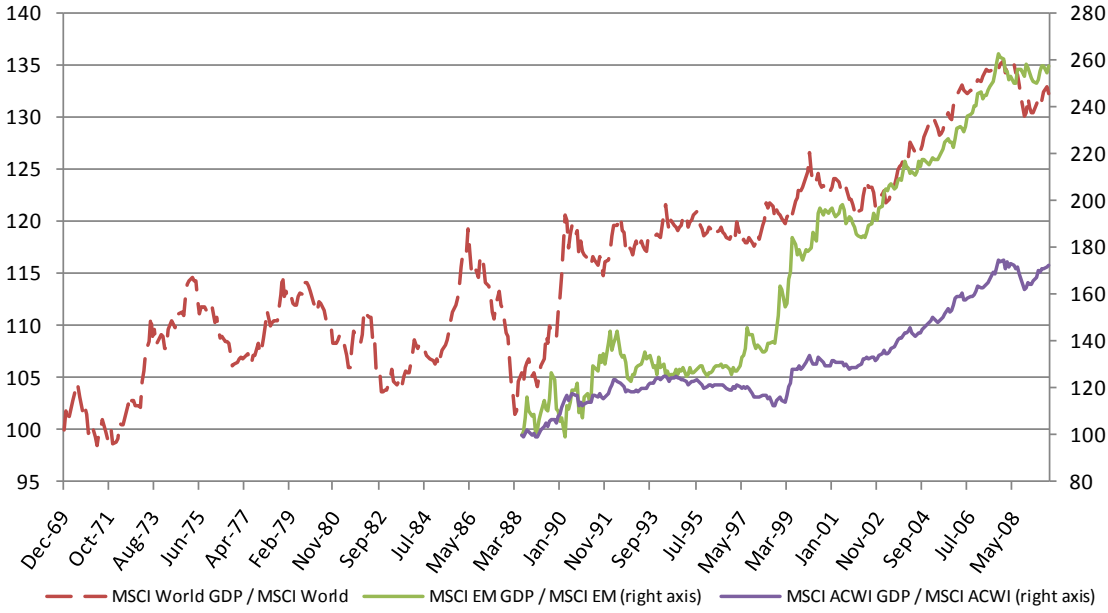
Some countries have had more stable differences between economic and market capitalization weights throughout the history of MSCI ACWI. Large economies of continental Europe, such as Germany (and including also Italy and France, not shown in Exhibit 2) are persistently overweighted in the MSCI ACWI GDP Weighted Index. This may be explained by a relatively high proportion of companies not publicly listed in these countries.

In addition, the US is progressively underweighted throughout the history, showing that the market capitalization weight grew much faster than the GDP weight.

Risk and Return

The different weight distribution has led to long-term performance differentials between GDP-weighted indices and their market capitalization weighted counterparts. Exhibit 3 shows the relative performance of three GDP weighted indices (MSCI World, MSCI EM, and MSCI ACWI GDP Weighted Indices) and their market capitalization weighted benchmarks.

Exhibit 3: Relative performance of the MSCI World, MSCI EM, and MSCI ACWI GDP Weighted Indices and their market capitalization weighted variants.



Source: MSCI Barra; monthly data; as of November 30, 2009. MSCI EM and MSCI ACWI GDP Weighted Indices (shown on the right axis) are simulated before 2005. The MSCI World GDP Weighted Index(shown on the left axis) is simulated before 1988.

Over the history, all three GDP weighted indices have outperformed their market capitalization weighted counterparts. The effect of the Japanese asset price bubble is particularly striking at the end of the 80s: the GDP-weighted variant of the MSCI World Index underperforms and then sharply outperforms its market capitalization weighted counterpart.

The actual degree of outperformance was very different among the regions. We see these risk and return statistics in Exhibit 4.

Exhibit 4: Annualized return, volatility and relative performance of the MSCI World, MSCI EM, and MSCI ACWI Indices and their GDP weighted variants.

Index	Period	Annualized return	Annualized risk	Return / Risk	Annualized relative performance
MSCI ACWI	1988-2009	4.7%	15.5%	0.30	
MSCI ACWI GDP	1988-2009	7.4%	16.5%	0.45	2.6%
MSCI World Index	1969-2009	6.3%	14.9%	0.42	
MSCI World Index GDP	1969-2009	7.0%	14.7%	0.48	0.7%
MSCI EM	1988-2009	9.6%	24.4%	0.39	
MSCI EM GDP	1988-2009	14.5%	28.2%	0.52	4.5%

Source: MSCI Barra; based on monthly returns; as of November 30, 2009

We can infer from the table that the three GDP weighted indices have performed better than their market capitalization weighted benchmarks even after accounting for risk. The MSCI ACWI GDP Weighted Index has outperformed its market capitalization counterpart by 2.6% annually with a slightly higher risk (+1%). The return to risk ratio was significantly higher for the GDP weighted version (0.45 vs 0.30). Similar results were observed for the MSCI World and MSCI EM Indices with a GDP weighted outperformance of 0.7% and 4.5% respectively.

Possible reasons for GDP weighting

Market capitalization weighted indices reflect the available investment opportunity set in public equity markets. By design, they ignore any unlisted companies, whether privately held or state-owned, since these are not accessible to the investing public. However, all companies in a country contribute to the economy whether or not they are listed, available to foreign investors, private or public. Since the value of this larger universe of companies is not directly observable, the value of the economy as measured by the GDP is often used as a reference against which a country's current market capitalization is contrasted.

The resulting market capitalization to GDP ratio is a useful metric for comparisons across countries and across time. This ratio can be seen as an indicator of the relative level of maturity of a market. A low ratio can be interpreted to signal a high growth potential for the market economy of a country, while a high ratio could signal that the country's market economy has already reached a high level of maturity and may be headed for lower growth rates.

Exhibit 5 lists countries with highest and lowest market capitalization to GDP ratios in MSCI ACWI.

Exhibit 5: Countries with lowest and highest market capitalization to GDP ratios in MSCI ACWI

Lowest		Highest	
Turkey	0.06	Switzerland	1.59
Poland	0.08	Taiwan	0.93
Indonesia	0.12	Australia	0.82
Russia	0.12	United Kingdom	0.82
Mexico	0.13	USA	0.74
China	0.14	Canada	0.70

Source: MSCI Barra; data as of December 31, 2009. Only countries with GDP or market capitalization weight greater than 1% are displayed.

Not surprisingly, the countries with lowest ratios are from emerging markets, while the countries with highest ratios are mostly developed markets.

Hence, a global GDP weighted index tends to overweight certain countries relative to their economic weight. These countries may include those that are less mature, may not be completely liberalized, and may have a high relative proportion of state-owned or privately held companies. As shown in Exhibit 5, these include some important emerging markets seen by many investors as countries with high potential for economic growth and above average returns over the long term. Advocates of the GDP weighted asset allocation method also consider that as these markets progressively open up, their equities will attract inflows that may result in a virtuous cycle. As a result, the market capitalization to GDP ratio of these countries will increase, in part due to above average returns. For these reasons, using economic rather than market capitalization weights could potentially allow tactically tilting a global portfolio towards these countries in expectation of higher returns.

The reverse strategy could apply to countries with high market capitalization to GDP ratios. A high ratio could signal that a country's market is mature and highly priced with average or below average expected returns and fewer chances to outperform. GDP weighting would allow tilting a global portfolio away from such countries. Taking this strategy to the extreme, using economic weights could potentially allow an investor to avoid market bubbles and reduce portfolio risk (for example, GDP weighting would have reduced exposure to the Japanese asset price bubble in the late eighties compared to market capitalization weighting).

There are two counterarguments to this. First, if GDP weighting is really a more efficient way to allocate to countries, it implies that markets are *not* efficient: if they are efficient, the risk-adjusted return of GDP weighting could only be equal or worse than that of market capitalization weighting.

Second, while it is true that market capitalization to GDP ratios of emerging markets are likely to rise with the opening of their economies, it is unclear that this alone should translate into higher returns. More likely, the market capitalization will increase through additional capital raised by new and existing companies and by state or private shareholders selling their stakes on the market, rather than through increased performance.

Overall, GDP weighting seems to be an active bet on the country and currency factors, allocating more to emerging markets and less to developed markets. Our analysis shows no significant value or other fundamental factor bias in the GDP weighted indices and very little industry bias.

Conclusions

We examined the effects of GDP weighting and its impact on country weights in a global allocation. GDP weighting assigns a higher weight to emerging markets and lower weight to developed markets and has led to the superior long-run performance of the MSCI ACWI, MSCI World, and MSCI EM GDP Weighted Indices in the past 40 years, compared to their market capitalization counterparts. However, it is not clear that there are fundamental reasons for the outperformance of this strategy or if it will continue to outperform in the future.

References

MSCI Barra GDP Weighted Indices -
http://www.mscibarra.com/products/indices/thematic_and_strategy/gdp_weighted/

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