"HOW WE INVEST" WHITE PAPER

ASSESSING MANAGER CAPACITY – THE CASE OF NEW ZEALAND EQUITIES

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14 SEPTEMBER 2015

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PREFACE

Capacity is an important but often ill-defined concept, relating to how much money can be invested in an actively managed strategy without harming that strategy's returns. This paper sets out how we evaluate the capacity of active managers in NZ Equities. It is an important consideration for the New Zealand Superannuation Fund (the 'Fund'), as the Fund's allocation to NZ equities accounts for about 2% of total NZ equity market capitalisation.

Developing these papers has helped us provide a consistent vision to staff, to focus our time and resources appropriately and to avoid re-litigating some of the fundamental investment questions that investors deal with on an ongoing basis. I hope they also enhance your understanding of how we go about investing the NZ Super Fund.

Matt Whineray
Chief Investment Officer

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WHY IS CAPACITY IMPORTANT?

Compared to other developed countries' equity markets, the NZ share market is very small and quite illiquid. Capacity is therefore particularly important for active managers in this market, despite recent strong returns increasing the market's size. Regardless of size, an active manager must be able to execute their best ideas (in the form of trades) quickly, at low cost, for their strategy to add value over the benchmark. In other words, the ability for the manager to execute trades to achieve their desired portfolio holdings relies on the available liquidity in the market. As the manager's assets under management (AUM) increases, the amount of trading volume may have an impact on stock prices. If the manager has more to sell than the market can readily absorb, the stock's price will likely drop. Conversely, if the manager wants to buy more than what is available, the price that must be paid will likely rise. In either case, the manager's ability to add value is compromised. Therefore, increasing AUM tends to result in lower returns.

DEFINING CAPACITY

The size of a manager's assets under management is the main contributing factor to capacity. The larger the size of active trades, the more likely those trades will encounter capacity issues. There are other contributing factors to manager capacity. For instance, periods of increased market liquidity (as in the past few years) improve manager capacity on the whole; a manager's specific investment style (e.g. a small-capitalisation value manager) also affects how much can be traded in desired market segments.

Manager capacity can be defined in one of three ways[1]:

1. The amount of AUM beyond which the strategy is no longer able to achieve the stated investment return objective. For example, a manager may expect to deliver a 3% gross return above the benchmark (3% 'alpha') and having an AUM of more than, say, $400M would prevent the manager from achieving that target. The manager capacity would be $400M in that case.
2. The amount of AUM that maximises total value add, which is calculated as alpha times AUM. Continuing with the example above, the maximum may happen at an AUM of $800M and an alpha of 2%, giving a total value add of $16M, which is higher than $12M (=$400M x 3%) above.
3. The amount of AUM that reduces alpha and hence total value add to zero. At this level of AUM, transaction costs reduce the manager's alpha to zero, leaving no value add to investors. The manager would still benefit from earning a higher total fee at the expense of investors, although this is unlikely to be a viable business model.

The first definition is most appropriate from the **investor's** perspective. That is because the level at which AUM begins to detract from a manager's ability to achieve the stated active return objective for a strategy, is most relevant to the investor in that strategy.

The other two definitions are more relevant to the **manager's** perspective as in both cases they seek to maximise AUM and therefore fee revenue.

If a manager is using the **second** definition of capacity, a large single investor (or more likely group of investors) would be better off splitting their capital between two managers, with similar alpha, who are working to the **first** definition of capacity. That is because the combined value-add of the two managers to the investor(s) would be greater than the value-add of the single manager ($24m versus $16m in the example above).

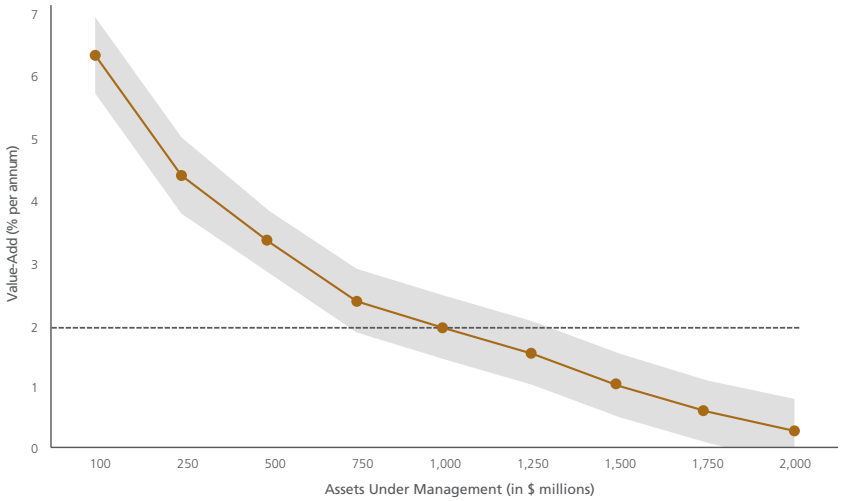
Capacity under the **third** definition is clearly irrelevant to investors - they would be better investing with a passive manager who produces the same result (zero alpha) for lower fees.

1 Vangelisti, M., 2006, "Capacity of an Equity Strategy", Journal of Portfolio Management, Winter, p44-50.

TYPICAL INVESTMENT MANAGER CAPACITY PROFILE

The solid line in Figure 1 shows the effect of increasing AUM on the manager's potential for adding value relative to a benchmark: the higher the AUM, the smaller the value add. The dashed line shows the manager's alpha objective which, in this example, is 2% per annum. The implication is that the manager's capacity is $1 billion.

FIGURE 1 – TYPICAL MANAGER CAPACITY PROFILE



It is not straightforward to estimate the relationship between AUM and value add for any given manager. This is because a change in AUM leads to a change in the size of active positions in the manager's portfolio, and the trading activities consequently required to implement the manager's strategy. While historical data may provide a guide to the future profitability of the manager's strategy, history may not be representative of liquidity conditions and trading volumes in coming years. There is accordingly a range of uncertainty around the capacity estimate, illustrated by the shaded area around the solid line in Figure 1.

ESTIMATING CAPACITY

Manager capacity assessments can be done with varying degrees of complexity. Most simply, a rule-of-thumb such as 1% of market size can be used (managers commonly do this). While easy to understand and implement, that measure does not discriminate among trading strategies with different turnover requirements (e.g. non-market cap versus market-cap) or different styles (e.g. large-cap versus small-cap). Also, these capacity estimates are tied to changes in market size, not what drives managers' best ideas (their value-add).

More complex approaches involve back-testing: using historical positions and/or simulated positions that take into account the manager's investment process. Simulated positions are particularly useful if the manager does not have a long history of operation. The Fund prefers this approach for assessing the capacity of NZ Equities managers. We note that the assessment relates to all of the manager's AUM being run under that strategy, regardless of whether it is in separate mandates or collective vehicles for retail or wholesale clients.

HOW WE ASSESS CAPACITY FOR NZ EQUITIES MANAGERS

We start with the actual portfolio positions that were held by the manager over a particular time period (e.g. monthly portfolio positions from 2009 to 2014). We then simulate the trading of those portfolio positions from period to period based on the manager's actual AUM. We do not have the actual prices at which every stock was traded and so we assume the trades are executed at the actual end-of-period prices. We believe that this assumption is reasonable, since the simulated returns match closely the actual returns achieved by the managers.

We then vary the size of the actual AUM and rerun the simulation. As AUM increases, the size of trades required to achieve the desired active positions for the portfolio also increases. Some of these simulated trades, especially those involving smaller or less liquid stocks, will run into capacity issues at given traded volumes during that time period.

In principle, additional trades could be transacted at lower prices. However, we do not know what the price effects might have been at these increased volumes, especially in the NZ share market which is a relatively illiquid market for most stocks. Instead of making bold assumptions on highly uncertain price effects, we choose to restrict the volume that any manager could trade for any stock to 10%-15%[2] of the market transacted volume, assuming that market prices would not have been affected at this volume.

Nevertheless, as the AUM for a manager goes up, the manager is increasingly unable to fully implement their investment strategy. Some active positions will fall short of the manager's desired allocation. To the extent that these active positions add value, the manager's expected alpha is degraded as AUM increases, resulting in a capacity profile similar to that in Figure 1.

The change in manager performance allows us to estimate where the manager's capacity lies, while the sensitivity of that estimate to the assumed transaction limits can help us establish a range of uncertainty around our capacity estimate. We perform the analysis outlined above for each of our current and potential New Zealand Equities managers in deciding our manager makeup for the Fund's allocation to New Zealand Equities.

CONCLUSION

Capacity is an important investor issue for the small, relatively illiquid market that exists in New Zealand. There are a number of ways that market participants and observers can, and do, evaluate capacity. However, we feel that the appropriate approach should reflect the investors' perspective, which is the approach we have taken to assess capacity for New Zealand Equities managers.

Finally, we note that our approach is not intended to produce a hard conclusion about what capacity is for a particular active New Zealand equities strategy (and for the manager running that strategy). Rather, it allows us to engage in a robust conversation about capacity with the manager.

2 This is consistent with the 15% of stock volume yardstick commonly used by market participants with respect to company on-market share buy-backs. It is usually regarded as a trading level below which prices are likely not to be affected.