
REVIEWING YOUR EQUITIES APPROACH – DO DOMICILE AND INDEX WEIGHTS MATTER?

Matthew Webb, Magellan Asset Management

Typically, investors arrive at their equities allocation (and domestic/international split) via mean-variance analysis of historical index returns. This research paper argues this approach is fundamentally flawed for two reasons - index sector weights are typically very weak predictors of the future; and, globalisation has made sector composition the dominant driver of returns. Australian investors have seen this first hand, with returns on the Australian equity market heavily skewed towards banking and resources, dominated by the resources boom and massive global credit expansion over the past fifteen years. Hence forward looking investors should be asking "Where are the future tailwinds and is my portfolio positioned appropriately?"

When Harry Markowitz introduced Modern Portfolio Theory in 1952, he illustrated that a combination of assets that are not perfectly correlated creates an efficient frontier which can be used to build a portfolio with optimal risk-return outcomes. Despite a number of criticisms behind its mathematical framework (primarily due to significant and largely unrealistic assumptions such as constant correlations) this has formed the basis for the portfolio construction of many investors, most particularly solving for the weights of individual asset classes. This paper seeks to argue that using this approach to allocate between international and Australian equities is sub-optimal, principally as the underlying factors driving both market returns can be highly correlated, yet the mean-variance relationships of these factors are not incorporated into this analysis, rather the simple "headline" mean-variance relationship between domestic equities and international equities is examined.

Investors need to consider the source of return to these factors, which in an equities allocation comprises both a "sector effect" (i.e. the impact of global forces on the underlying sector of a stock universe and the sector composition of the index relative to the global index) and a "country effect" (that is, the state of the local economy, stability of government, impact of demographics). In delineating between sector and country effects, attribution of such forces faces a considerable challenge due to the acceleration of global market integration in recent times, compromising the ability to use long-term data. Consider that the Association of South East Asian Nations Free Trade Agreement (1992); the North American Free Trade Agreement (1994); the establishment of the European Union (1993); and the founding of the World Trade Organization (1995) have all taken place in the last twenty years, lowering trade (and capital flow) barriers between countries. When coupled with the absence of any economically significant conflict between nations throughout this time, it is relatively simple to infer that the blurring of national lines will have reduced the impact of country effects whilst at the same time increasing the impact of sector effects, and studies have quantitatively illustrated that sector impacts have grown in recent times whilst country influences have reducedⁱ.

Interestingly, whilst one would expect that an increase in the freedom of capital flows from the integration of global capital markets to produce a noticeable increase in correlations between

national stock market returns, this has not occurred (as evidenced by the marked outperformance of the Australian equity market over the last twenty years). Whilst *prima facie* this would suggest that the country effect still dominates stock market returns and thus the use of simple “headline” domestic equities and international equities returns for mean-variance analysis remains an appropriate framework for asset allocation, this ignores the underlying effects of capital market integration outlined below.

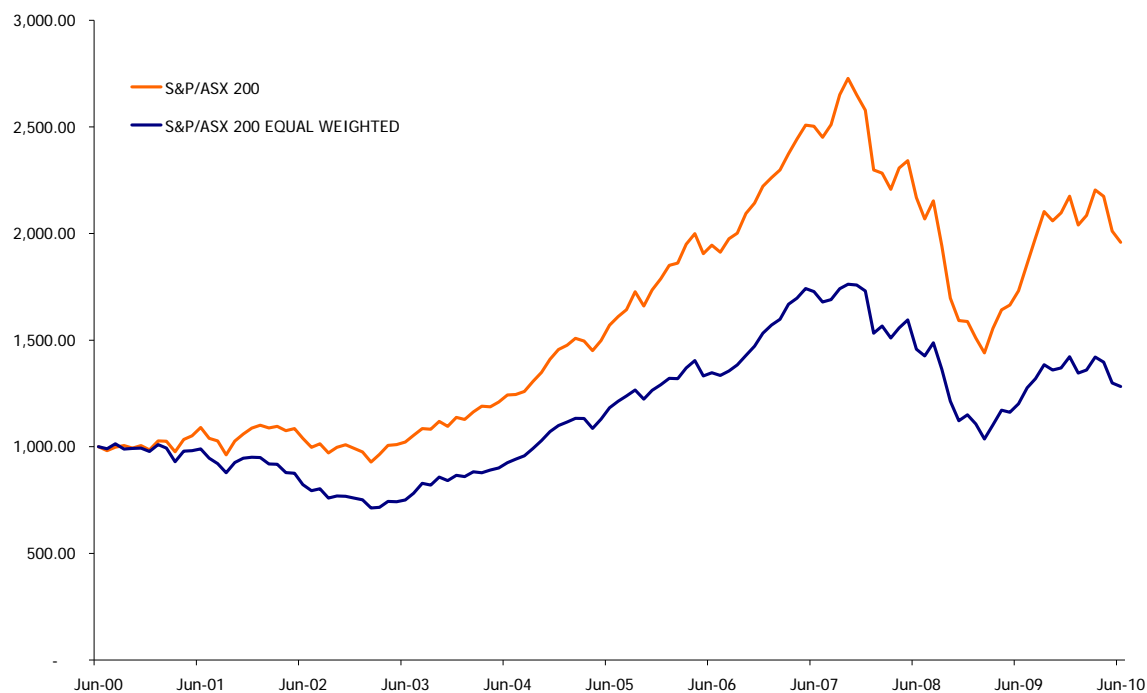
Disaggregating Country and Sector Effects

The two factors outlined above (the country effect and the sector effect) describe the returns available on any given national index in an integrated market. The interaction of these two factors (such as if a local index has a positive skew to consumer discretionary stocks and the local economy is outperforming *ceteris paribus* this will result in greater outperformance over the global index than the two factors alone) will also have an impact on returns however in this analysis the interaction effect is presumed to be zero, both for analytical simplicity and, more importantly that the interaction effect will have no bearing on the outcome.

Contrary to the claim that country effects continue to dominate (and thus sector effects are minor) we argue globalisation has not reduced the sector disparity between nations; indeed in most cases it has increased it. Consider that materials as a percentage of the Australian market (S&P/ASX200) have increased from 16% to 25% over the last eight years; whilst over the same period the weight in global stock markets (S&P Global 1200) has increased from 5% to 7.5% - in both instances this increased weight has been principally due to the significant growth of resource stocks, driven largely by the global impact of the growth in China’s extraordinary demand for resources over the period. Whilst both locally and globally the percentage growth in weight has been approximately equal (approximately 50%) the Australian stock market has moved from an 11% overweight bias to materials to a 17.5% bias over the period, producing a marked impact on relative returns on the Australian market that is primarily attributable to the sector effect outlined above. This should come as no surprise; the freedom of trade and capital flows has meant that Australia’s comparative advantage in resources has attracted significant capital and thus our national securities market has become more biased to what is our comparative strength (the same could easily be applied to countries such as Switzerland who have experienced a marked increase in their healthcare sector).

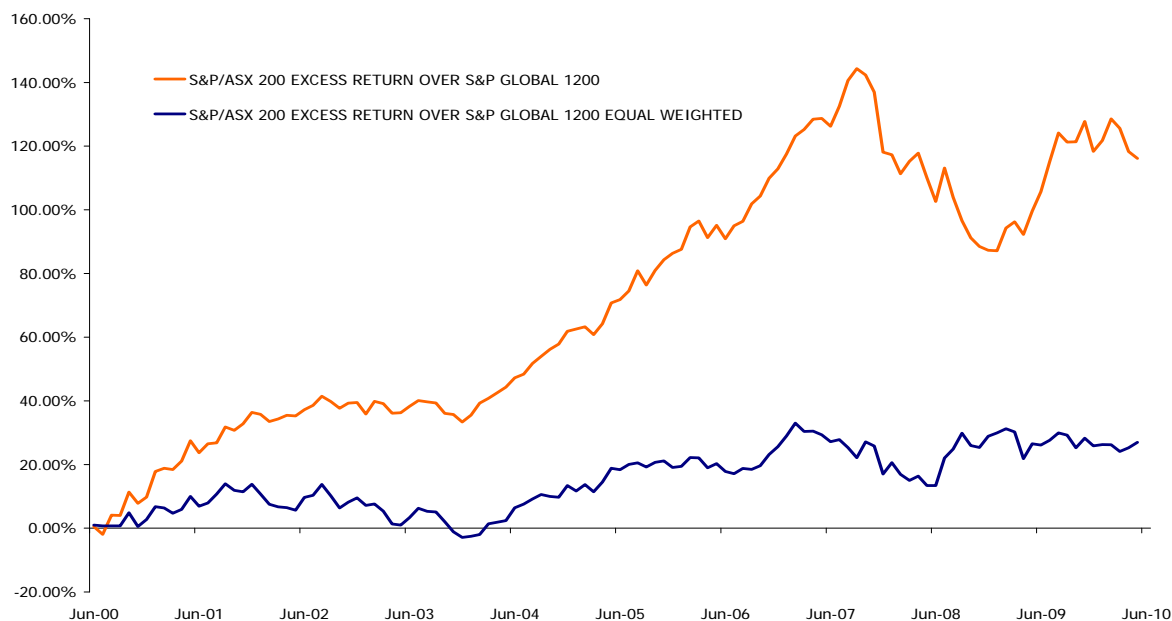
To analyse whether sector effects dominate country effects for Australian investors we analyse both the returns of the S&P/ASX 200 and the returns of the S&P Global 1200ⁱⁱ over a ten year period to 30 June 2010. In order to determine sector influences we compare the achieved benchmark returns over the period with the returns of each benchmark when monthly re-weighted to an equal exposure to each of the ten GICS[®] Sectors. Whilst this is a relatively short period, we consider this period appropriate and instructive given (a) as discussed above global market integration has rapidly grown in recent years, particularly through the 1990’s (thus making earlier data largely redundant); (b) the period eliminates much of the ‘TMT bubble’ which would cause the sector effect to be overstated; and (c) the last decade has seen two global recessions thus the results incorporate a variety of economic cycles. Charts 1 & 2 illustrate the results:

Chart 1: Impact on Total Return
(June 2000 – June 2010)



Source: Magellan Asset Management

Chart 2: Impact on Excess Return
(June 2000 – June 2010)



Source: Magellan Asset Management

The impact on total returns is considerable when the sector impact of the Australian market is removed. The total return over the ten year period for the S&P/ASX 200 was 95.87% (or 6.95% per annum) whilst if sector skews were removed and the index was equally allocated across all ten GICS® sectors the total return over the period declines to 28.28% (or 2.52% per annum). One can thus conclude that the sector impact of the Australian market has had a marked impact on the total returns to Australian investors.

Importantly, the impact on relative returns is also significant. Over the period the excess return of Australian equities over global equities was 116.92% (or 8.01% per annum), whilst when sector effects are removed and we equally weight both indices on a monthly basis, the excess return reduces to 26.96% (or 2.42% per annum). Over this period, we can thus infer that the sector effect has accounted for over 75% of the excess return of the Australian market over the global market over the time period considered (by removing the sector biases of both benchmarks).

In conducting the above analysis, we have equally weighted across sectors to compare pure sector returns without biasing the results to the sector weights of the global benchmark or the Australian benchmark, this however clearly does not reflect economic reality. Most notably the financials sector is 20% of the global benchmark (as at 30 June 2010) whilst both Telecom Services and Utilities are 5% of the global benchmark (whilst remaining sectors are +/- 3% of the 10% average weight that we use for the above analysis). For completeness, rather than the equal-weighting methodology used above, we compareⁱⁱⁱ:

- Applying the monthly sector weights of the S&P Global 1200 to the monthly sector returns of the S&P/ASX 200; with
- Applying the monthly sector weights of the S&P/ASX 200 to the monthly sector returns of the S&P Global 1200;

When applying the S&P Global 1200 weights to the ASX 200 monthly returns the return over the period declines even further than that in the above analysis to 13.33% over the period (or 1.26% per annum), whilst the excess returns when compared with re-weighted S&P Global 1200 returns marginally reduces to 25.60% per annum (or 2.31% per annum).

An alternative way to consider the impact of sector effects against country effects is to consider the correlations of sectors within countries with the correlation of global sectors with each other. If there is a marked increase in correlations within a certain country then the country effect could be material. Outlined below are the average of monthly pair-wise correlations between each sector and the remaining sectors:

Table 1: Pair-Wise Correlations of Major Sectors

	S&P/ASX 200 Average	S&P Global 1200 Average
Consumer staples	0.45	0.64
Consumer discretionary	0.47	0.72
Energy	0.44	0.61
Financial Services	0.50	0.74
Healthcare	0.41	0.60
Information technology	0.41	0.62
Materials	0.47	0.73
Industrials	0.54	0.77
Telecom Services	0.24	0.63
Utilities	0.39	0.67
Average Across All Sectors	0.43	0.67

Source: Magellan Asset Management

In every instance the S&P Global 1200 sectors illustrate higher correlations than those in the S&P/ASX 200, implying that the country effect for Australia is relatively insignificant.

The Sector and Country Effect – Implications for Portfolio Construction

Clearly the above findings suggest that the current method employed by Australian investors to allocate between domestic and offshore equities has resulted in significant sectoral impacts that have caused a significant performance benefit over the past ten years. There is no doubt that most investors would be aware of this (but perhaps not its scale), agreeing that an investment into the global materials sector would be likely to have higher correlation with their Australian equity exposures (as the sector is 25% of the S&P/ASX 200 Index) than an investment into the global technology sector (which is less than 1% of the S&P/ASX 200 Index). The significance of this structural bias is critical – the combination of significantly overweight position to the materials sector with its significant outperformance has provided an outsized contribution to both absolute and excess returns the last ten years. The global nature of the resources business is also very important, producing goods that are subject to global demand and supply conditions, with little of their business metrics (such as profitability and cashflows) determined by domestic sources. Quantitative analysis conducted by Griffin and Karolyi^{iv} showed that sector effects on the returns and variances of traded-goods industries were more pronounced than for non-traded goods industries whilst their country effect was lower, associated statistical testing confirmed that the variances of the two industry types were not equal, suggested a marked difference in the determination of returns of traded-goods industries with non-traded goods industries globally.

The implication for portfolio construction is that allocating via sectors rather than countries (or Australian/international) is also not optimal, as country effects may well still be significant for non traded-goods industries. However, importantly for Australian investors, the sector effects matter greatly for the export sector, and given its dominance in the Australian market over the last ten years (and its current weight in the benchmark), investors need to acknowledge and consider their significant exposure to this sector. Page and Van Royen^v propose asset allocation based on a factor approach, combining both sector and country influences, which their study indicated produced lower standard deviations and more stable volatility than either country-based approaches (that suffered materially increased volatility during the Russian debt crisis) or sector approaches (that suffered materially increased volatility with the TMT bubble).

Whilst asset consultants, research houses and large institutional investors may be in a position to employ such a factor approach it is unlikely that many practitioners will be able to implement and test a relatively complex matrix of inter-relationships between the underlying factors impacting security and market returns (and, as with all quantitative analysis it suffers from using the past to explain what may happen in the future).

Practical Application

For Australian investors, the simple acknowledgement that the Australian market exhibits significant structural biases is an important step forward in understanding the risks that are present in an equities allocation (rather than approaching an equities allocation from a simple Australian/international viewpoint). In acknowledging the risks that are present, the investor will be in a better position to choose appropriately diversifying strategies for their portfolio. The benefit of franking credits to Australian investors is of course significant for some investors and has not been considered in this paper.

If the global financial crisis taught investors anything, hopefully it is the need to look forward with asset allocation, pleasingly this affords the practitioner to apply their own views as 'factors' that form the pillars of their portfolio construction. As the world stands today there are a number of (largely) indisputable factors that need to be considered in portfolio construction.

- (a) The fallout from escalating sovereign debt in the developed world.
With 46% of Americans, 53% of the French population and 33% of the British population carrying the belief that their government is likely to default over the next ten years clearly the world is concerned with this problem^{vi}. The solution to growth in public-sector debt, whether via Keynesian economics and more government stimulus; via further austerity measures; or via some combination of the two; will have broad ramifications on economic growth, inflation (or deflation), and interest rates.
- (b) The deleveraging of the household sector.
McKinsey^{vii} cite that households in the United States, the United Kingdom, Spain, Canada, and South Korea all have a high likelihood of deleveraging (Australia was omitted from the study but given the relative Australian level of domestic household indebtedness to income relative to these countries it would be reasonable to conclude that Australia's probability is

also high). Given the significance of the consumer in these economies, the impact on domestically-sourced economic growth is likely to be material.

- (c) The increased capital requirements of the financial system through the implementation of Basel III.
The proposed changes outlined in Basel III increase both liquidity and capital requirements for the banking system. The result of these changes is, *ceteris parabis*, lower return on equity for banks around the world accompanied by the likelihood of lower credit growth. The impact on bank profitability needs to be considered when investing into the sector, together with the broader impact of slower credit growth on the global economy.
- (d) The asset-intensive nature of China's recent economic growth.
With fixed-asset investment to GDP now 67%, accounting for over 90% of China's economic growth in 2009^{viii}, the gap between supply and demand is growing as China continues to build "ahead of the curve" and thus the sustainability of such spending is becoming questioned. Whilst there is little debate about the continued growth prospects of China, eventually the fixed asset investment will need to slow and allow demand to catch up to supply. This potential slowdown (although predicting the timeframe is very difficult), will have a marked impact on Chinese economic growth and commodity prices.
- (e) The movement of economic power from the developed world to the developing world.
Notwithstanding a likely eventual slowdown in China's fixed asset investment, the continued economic growth of the emerging nations whilst the developed world suffers slower growth rates is forecast to result in a major reshaping of the world's economic power. Consider that by 2050, the United States is forecast to be the only current member of the G7 that remains one of the largest seven economies in the world, with the BRIC countries Indonesia and Mexico occupying the remaining six positions^{ix}.

Conclusion

The application of factors (rather than sector or country effects) into portfolio construction will result in an improved portfolio and most importantly, a portfolio that considers forward-looking inputs to portfolio construction rather than analysis that relies on historical returns and correlations. The factors listed above are regarded as highly important portfolio considerations by the author, however each investor will have his/her own view about which factors are important, most importantly integrating forward-looking factors into portfolio construction will result in much improved portfolio outcomes than can be expected from traditional mean-variance analysis predicated on historical return relationships of headline equity returns.

ⁱ See Hamelink, Hasrasty and Hillion (2001) "Country Sector or Style: What matters most when constructing global equity portfolios" or Cavalgia, Brighman and Aked (2001) "The Increasing Importance of Industry Factors"

ⁱⁱ US Dollar returns are used for the S&P 1200 as local currency returns are unavailable at a sector level for this index, and while the use of US Dollar returns mitigates the impact of currency movements to the maximum possible, whereas the use of Australian dollar returns would give rise to a significant currency impact.

ⁱⁱⁱ Sector weights for the S&P/ASX 200 were unavailable for periods prior January 2002, whilst sector weights for the S&P Global 1200 were unavailable for periods prior to December 2004, in this analysis we use the first available sector weights for dates that preceded its availability

^{iv} Griffin, JM and Karolyi GA (1997) "Another look at the role of the industrial structure of markets for international diversification strategies"

^v Page, S and Van Royen, A (2001) "The Multiple Dimensions of Asset Allocation: Countries, Sectors or Factors?"

^{vi} FT/Harris Opinion Poll, May 16 2010.

^{vii} McKinsey & Co, January 2010, "Debt and Deleveraging: The global credit bubble and its economic consequences"

^{viii} National Bureau of Statistics, China

^{ix} IMF World Economic Outlook April 2010