

## Investment Survey December 2008 – Sector correlations

### 1. Returns

Index returns for the quarter and the year to 31 December 2008 were:

Asset Class	Quarter	Year
NZ Shares	-11.9%	-31.6%
Australian shares in A\$	-18.3%	-38.4%
Global Shares:		
• local currency	-20.5%	-38.3%
• unhedged	-10.5%	-21.4%
• hedged	-21.8%	-38.3%
Property		
• NZ Property	-9.6%	-20.8%
• Global Property	-37.1%	-43.6%
NZ Bonds		
• Govt Bonds	6.0%	15.8%
• Corporate A	6.2%	15.4%
• All Swaps	9.3%	21.5%
Global Bonds		
• World Govt Bonds	7.4%	15.2%
• Global Aggregate	5.6%	11.2%
Cash	1.9%	8.8%
NZ\$ against US\$	-12.5%	-24.1%
NZ\$ against Aus\$	-1.0%	-4.4%

### 2. Sector correlations

This quarter we examine correlation between asset classes and ask the question “What has been happening?”

#### 2.1. Introduction

Correlation, in the statistical sense is defined as

*A relation existing between [...] mathematical or statistical variables which tend to vary, be associated, or occur together in a way not expected on the basis of chance alone.*  
[Merriam-Webster Online Dictionary]

Basically, if two asset classes are highly positively correlated (correlation coefficient close to 1), then they are inclined to move in the same direction.

If they are highly negatively correlated (coefficient close to -1), then they are inclined to move in opposite directions.

We note graphs include a lot of data and if you would like more detail please [click here](#) and email a request.

#### 2.2 Goal

One of the goals in setting up a portfolio of assets is to reduce the volatility of returns, which can be obtained through diversification. Diversification has been referred to as “the only free lunch on Wall Street.”

But diversification only works if the assets that are involved continue to provide uncorrelated returns in most market conditions.

### 2.3 2008 Recoupling

Unfortunately for most investors, many different sectors have failed to give positive results through the 2007/08 financial meltdown.

First the property market turned as the US housing bubble burst. Then bond managers took a hit when liquidity dried up, forced selling and flight to quality hurt corporate debt holdings.

Then global sharemarkets and commodity markets tumbled on worsening outlooks for the global economy. The illiquid conditions also hurt hedge funds.

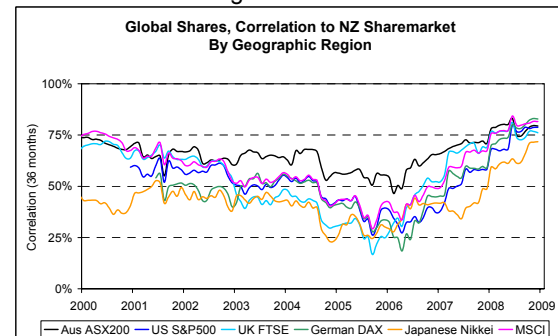
It seems like there has been no safe haven through the crisis.



All regions showed large losses and investors were left scrambling for sovereign debt as the only true safe haven. If the investor was lucky, their share investments “only” fell 30%.

### 2.4 Trends in Correlation

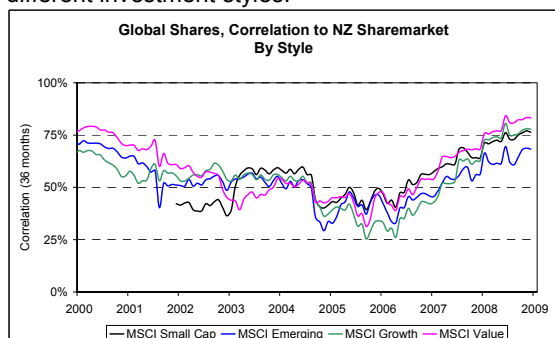
The table below compares the correlation (to the New Zealand sharemarket) of several large global markets over the long term.



Since 2006, correlations to the New Zealand market have steadily moved up (for example, from 34% to 84% for the MSCI).

We would note that correlations tend to rise in financial crises as risk aversion takes precedence. We would also note that as the indexes converge the correlation between the indexes has risen as well. For example, at the end of 2008 the correlation between the DAX and the FTSE was 87% compared to 66% at the start of 2001.

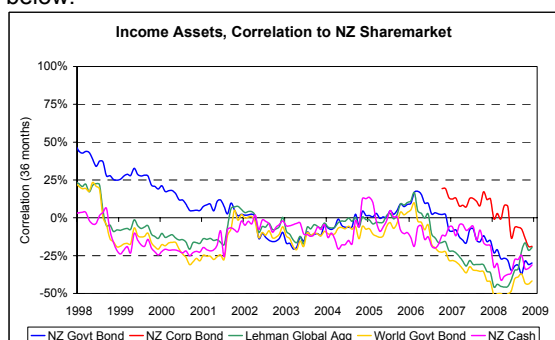
A similar pattern can be seen when looking at different investment styles.



**2.5 Bonds and Cash**

On a historical basis, sharemarkets have tended to be positively correlated. That is markets tend to move in the same direction.

Income assets have been the most commonly used diversifiers as bonds have tended to move in the opposite direction to shares in the past. They have thus been a good diversifier as shown in the table below.



The table shows a long period of zero correlation and then, as the crisis hit, a downwards trend with some indexes at historically strong negative levels.

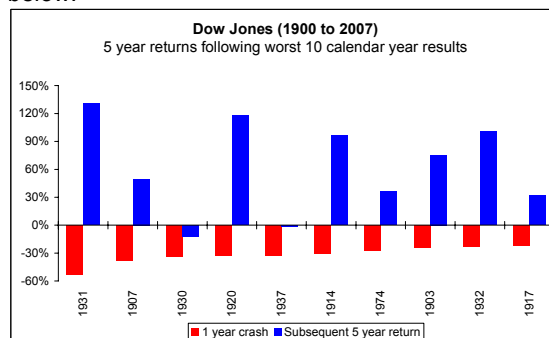
However, many bond managers failed to achieve index returns where liquidity issues weighed heavily on their performance. Many found themselves holding assets that were fundamentally sound, but being marked down substantially as forced selling occurred from highly geared investors trying to meet redemption requests.

Consequently it is not hard to find examples of underperformance across all asset classes.

**2.6 Conclusions**

2008 has served as a reminder of the benefits of diversification. The very nature of a financial crisis lends itself to sharp falls across a range of asset sectors. Those with large holdings in risky assets will have found themselves much poorer by year end.

Finally, investors will need to be disciplined over the coming year and stick to their long term strategic asset allocations. Historically, the worst falls have often been followed by strong rebounds as shown below.



It remains to seen what 2009 will bring.

**Appendix – Correlation Tables**

The following correlation tables are from the preceding charts for the 3 years to 31 December 2008.

**Correlation by Geographic Region**

	Aus NZSX50	Aus ASX200	US S&P500	UK FTSE	German DAX	Japanese Nikkei	MSCI
NZSX50	100%						
Aus ASX200	79%	100%					
US S&P500	79%	90%	100%				
UK FTSE	76%	90%	85%	100%			
German DAX	83%	89%	90%	87%	100%		
Japanese Nikkei	72%	82%	82%	85%	84%	100%	
MSCI	82%	94%	98%	92%	94%	90%	100%

**Correlation by Style**

	NZSX50	MSCI	MSCI Small Cap	MSCI Emerging	MSCI Growth	MSCI Value
NZSX50	100%					
MSCI	82%	100%				
MSCI Small Cap	76%	96%	100%			
MSCI Emerging	68%	88%	86%	100%		
MSCI Growth	78%	99%	96%	89%	100%	
MSCI Value	83%	98%	93%	83%	94%	100%

**Correlation by Income Assets**

	NZSX50	NZ Govt Bond	NZ Corp Bond	LGAI	WGBI	NZ Cash
NZSX50	100%					
NZ Govt Bond	-30%	100%				
NZ Corp Bond	-19%	74%	100%			
Lehman Global Agg	-20%	61%	45%	100%		
World Govt Bond	-42%	65%	50%	92%	100%	
NZ Cash	-31%	5%	-4%	-8%	3%	100%

**Table 1 – NZ and Australian Share Funds**

Manager	3 Months		1 Year		3 Years		5 Years		3 Years						
	%	Rank	% p.a.	Rank	% p.a.	Rank	% p.a.	Rank	Excess Return % p.a.	Rank	Tracking Error % p.a.	Rank	Inform'n Ratio % p.a.	Rank	
<b>NZ</b>															
GSJBW	NZ Shares	-3.4	(1)	-19.0	(1)	3.2	(1)	9.9	(1)	8.5	(1)	6.6	(3)	1.3	(1)
MAM	NZ Shares	-8.3	(2)	-23.0	(2)	-0.4	(2)	n.a		4.8	(2)	n.a		n.a	
TAM	NZ Shares	-11.5	(4)	-29.8	(4)	-3.7	(3)	4.7	(3)	1.5	(3)	5.8	(2)	0.3	(3)
TYN	Core Share	-10.2	(3)	-29.7	(3)	-4.5	(4)	5.1	(2)	0.8	(4)	2.4	(1)	0.3	(2)
<b>Indexed</b>															
AMPCI	NZ Eq Passive	-11.8		-31.1		-5.1		3.0		0.1		0.2		0.4	
SMS	NZ Top 10	-9.1		-31.0		-9.2		-1.2		-3.9		6.9		-0.6	
SMS	NZ Top 50	-12.6		-30.9		-4.5		n.a		0.7		8.7		0.1	
SMS	NZ Mid Cap	-11.8		-30.3		-0.4		4.1		4.8		10.8		0.4	
SMS	Aus Mid Cap	-27.9		-45.0		-6.0		n.a		-0.8		15.4		-0.1	
SMS	Aus Top 20	-12.6		-30.1		2.9		8.3		8.1		14.9		0.5	
<b>Australasian</b>															
AB	High Growth	-7.7	(1)	-27.5	(5)	-1.6	(3)	6.3	(4)	3.6	(3)	3.8	(6)	0.9	(5)
AMPCI	Active	-11.3	(7)	-26.8	(2)	-0.6	(1)	6.1	(5)	4.6	(1)	2.1	(1)	2.2	(1)
Arcus		-9.9	(6)	-26.9	(4)	-1.6	(4)	n.a		3.6	(4)	3.4	(5)	1.0	(4)
BAM		-8.8	(2)	-25.6	(1)	-1.3	(2)	7.0	(3)	4.0	(2)	3.0	(3)	1.3	(3)
GSJBW	Core Equity	-8.9	(3)	n.a		n.a		n.a		n.a		n.a		n.a	
ING	Aust Share	-9.3	(5)	-28.3	(6)	-2.8	(6)	7.2	(2)	2.4	(6)	3.3	(4)	0.7	(6)
Mercer	Trans-Tasman	-9.1	(4)	-26.8	(3)	-2.1	(5)	7.3	(1)	3.1	(5)	2.4	(2)	1.3	(2)
Average		-9.3		-27.0		-1.7		6.8		3.5		3.0		1.3	
<b>Non core</b>															
AMPCI	Strategic	-11.1		-24.7		2.8		8.2		8.0		14.6		0.5	
FIS	NZ Growth	-18.5		-40.9		-1.5		8.6		3.7		12.6		0.3	
GSJBW	Trans-Tasman	-9.2		-27.4		1.9		10.6		7.2		8.7		0.8	
ING	ESF	-8.2		-27.0		-1.2		n.a		4.0		8.0		0.5	
MAM	Peak	-4.0		-14.7		n.a		n.a		n.a		n.a		n.a	
MNT		-7.4		-23.4		n.a		n.a		n.a		n.a		n.a	
TYN	Aggressive	-5.4		-18.1		13.0		19.0		18.2		9.7		1.9	
<b>Indexes</b>															
NZSX50 (incl IC's)		-11.9		-31.6		-5.2		3.3							
ASX200		-18.3		-38.4		-3.9		6.9							
Cash + 5% pa		3.2		13.8		13.3		12.6							

**Table 2 – Other Funds**

Manager		3 Months		1 Year		3 Years		5 Years		3 Years	
		FX %	%	% p.a.	% p.a.	% p.a.	% p.a.	Volatility			
ING	Topaz	100.0	-5.0	-9.0		4.3		6.6			6.1
ING	Topaz +	100.0	-11.7	-24.5		0.3		5.3			12.3
ING	Onyx	100.0	-4.1	-4.7		5.4		6.3			4.5
MAM	Aggressive	n.a	1.9	3.1		n.a		n.a			n.a
MGH		0.0	6.7	3.1		3.7		8.6			11.6
Mercer		0.0	-8.7	-6.9		5.0		n.a			12.6
TAM	Commodity	100.0	-31.4	-36.3		-8.6		3.4			23.7
TYN	JPMAAM	100.0	-11.2	-11.2		5.0		7.7			7.2
TYN	Options	n.a	-23.1	-6.1		7.3		11.2			11.7
WEL	Commodity	0.0	-21.7	-16.8		1.8		7.4			19.1
Average			-10.8	-10.9		2.7		7.0			12.1
<b>Index</b>											
HFR FoF Hedged NZD			-8.2	-16.2		2.5		6.0			

**Notes:**

1. Excess return is defined as gross return less benchmark return, i.e. value added.
2. Tracking error is the standard deviation of value added.
3. Information Ratio is value added divided by tracking error, i.e. risk adjusted performance.
4. The numbers shown are in some cases gross equivalents of the net returns achieved by the manager. Accordingly, for a gross investor the returns realised may be different to those shown above.
5. Relative outperformance may be due to the nature of the fund rather than to superior performance.
6. The index share funds are benchmarked against the standard share index and not against their own index.

Table 3 – Global Share Funds (unhedged)

Manager	3 Months		1 Year		3 Years		5 Years		3 Years						
	%	Rank	% p.a.	Rank	% p.a.	Rank	% p.a.	Rank	Excess Return % p.a.	Rank	Tracking Error % p.a.	Rank	Inform'n Ratio % p.a.	Rank	
<b>Core</b>															
AB	Style Blend	-16.8	(13)	-36.3	(13)	-9.1	(13)	-0.1	(10)	-6.3	(13)	4.8	(11)	-1.3	(12)
AMPCI	FDF Int'l Share	-12.6	(9)	-26.8	(10)	-4.9	(9)	1.9	(6)	-2.2	(9)	3.1	(6)	-0.7	(8)
Arcus	Global Eq	-10.9	(6)	-26.1	(8)	-3.1	(6)	n.a		-0.3	(6)	4.7	(10)	-0.1	(5)
BNP	Global Eq	-6.1	(1)	-12.6	(1)	2.4	(1)	6.2	(1)	5.2	(1)	4.0	(8)	1.3	(1)
ING	Int'l Eq	-9.3	(4)	-19.8	(3)	-1.2	(3)	3.7	(3)	1.6	(3)	2.4	(3)	0.7	(2)
INT	Int'l Shares	-13.0	(10)	-26.4	(9)	-5.8	(11)	0.4	(9)	-3.1	(11)	2.5	(4)	-1.2	(10)
Jana	Core Global	-13.9	(11)	-31.4	(12)	-6.3	(12)	n.a		-3.6	(12)	4.6	(9)	-0.8	(9)
Mercer	Global Shares	-11.5	(7)	-25.2	(6)	-4.2	(7)	2.4	(5)	-1.4	(7)	2.7	(5)	-0.5	(6)
MLC	NCIT	-14.0	(12)	-28.3	(11)	-5.2	(10)	1.3	(8)	-2.4	(10)	3.9	(7)	-0.6	(7)
RUS	ISF	-11.7	(8)	-25.5	(7)	-4.7	(8)	1.5	(7)	-2.0	(8)	1.5	(1)	-1.3	(11)
RUS	GOF	-10.8	(5)	-23.1	(4)	-2.4	(5)	n.a		0.4	(5)	n.a		n.a	
TYN	Capital Int'l	-9.3	(3)	-19.2	(2)	-2.3	(4)	2.9	(4)	0.5	(4)	2.3	(2)	0.2	(4)
WEL	Opportunities	-7.3	(2)	-24.2	(5)	-0.5	(2)	4.5	(2)	2.3	(2)	5.3	(12)	0.4	(3)
Average		-11.3		-25.0		-3.6		2.5		-0.9		3.5		-0.3	
<b>Value</b>															
AB	Value	-16.5	(6)	-35.0	(7)	-8.3	(7)	0.7	(6)	-5.5	(7)	5.3	(6)	-1.0	(7)
DFA	Value	-16.7	(7)	-27.0	(6)	-5.0	(6)	2.8	(4)	-2.3	(6)	5.1	(5)	-0.4	(6)
GMO	Equity Trust	-9.2	(3)	-18.6	(2)	-2.2	(4)	3.4	(3)	0.6	(4)	1.6	(1)	0.4	(3)
TAM	International	-10.4	(4)	-23.3	(4)	-2.3	(5)	2.8	(5)	0.4	(5)	8.7	(7)	0.1	(5)
TAM	Marathon	-12.8	(5)	-25.3	(5)	-1.7	(3)	3.9	(2)	1.1	(3)	4.0	(4)	0.3	(4)
TEM		-5.8	(1)	-20.5	(3)	-1.1	(2)	4.0	(1)	1.6	(2)	3.6	(3)	0.5	(2)
WEL	Value	-7.4	(2)	-16.1	(1)	1.8	(1)	n.a		4.5	(1)	3.0	(2)	1.5	(1)
Average		-11.3		-23.7		-2.7		2.9		0.1		4.5		0.2	
<b>Growth</b>															
AB	Research	-16.8	(4)	-37.5	(4)	-9.8	(4)	-0.9	(3)	-7.0	(4)	18.1	(4)	-0.4	(3)
BNP	Growth	-8.3	(1)	-19.0	(2)	-0.9	(2)	4.1	(1)	1.9	(2)	14.9	(3)	0.1	(2)
GMO	Growth	-8.8	(2)	-17.2	(1)	-0.6	(1)	n.a		2.2	(1)	2.5	(1)	0.9	(1)
WEL	Growth	-16.0	(3)	-37.0	(3)	-7.0	(3)	-0.8	(2)	-4.2	(3)	8.3	(2)	-0.5	(4)
Average		-12.5		-27.7		-4.6		0.8		-1.8		11.0		0.0	
<b>Indexed</b>															
AMPCI	WINZ	-10.1		-18.9		-2.8		1.8		0.0		1.6		0.0	
VAN		-10.3		-21.0		-2.9		2.1		-0.2		0.4		-0.4	
<b>Other</b>															
AMPCI	Extended	-13.6		-25.7		-3.3		5.4		-3.9		12.3		-0.3	
AMPCI	S Responsible	-18.2		-27.9		-4.2		0.7		-1.4		5.9		-0.2	
Jana	High Alpha	-16.7		-31.7		-7.2		n.a		-4.5		6.2		-0.7	
LMI	Emerging	-23.1		-41.3		-0.4		9.1		-1.0		4.0		-0.3	
NZAM	Multi-Manager	2.9		-3.9		4.7		7.7		7.5		8.0		0.9	
<b>Indexes</b>															
MSCI 0% hedged		-10.5		-21.4		-2.8		2.4							
MSCI 100% hedged		-21.8		-38.3		-7.0		2.6							
MSCI Emerging 0% hedged		-19.0		-37.8		0.6		10.5							

Table 4 – Property

Manager	3 Months		1 Year		3 Years		5 Years		3 Years						
	%	Rank	% p.a.	Rank	% p.a.	Rank	% p.a.	Rank	Excess Return % p.a.	Rank	Tracking Error % p.a.	Rank	Inform'n Ratio % p.a.	Rank	
<b>NZ Listed</b>															
AB	NZ Listed	-9.9	(1)	-21.4	(1)	-1.1	(2)	7.6	(2)	0.7	(2)	1.5	(1)	0.4	(1)
ING	Prop Securities	-12.5	(3)	-24.5	(3)	-1.0	(1)	8.8	(1)	0.8	(1)	2.9	(2)	0.3	(2)
MNT	Australasian	-10.7	(2)	-22.5	(2)	n.a		n.a		n.a		n.a		n.a	
Average		-11.0		-22.8		-1.1		8.2		0.7		2.2		0.4	
<b>NZ Direct</b>															
AMPCI	AIF P	-5.8	(2)	-3.7	(2)	14.3	(2)	14.7	(2)	-2.4	(2)	6.0	(1)	-0.4	(2)
TAM		1.5	(1)	4.0	(1)	16.6	(1)	16.7	(1)	-0.1	(1)	9.4	(2)	0.0	(1)
Average		-2.1		0.2		15.5		15.7		-1.2		7.7		-0.2	
<b>Global</b>															
AMPCI	GPSF	-38.5	(3)	-46.7	(3)	-10.6	(1)	3.9	(1)	0.9	(1)	5.1	(3)	0.2	(1)
ING	Ex Australia	-37.6	(2)	-44.4	(1)	-12.1	(2)	n.a		-0.6	(2)	4.4	(2)	-0.1	(2)
RUS	Global R.E.	-35.2	(1)	-45.6	(2)	n.a		n.a		n.a		n.a		n.a	
TYN		-40.5	(4)	-51.8	(4)	-15.0	(3)	-0.8	(2)	-3.7	(3)	3.8	(1)	-1.0	(3)
Average		-37.9		-47.1		-12.6		1.6		-1.1		4.5		-0.3	
<b>Indexes</b>															
NZSE Property		-9.6		-20.8		-1.8		6.4							
UBS Global Property		-37.1		-43.6		-11.5		2.8							

**Table 5 – Bond and Cash Funds****5.1 New Zealand Bonds**

Manager		3 Months		1 Year		3 Years		5 Years		3 Years					
		%	Rank	% p.a.	Rank	% p.a.	Rank	% p.a.	Rank	Excess Return % p.a.	Tracking Error Rank	Inform'n Ratio % p.a.	Rank		
AB	NZ Fixed Income	7.2	(2)	17.5	(2)	8.4	(3)	7.5	(3)	0.6	(3)	1.4	(2)	0.4	(3)
AMPCI	AIF F	8.5	(1)	20.5	(1)	9.6	(1)	8.2	(1)	1.7	(1)	1.7	(3)	1.0	(2)
Arcus		7.1	(3)	14.9	(5)	7.9	(4)	n.a		0.1	(4)	2.4	(5)	0.1	(4)
ING	NZ Fixed Plus	0.4	(7)	7.4	(7)	6.2	(6)	6.8	(5)	-1.6	(6)	3.0	(6)	-0.5	(6)
ING	NZ Govt Bonds	5.4	(6)	15.3	(4)	n.a		n.a		n.a		n.a		n.a	
TAM		6.9	(4)	17.2	(3)	9.0	(2)	7.9	(2)	1.2	(2)	1.0	(1)	1.1	(1)
TYN		5.6	(5)	12.7	(6)	7.8	(5)	7.4	(4)	0.0	(5)	1.9	(4)	0.0	(5)
Average		5.9		15.1		8.1		7.6		0.3		1.9		0.3	
<b>Index</b>															
	NZ Govt Stock	6.0		15.8		7.8		7.2							
	NZ All Swaps	9.3		21.5		n.a		n.a							

**5.2 Global Bonds (hedged)**

Manager		3 Months		1 Year		3 Years		5 Years		3 Years					
		%	Rank	% p.a.	Rank	% p.a.	Rank	% p.a.	Rank	Excess Return % p.a.	Tracking Error Rank	Inform'n Ratio % p.a.	Rank		
AB		0.1	(7)	-0.6	(7)	n.a		n.a		n.a		n.a		n.a	
AMPCI	AIF Global Fixed	-5.1	(9)	-8.0	(9)	0.9	(8)	3.9	(6)	-7.7	(8)	4.8	(8)	-1.6	(8)
Arcus		2.3	(3)	3.7	(5)	6.4	(4)	n.a		-3.4	(5)	3.0	(5)	-1.1	(5)
BLK	Global Euro	1.0	(5)	2.3	(6)	5.3	(6)	6.9	(4)	-3.3	(4)	2.5	(3)	-1.3	(7)
DFA		3.3	(2)	8.9	(2)	8.1	(2)	n.a		-1.7	(2)	2.8	(4)	-0.6	(2)
ING	Int'l Fixed Int.	8.2	(1)	16.6	(1)	10.5	(1)	10.2	(1)	2.0	(1)	1.5	(1)	1.4	(1)
RUS	Global Bond	0.8	(6)	4.0	(4)	5.5	(5)	7.3	(3)	-4.3	(6)	3.4	(6)	-1.2	(6)
TAM	PIMCO	-1.9	(8)	-1.8	(8)	3.8	(7)	6.0	(5)	-4.7	(7)	4.4	(7)	-1.1	(4)
TYN	FFTW	2.1	(4)	6.6	(3)	6.7	(3)	7.9	(2)	-1.8	(3)	1.9	(2)	-1.0	(3)
Average		1.2		3.5		5.9		7.0		-3.1		3.0		-0.8	
<b>A\$ Hedged</b>															
	INT	-4.6		-1.1		n.a		n.a		n.a		n.a		n.a	
	Mercer	4.0		9.0		6.2		7.1		-3.7		7.4		-0.5	
<b>Index</b>															
	Lehman	5.6		11.2		8.5		8.6							
	Citigroup WGBI	7.4		15.2		9.8		9.6							

**5.3 Cash**

Manager		3 Months		1 Year		3 Years		5 Years		3 Years					
		%	Rank	% p.a.	Rank	% p.a.	Rank	% p.a.	Rank	Excess Return % p.a.	Tracking Error Rank	Inform'n Ratio % p.a.	Rank		
AB	NZ Cash	2.0	(6)	8.6	(6)	8.2	(7)	7.6	(7)	-0.1	(7)	0.2	(4)	-0.6	(7)
AMPCI	ASIT Cash	2.2	(2)	9.2	(3)	8.6	(4)	7.8	(4)	0.2	(4)	0.2	(3)	1.2	(3)
AMPCI	Strategic Income	2.1	(4)	8.5	(7)	8.6	(3)	8.3	(2)	0.3	(3)	0.8	(8)	0.4	(6)
Arcus		2.1	(5)	8.1	(8)	8.1	(8)	7.5	(8)	-0.3	(8)	0.3	(7)	-0.8	(8)
ING	Cash Plus	1.9	(8)	9.3	(2)	9.0	(1)	8.7	(1)	0.7	(1)	0.3	(5)	2.5	(1)
Mercer	NZ Money Mkt	2.2	(2)	9.2	(4)	8.4	(5)	7.7	(6)	0.1	(5)	0.2	(2)	0.6	(5)
TAM		2.0	(7)	9.0	(5)	8.4	(6)	7.7	(5)	0.1	(6)	0.1	(1)	1.1	(4)
TYN		2.3	(1)	9.6	(1)	8.8	(2)	8.0	(3)	0.4	(2)	0.3	(6)	1.4	(2)
Average		2.1		8.9		8.5		7.9		0.2		0.3		0.7	
<b>Index</b>															
	90 Day Bank Bill	1.9		8.8		8.3		7.6							

**Table 6 – Wholesale Balanced Funds****6.1 Returns**

Manager	Gross							
	3 Months		1 Year		3 Years		5 Years	
	%	Rank	% p.a.	Rank	% p.a.	Rank	% p.a.	Rank
AMPCI	-5.7	(2)	-10.5	(1)	3.5	(1)	7.1	(1)
Arcus	-7.6	(3)	-18.9	(5)	0.6	(5)	6.1	(4)
ING	-8.2	(4)	-14.6	(4)	0.8	(4)	6.2	(3)
Mercer	-10.5	(6)	-19.5	(6)	-1.2	(6)	4.3	(6)
TAM	-5.7	(1)	-11.8	(2)	3.5	(2)	6.8	(2)
TYN	-8.8	(5)	-14.2	(3)	1.1	(3)	6.0	(5)
Average	-7.7		-14.9		1.4		6.1	

**6.2 Asset Allocation**

(Shaded figures indicate an increased asset allocation since the previous quarter)

Manager	NZ		Global		Alt Assets	Growth Assets	Bonds		Cash	Income Assets	Currency Alloc
	Shares	Shares	NZ	Global			NZ	Global			
AMPCI	13.4	34.9	12.0	1.2	0.0	61.6	22.4	9.9	6.1	38.4	22.0
Arcus	17.1	35.4	1.9	3.2	5.7	63.4	5.0	17.9	13.8	36.7	17.7
ING	19.9	30.7	9.8	2.4	2.1	65.0	12.6	16.2	6.1	35.0	18.6
Mercer	12.8	32.5	4.0	5.9	9.9	65.1	5.6	24.1	5.2	34.9	16.3
TAM	7.5	37.6	14.9	0.0	0.0	60.0	6.4	20.3	13.4	40.0	29.2
TYN	18.1	30.6	0.0	3.8	7.5	60.0	20.5	17.5	2.1	40.0	15.3
Average	14.8	33.6	7.1	2.7	4.2	62.5	12.1	17.6	7.8	37.5	19.8

**Table 7 – Additional information**

(Funds under management relate to the total organisation)

	Acronym	Total FUM	Manager	Acronym	Total FUM
AllianceBernstein	AB	n.a	Milford Asset Management	MAM	240.0
Arcus Investment Management	Arcus	3,639.0	MLC	MLC	n.a
AMP Capital Investors	AMPCI	10,786.0	MGH Asset Management Ltd	MGH	n.a
Brook Asset Management	BAM	1,068.6	Mercer	Mercer	1,334.4
BlackRock Investment Management	BLK	n.a	Mint Asset Management	MNT	n.a
BNP Paribas Investment Management	BNP	n.a	New Zealand Assets Management	NZAM	595.0
Dimensional Fund Advisors	DFA	n.a	Russell Investment Group	RUS	n.a
Fisher Funds Management	FIS	515.4	SmartShares	SMS	246.9
GMO	GMO	11,497.0	Tower Asset Management	TAM	3,528.0
ING	ING	7,670.6	Templeton	TEM	n.a
Intech	INT	n.a	Tyndall Investment Management	TYN	n.a
Jana	Jana	n.a	Vanguard Investments Australia	VAN	71,904.4
Goldman Sachs JBWere	GSJBW	n.a	Wellington Management Company	WEL	n.a
Legg Mason, Inc.	LMI	n.a			

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