

Sector diversification, home-country bias and global investments

The typical Australian balanced portfolio contains excess sector risk. **DIREK UTHARNTHARM** illustrates a strategy to achieve optimum sector diversification in a world where home-country bias is a real and entrenched phenomenon.

A recent survey¹ of pooled superannuation trusts (PST) found that the average Australian PST allocated 58% of its share portfolio to Australian shares, even though the Australian share market's weight in the MSCI World Index is only about 2%.

A growing body of recent international research is beginning to show that such a bias to the home market is detrimental to fund performance in a way not previously perceived, particularly for those in countries such as Australia where the industry sector composition of the home market is markedly different from that of the global market.

Sector distortion in the Australian market

Table 1 compares industry sector

weights in the MSCI World and S&P/ASX 300 indices as at 31 March 2003. The column on the right shows the difference between the two indices.

As can be seen, the financial and materials sectors combined account for 62 per cent of the S&P/ASX 300 index, compared to 26 per cent in the MSCI World Index—a difference of 36%. On the other hand, the information technology and health care sectors combined account for only three per cent of the S&P/ASX 300, while the equivalent measure in the MSCI World Index is 25%. There are weight distortions in the six other sectors as well, but these are relatively minor compared to the distortions observed across the four aforementioned sectors.

The home-market bias of PSTs means that the sectoral composition of those

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TABLE 1 SECTOR WEIGHT DISTORTION BETWEEN THE AUSTRALIAN AND THE GLOBAL MARKET

GICS Sector	Weight in MSCI World* Sector	Sector Weight in S&P/ASX 300*	Difference
Information Technology	11.3%	0.2%	(11.1%)
Health Care	13.7%	2.6%	(11.1%)
Energy	8.0%	2.4%	(5.6%)
Utilities	3.9%	1.4%	(2.5%)
Industrials	10.0%	7.1%	(2.9%)
Consumer Discretionary	12.8%	10.6%	(2.2%)
Consumer Stable	8.9%	7.7%	(1.2%)
Telecom Services	5.4%	5.7%	0.3%
Materials	4.4%	17.5%	13.1%
Financials	21.6%	44.8%	23.2%
Total	100.0%	100.0%	

* Index weights as at 31 March 2003

TABLE 2 SECTOR WEIGHT DISTORTION BETWEEN THE AVERAGE AUSTRALIAN PST AND THE GLOBAL MARKET

GICS Sector	Sector Weight in MSCI World*	Sector Weight in Average PST**			Difference
		Domestic Portfolio	Foreign Portfolio	Total Portfolio	
Information Technology	11.3%	0.1%	4.8%	4.9%	(6.4%)
Health Care	13.7%	1.5%	5.7%	7.2%	(6.5%)
Energy	8.0%	1.4%	3.4%	4.8%	(3.2%)
Utilities	3.9%	0.8%	1.6%	2.4%	(1.5%)
Industrials	10.0%	4.1%	4.2%	8.3%	(1.7%)
Consumer Discretionary	12.8%	6.2%	5.4%	11.6%	(1.2%)
Consumer Stable	8.9%	4.5%	3.7%	8.2%	(0.7%)
Telecom Services	5.4%	3.3%	2.3%	5.6%	0.2%
Materials	4.4%	10.1%	1.8%	11.9%	7.5%
Financials	21.6%	26.0%	9.1%	35.1%	13.5%
Total	100.0%	58.0%	42.0%	100.0%	

* Weights as at 31 March 2003

** Based on 58% domestic, 42% foreign equities split as found in the Intech survey. S&P/ASX300 and MSCI World sector weights as at 31 March 2003.

PSTs is markedly different from that of the global market. The sectoral composition of the average Australian PST can be estimated using the data reported in the aforementioned survey, and making the assumption that the sector weights in the domestic and foreign components of the portfolio mimic those of the local and global indices respectively (as would be the case for an indexed fund).

Table 2 illustrates the results. As can be seen, this hypothetical—but probably quite representative—portfolio contains significant sectoral weight distortion in the information technology and health care sectors (underweight by a combined 12.9%), and the financials and materials sectors (overweight by a combined 21.0%).

The increasing importance of sector factors

This sectoral weight distortion is by no means a recent or newly discovered phenomenon. However, it has not been a source of concern in the past because the accepted view held that country factors are the dominant driver of stock returns (Lessard 1974, 1976), and that diversification across countries led to greater risk reduction than diversification across industries (Solnik 1974).

This view formed the basis for what is now considered the “traditional” global

equity portfolio construction framework based on top-down country selection, under which the main decision was how much to overweight or underweight countries. Sector diversification per se was simply not considered to be important.

However, a growing body of recent empirical evidence now suggests that since the mid-1990s the relative

benefits of diversification across countries and sectors may have changed. Baca, Garbe and Weiss (2000) studied the world’s seven major equity markets and found that country effects no longer dominate sector effects in explaining stock return variations.

Page and Van Royen (2001) studied correlations across markets and sectors between 1994–2000, and reported that

FIGURE 1 SECTOR AND COUNTRY CORRELATIONS (PAGE AND VAN ROYEN 2001)



“For most of the period, country correlations have been lower than sector correlations, justifying a traditional country-based approach to asset allocation. However, country correlations sharply increased after the Asian crisis spread in the fall of 1997 and in the aftermath of the Russian default in August 1998. Since the beginning of 2000 sectors and countries have had similar levels of correlations. This implies that the diversification benefit of investing across countries has been eroding steadily” (see Figure 1).

Using a factor model, Cavaglia et al (2000) report that sector factors have been growing in relative importance (see Figure 2) and may even dominate country factors. They also report that diversification across global industries provided greater risk reduction than diversification across countries, a finding that overturns Solnik’s original 1974 finding. Solnik himself admits that the world has changed. He now argues that both sector and country considerations need to be taken into account when constructing equity portfolios.²

New equity portfolio construction frameworks required

In this new paradigm where sector diversification ranks as importantly as

country diversification, traditional equity portfolio construction frameworks based primarily along country lines will lead to sub-optimal portfolios. A new framework is required

An important question that must be asked is “will home-country bias diminish as managers move to a sector/country allocation framework?”

that simultaneously takes into account country and industry sector diversification.

A number of suggestions have been put forward. Page et al (2001) suggest a factor-based approach that combine simultaneously both sector and country effects. Cavaglia and Moroz (2002) propose a cross-industry, cross-country allocation matrix built bottom-up from a country-level industry selection process, and where the risks of country or sector tilts are controlled top-down at the aggregate level.

While these new frameworks offer a fresh approach to portfolio construction, they have tended to ignore the stubborn presence of home

country bias in equity portfolios—the very phenomenon that is causing sector distortion in markets such as Australia in the first place.

An important question that must be asked is “will home country bias diminish as managers move to a sector/country allocation framework?” For if the answer is “no”, then portfolio construction frameworks that ignore home-country bias are unlikely to be adopted by asset managers.

Home-country bias

Home-country bias is a well-studied phenomenon observed in all major advanced markets. French and Poterba (1991) found that US investors in 1989 typically held 94% of their equity portfolio in domestic equity. Cooper and Kaplanis (1994) also found strong home bias among Japanese, British and German investors, who allocated 87, 79 and 75% respectively in domestic equities.

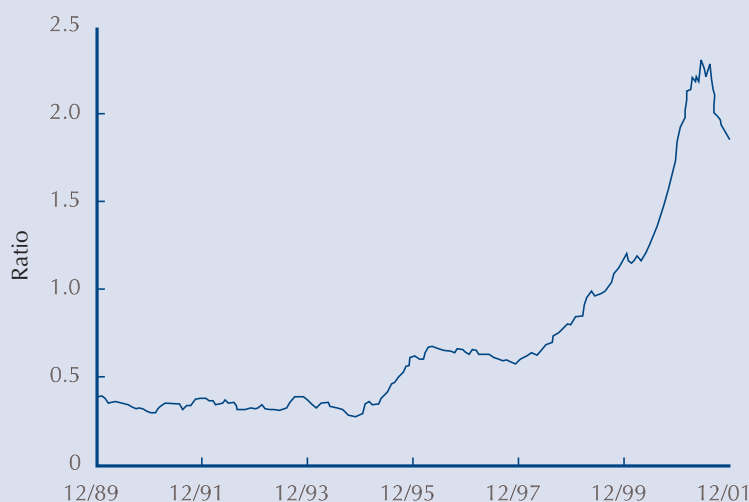
More recent studies (Bohn and Tesar 1996, Tesar and Werner 1998) found that while there have been slight decreases in the degree of bias in recent years, the absolute level of bias still remains very high. Australian PSTs allocating 58% their share portfolio to Australian shares, although the Australian market’s weight in the MSCI World Index is only about 2%, is a case in point.

A number of possible reasons for the existence of home-country bias have been hypothesised (see Lewis 1998 pp. 16–28 for a review). The debate revolves around hypotheses that can be classified into two groups.

The first suggests that home bias provides a hedge for liabilities or risks that are home-based either explicitly or in a loose political sense, and asset managers are willing to forego some efficiency in return for this hedge. The second suggests that home bias results from the high degree of uncertainty in the estimates of means and variances of foreign market returns, which makes international diversification not necessarily superior to domestic dedication.

The important point to note is that, regardless of which hypothesis one might subscribe to, a logical extension

FIGURE 2 IMPORTANCE OF INDUSTRY FACTORS RELATIVE TO COUNTRY FACTORS



Based on data from Cavaglia et al (2000), updated by UBS Global Asset Management, as presented by Solnik, ‘Global considerations for portfolio construction’, AIMR Conference Proceedings, 2002.

of both arguments is that there is no reason to expect home-country bias to suddenly diminish as asset managers shift to a sector/country allocation framework.

If home-country bias exists as a hedge (i.e. the first hypothesis is true), then one has no reason to expect the bias to diminish because the need for that hedge has not changed. On the other hand, if home country bias is a result of uncertainty with respect to foreign returns (i.e. the second hypothesis is true), then one can still expect the bias, to persist—perhaps even increase—because the dollar invested at home now offers more diversification benefits (through increased gains from domestic sector diversification) than it did previously.

Sector/country allocation method with allowance for home-country bias

Since home-country bias can be expected to persist in the foreseeable future, how may Australian asset managers construct global sector-neutral portfolios to mitigate the inefficiencies caused by home-bias-induced sector distortion? An analysis of extremes may be useful here. In one extreme case, asset managers can leave the domestic portfolio unchanged with domestic sector exposures mirroring the local market, and engage in global sector re-balancing in the foreign portfolio only.

What does such a portfolio look like? It will have short positions in foreign financials and materials sectors. This is probably not realistic or reasonable, as

it would be unwise to limit exposure to the financial and materials sectors only to the Australian market.

In the other extreme case, asset managers can engage in sector re-balancing in both the domestic and

The approach differs from other proposals in that home bias is accepted as a real and entrenched phenomenon...

foreign portfolios such that they both mirror MSCI sector weights. This is not realistic or reasonable either, as it entails increasing exposure to the Australian IT sector to 15 times the sector's index weight.

The practical solution is to either (1) give up some domestic exposure in return for more sector diversification offshore (i.e. give up home-country bias—an unlikely solution for reasons given previously), or (2) engage a carve-out strategy.

This paper proposes a carve-out strategy that balances cross-industry, cross-sector diversification requirements with a mechanism that addresses home-country bias. The approach differs from other proposals in that home bias is accepted as a real and entrenched phenomenon—a deliberate choice by asset managers—rather than as an irrational anomaly viewed under traditional Markowitz mean-variance efficient frontier analysis.

Without such a mechanism, asset managers are likely to pay lip service to

sector/country diversification matrices while reverting to the old habits of overweighting the domestic market at the expense of sectoral diversification.

The proposed approach involves the following steps:

- Deciding on an explicit allocation between domestic (Australian) shares and foreign shares;
- Carving out from the domestic portfolio sub-portfolios that avoid the financials and materials sectors;
- Carving out from the foreign portfolio sub-portfolios that are dedicated to the information technology and health care sectors;
- Optimising target weights for each portfolio and sub-portfolio to minimise sectoral weight distortion between the aggregate portfolio and the MSCI World Index.

The resultant matrix serves as an asset allocation template for a home-bias-compliant, global sector-neutral portfolio. The template can then be combined with local sector over/underweight decisions or even specific stock selection decisions to derive the final portfolio. Style, sector, country tilts and other risk-control measures can be overlaid at the aggregate level.

Table 3 illustrates the result of this process applied to the average PST that allocates 58% of its equity assets to domestic shares and 42% to foreign shares. As can be seen, the domestic –foreign allocation has been preserved while the resultant aggregate sector

TABLE 3 : SECTOR WEIGHT DISTRIBUTION MATRIX FOR A SECTORIALLY-EFFICIENT PORTFOLIO

Country	Portfolios	Info Tech	Health Care	Materials	Financials	Other	Total	Country Total
Domestic	Core	0.1%	0.5%	3.6%	9.3%	7.3%	20.8%	58.0%
	ex Materials	0.1%	0.5%		8.8%	6.8%	16.2%	
	ex Finance & Materials	0.1%	1.4%			19.5%	21.0%	
Foreign	Core	1.8%	2.2%	0.7%	3.5%	15.7%	23.9%	42.0%
	Dedicated IT	9.2%					9.2%	
	Dedicated Healthcare		8.9%				8.9%	
Sector Total		11.3%	13.5%	4.3%	21.6%	49.3%	100.0%	100.0%
MSCI World Index		11.3%	13.7%	4.4%	21.6%	49.0%	100.0%	
Sector Over (Under)		0.0%	(0.2%)	(0.1%)	0.0%	0.3%		

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weight distribution matches closely those of the MSCI World Index, thereby eliminating sectoral distortion inherent in the untreated portfolio shown in Table 2.

It is important to note that the foregoing argument is one based on risk-reduction, or “efficiency” in the language of mean-variance analysis. The goal is to seek the lowest level of risk for a given level of return, and this is achieved by diversification across all important factors—including sectors.

The argument is not about creating sub-portfolios to over- or under-weight particular sectors because of any particular view about their return expectations. The same process applied to a different market—say Finland—will probably result in a rather different set of sub-portfolios than the ones found in the Australian context.

CONCLUSION

As more studies demonstrate the increasing importance of global sector diversification viz-a-viz country diversification, new portfolio construction frameworks that adopt a simultaneous or matrix sector/country allocation approach are being espoused as the way forward. However, without an explicit allowance for home-country bias—a real and entrenched characteristic of portfolios in most developed countries—these new portfolio construction frameworks are unlikely to be adopted by asset managers.

In countries where the local sector composition differs markedly from the global market, a carve-out strategy allows the construction of portfolios that simultaneously achieve the objectives of being home-country biased and global sector-neutral. In the Australian context, this involves (1) carving out from the domestic portfolio sub-portfolios that avoid the financials and materials sectors; and (2) carving out from the foreign portfolio sub-portfolios that are dedicated to the information technology and health care sectors. This argument is based on risk-reduction, rather than any particular view about return expectations of different industry sectors.

REFERENCES

- Baca, S.P., Garbe, B.L., and Weiss, R.A., The rise of sector effects in major equity markets, *Financial Analysts Journal*, Vol. 56, No. 5, September/October 2000.
- Bohn, H., and Tesar, L.L., U.S. equity investment in foreign markets: portfolio rebalancing or return chasing?, *American Economic Review*, Vol. 86, No. 2, 1996.
- Cavaglia, S., Brightman, C., and Aked, M., The increasing importance of industry factors, *Financial Analysts Journal*, Vol. 56, No. 5, September/October 2000.
- Cavaglia, S., and Moroz, V., Cross-industry, cross-country allocation, *Financial Analysts Journal*, Vol. 58, No. 6, November/December 2002.
- Cooper, I., and Kaplanis, E., Home bias in equity portfolios, inflation hedging, and international capital market equilibrium, *The Review of Financial Studies*, Vol. 7, 1994.
- French, K.R., and Poterba, J.M., Investor diversification and international equity markets, *American Economic Review*, Vol. 81, 1991.
- Lessard, D., World, national and industry factors in equity returns, *Journal of Finance*, Vol. 29, No. 3, May 1974.
- Lessard, D., World, country, and industry relationships in equity returns: Implications for risk reduction through international diversification, *Financial Analysts Journal*, Vol. 32, No. 1, January/February 1976.
- Lewis, K.K., International home bias in international finance and business cycles, Working Paper Series 6351, National Bureau of Economic Research, Cambridge MA, January 1998.
- Lewis, K.K., Trying to explain the home bias in equities and consumption, *Journal of Economic Literature*, Vol. 37, June 1999.
- Page, S., and Van Royen, A.S., The multiple dimensions of asset allocation: Countries, sectors or factors?, State Street Associates, December 2001.
- Solnik, B., Why not diversify internationally rather than domestically?, *Financial Analysts Journal*, Vol. 30, No. 4, July/August 1974.
- Solnik, B., Global considerations for portfolio construction, AIMR Conference Proceedings, March 2002.
- Tesar, L.L., and Werner, I.M., The internationalization of securities markets since the 1987 crash, in Litan, R., and Santomero, A., (eds), *Brooking Papers on Financial Services*, The Brookings Institution, Washington 1998.

NOTES

1 Intech Financial Services, Asset Allocation Exposure Survey November 2002, as reported in the *Australian Financial Review*, 8 January 2003.

2 See Solnik 2002.



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