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Towards Financial System Integrity

Submission to the Commonwealth Treasury

Optimal Portfolio Disclosure The Future of Investment Management Reporting for Superannuation in Australia

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Optimal Portfolio Disclosure

Submission to The Commonwealth Treasury on behalf of the Centre for International Finance and Regulation (CIFR), UNSW Australia

Based on the working paper “Portfolio Holdings Disclosure: The Goldilocks Conundrum” by Zhe Chen, David R. Gallagher and Adrian D. Lee

Centre for International Finance and Regulation (CIFR)

The Centre for International Finance and Regulation (CIFR) is a \$41 million Centre of Excellence, sponsored by the Commonwealth and NSW Governments, representing a strategic link between academia, financial regulators, policy makers and industry, promoting financial market developments, best practice policy and regulatory responses, through leading research and education.

Background to Our Submission

We are very pleased to have the opportunity to contribute to your review of the superannuation industry, and recognise the significance of what the review is seeking to do. Among other things, led by Professor Gallagher, our research over the past decade has relied on the goodwill and generosity of many investment institutions in the industry to work with more granular data than is commonly available in the industry. The fact that we have had to rely on goodwill, and that the industry standards have not improved, is a huge disappointment. We recognise that innovation takes time in some cases, but the fact that our research, along with the research of our colleagues in Australia and overseas, has been able to develop to the degree it has, demonstrates the impact we have been able to make notwithstanding the barriers to data we have faced. The investment management industry has been tremendously supportive of our efforts, and the firm that deserves the most recognition for pioneering this effort is Mercer Investment Consulting. The specific individuals at Mercers who have assisted us over the last ten years include Greg Liddell, Russell Clarke, David Carruthers and Tony Cole. We also acknowledge the support of SIRCA and the Capital Markets CRC in supporting many research activities that emanated from our proprietary database development and research activities over many years, and the Australian Research Council (ARC) that funded an original research grant (DP0346064) with Chief Investigators Professor David R. Gallagher and Professor Peter L. Swan.

The Importance of Portfolio Holdings Disclosure

Given the significant assets under management and the important role of professional investment firms in providing investment services to a range of clients (e.g. retail, institutional, corporate), fund managers’ activities are continually scrutinised by regulators, investors, consultants and ratings houses. Australia is fortunate to have a well-functioning, healthy and stable financial system. As performance measurement is critical to the process of determining whether the investment objectives of the investor are being met, any performance review framework will require that sufficient data is available to make a clearer assessment about overall performance, and the sources of performance generation.

Participants in the investment industry provide regular data feeds concerning fund performance to investors, and performance surveys by professional asset consultants provide a simple and effective means of understanding the performance of fund managers against their peer group at monthly or quarterly frequency (at a small time lag). Such information then enables investors to review their investment manager with respect to performance against the industry benchmark (e.g. S&P/ASX 200) as well as the distribution of performance among competitors. In addition, investors may have available to them the professional insights of either asset consultants and/or ratings houses concerning the investment performance of institutions, which is summarily provided in terms of a 'recommended' list or ratings system. For example, Morningstar uses a five-star rating system as a measure of investment quality. In Australia, such ratings mechanisms are typically a combination of both qualitative and quantitative screens of the fund management entity, with respect to firm's capability in providing investment services within specific asset classes or products.

Much research in academia has sought to better understand how investment performance should be measured (as a means of understanding whether managerial skill truly exists, and therefore the value of the services being provided), as well as the impact of performance on the investment behaviour of investors. Research clearly shows that investors are highly responsive to performance, indeed past period 'winning' fund managers experience a disproportionate increase in next period fund flows compared to poorly performing fund managers.

While this pattern highlights rationality in behaviour, the process of disciplining poor performers plays an integral part in ensuring a healthy, vibrant and well-functioning investment market. Research also clearly shows that short-term persistence in fund performance exists, whereby past period winning managers/funds tend to repeat the relative performance against competitors in future periods. In other words, the track record of a fund manager may have some predictive ability.

The Motivation for Higher Granular Performance Analytics

While much research has been achieved concerning manager performance and behaviour, conjecture exists about whether investors and professional performance analysts have sufficient data from which to make accurate inferences concerning past period performance. We need to understand whether improved inferences can lead to the required action being taken in a more efficient period of time. For example, if a superannuation fund needs to replace a poorly performing fund manager, then what analytics may improve the precision and timing of the decision, and therefore mitigate potential and protracted underperformance? Such activity ensures that performance is disciplined by the market in a timely and critically important manner.

Much of our research over the past years has been to ponder whether professional investors can achieve improved precision in their decision making through the use of more granular portfolio management data compared to the aggregated data currently available within the industry.

There are two interesting analogies outside of portfolio management which can be used to illustrate why increased granularity in information is valuable in making assessments about performance. In a sporting context, if we were told that the world number 1 tennis player had won the Australian Open Tennis Final against the world number 2 player, that

would convey very simple but effective information that the #1 player played better tennis in that match. However, astute analysts would then be interested to know about the quality of the victory, and the breakdown of how many sets were played, and the score line in each set. One may even take the level of analysis even further to determine the number of unforced errors, first serve percentages, and forehand/backhand winners for both players. Increased granularity can enable improved inferences about the quality of the players involved and how the match was won or lost.

In a business context, if we were provided with only the net profit after interest, tax, depreciation and amortisation (EBITDA) of a listed corporation on the ASX, and we had no other information concerning the profitability of the firm, to what extent could analysts make precise inferences concerning the profit performance of the firm? A simple one-line number about profitability may be all that is needed to indicate whether the firm generated a positive earnings result. But further questions would inevitably arise about whether the profit result was indeed a good outcome. This could be assessed on two levels — first, with respect to the firm itself, and the quality of the earnings (cash versus accruals; abnormal items etc.), and second, with respect to other benchmarks, such as percentage growth in earnings from last year and comparable performance of other firms within the same industry sector. In short, the best inferences and decisions are not conclusively made in terms of absolutes alone, but require more granular information that shows how the result was achieved.

In the context of portfolio management, performance is typically reported at the total fund level, typically measured at a monthly frequency.¹ Such data then provides the market with an understanding of the performance in the period, and other assessments can then be considered relative to the appropriate benchmark index, and against a suitably defined peer group of competing fund managers. Investment performance for the fund is achieved with respect to the trading activity of managers, where the sum of the trades give rise to the portfolio holdings in each of the securities held by the fund. The relative weights of the securities in the portfolio on a time-weighted basis then allow us to measure the aggregate return generated by the fund. However, unlike the United States, in Australia we do not have a mandated disclosure regime related to portfolio holdings data, which would otherwise ensure more granular information is available on the management processes attributed to collective investment vehicles (i.e. unique funds). While fund managers typically provide institutional investors and asset consultants with periodic portfolio holdings, there remains no formalised/legal requirement to disclose portfolios.

The U.S. Portfolio Disclosure Environment

The US Securities and Exchange Commission (SEC) has for many years required mutual funds and investment companies to disclose their security holdings on a semi-annual basis, under the Securities Act (1933) and the Investment Company Act (1940). More recently, the SEC mandates a quarterly reporting of portfolio holdings of funds, not more than 60 days after the funds' fiscal quarter. These amendments were viewed as a significant opportunity to improve the disclosure regime operating in the United States and to improve the transparency available to investors. A similar disclosure regime operates in Canada. While such improvements are recognized, further opportunity

¹ Indeed, performance surveys available to institutional investors are typically measured on a pre-tax and pre-expenses basis, but this is a separate issue.

remains to enhance the period frequency of disclosure of fund positions (provided sufficient lag was also encapsulated in law). It is here where Australia could benefit from the significant advances that have been achieved in the United States.

There are two important sides to the debate concerning mandated portfolio disclosure. In the case of advocates supporting a disclosure regime, investors are argued to have more detailed information that allows them to better monitor their investments delegated to professional fund managers. As part of the monitoring process, such a system provides investors having exposure to multiple managers with an opportunity to identify overlaps in holdings and to improve their asset allocation decision making. This is particularly important if an investor needs to refrain from having a style-biased portfolio, so that style drift can be remedied.

The use of tabular and pictorial views of portfolio holdings data, classified, for example, by industry exposure, geography, credit quality and company size may also provide investors with summary data highly relevant for decision making. From a regulatory perspective, disclosure may have a positive impact on funds engaging in window dressing activities (i.e. prior to period end, the manager sells past period losers and buys past period winners, as a means of providing a distorted signal to investors concerning managerial ability). In addition, the opportunities for portfolio pumping practices (otherwise known as ‘painting the tape’, ‘marking the close’, or ‘gaming’) would be less likely to occur given a greater ability to detect those trading patterns at period end which temporarily inflate stock prices (and therefore improve end-of-period portfolio valuations).

The implementation and compliance with a portfolio disclosure regime may be less significant than some funds managers would suggest. Given that this standardised data already exists in a readily available format, thanks to the excellent record keeping and computer systems of fund managers, these costs should not be significant. In the case of the major asset consultants, portfolio holdings data is now routinely provided by fund managers on a voluntary basis for the benefit of the consultants’ manager research and client reporting. As the investment industry continues to evolve and become even more sophisticated, clients will increasingly demand additional information that may enable them to have greater opportunity to make informed decisions.

Australian Empirical Evidence – Direct Research

In the context of portfolio holdings disclosure, we investigate the trade-off between measurement accuracy and leakage of commercially sensitive information when holdings data is publically reported at varying frequencies and lags. This study is particularly relevant in the current regulatory environment as the Australian government seeks to introduce a new regime of periodic disclosure to Australia’s AU\$1.6 trillion dollar superannuation industry (Australia, 2013), which may potentially have significant flow-on effects to underlying asset managers. Such legislation would parallel the SEC’s disclosure requirements under Section 13(f) of the Exchange Act in the United States. The 13F filings require all institutional investment managers in the US with actively managed assets exceeding \$100 million to disclose all long positions with more than 10,000 shares or a market position of greater than US\$200,000 within 45 days of each calendar quarter-end (or at the end of each half-year prior to 2004). The shift from semi-annual to quarterly reporting highlighted a number of issues concerning the relationship between

disclosure frequency and fund performance/market quality, which we seek to address in an Australian context here.

There is currently no legislative requirement for fund managers to provide portfolio holdings information publically. Monthly return data are generally accessible through industry surveys, such as the Mercer Portfolio Analytics database, though these rarely provide a reliable perspective of the portfolios' risk exposures and excess performance. Asset consultants may also be able to provide limited access to sample holdings (as well as qualitative guidance based on the asset consultant's own evaluation), but the accuracy of these varies on a case-by-case basis. Mandatory holdings disclosure helps fill this gap by increasing the transparency of fund managers' investment decisions, and allowing investors to employ more sophisticated evaluation techniques to determine whether a fund manager's investment style is suitable for their objectives (Wermers, Yao and Zhao, 2012, Kacperczyk, Sialm and Zheng, 2008). By reducing information asymmetry between investors and fund managers, proponents claim increased competition and lower management fees, leading to a greater flow-through of benefits to end investors. Furthermore, greater accessibility to investment data may have the positive externality of improving marking quality (Agarwal, Mullally, Tang and Yang, 2013) and enhancing investor financial literacy (Alexander, Jones and Nigro, 2001).

A number of arguments have also been presented against both mandatory holdings disclosure and the implementation of more frequent disclosure regimes. The main concern is that third party investors are able to anticipate fund manager trades by looking at their holdings positions, and front-run these (Wermers, 2001, Parida and Teo, 2011). Furthermore, freeloading fund managers may also be able to exploit the costly research that other funds have done through copycat strategies, and potentially undercut the original funds on management fees (Frank, Poterba, Shackelford and Shoven, 2004, Verbeek and Wang, 2013). The combination of these behaviours has the potential to both increase transaction costs for entities that are required to periodically disclose their holdings, and reduce motivation for original research. The second part of our study focuses on the second of these problems: whether copycat funds are able to match the performance of underlying funds under a number of disclosure regimes.

Data

We use a proprietary data set containing daily transactions and monthly holdings from 59 active Australian equity fund managers, spanning fifteen years from 1st January 1996 to 31st December 2010 inclusive, to investigate the trade-off between performance measurement accuracy and leakage of commercially sensitive information with respect to disclosure frequency. The data were collected through voluntary participation by both fund managers themselves and through the custodians of multi-fund managers. We also use daily price level and dilutions data from the SIRCA Australian Equities Tick History database, market capitalization and dividend data from the Share Price and Price Relative database and financial statement data from the Aspect Huntley database.

Results

Our results show that more frequent disclosure periods tend to underestimate fund manager excess returns, while less frequent disclosure tends to overestimate (table 1). This is consistent with prior findings that fund managers have positive short term trade timing performance, which reverts over the medium and long term (Chen, Foster,

Gallagher and Wermers, 2014). However, these errors are only significant at the monthly reporting level. Greater differences are apparent when funds are partitioned by excess performance. When the funds are separated into performance quartiles, we observe that under-valuation of intra-period performance is primarily concentrated in top-quartile funds, with alphas being understated by up to 1.2% per annum in the case of annual portfolio disclosure (table 2).

In terms of root mean squared errors (RMSE), higher frequency portfolio disclosure significantly improves the accuracy of measured DGTW characteristics based alphas (see Daniel, Grinblatt, Titman and Wermers (1997) for construction method and rationale) (table 3). This is important since cross-sectional measures of alpha can only be calculated with access to holdings level data, whereas returns themselves are available directly through fund surveys. Our results also show that less frequent reporting leads to substantial underestimation of inter-day portfolio volatility and idiosyncratic volatility (table 4), particularly for top and bottom quartile managers (table 5).

The second part of this study ascertains the extent to which commercially sensitive information is leaked through periodic disclosure of holdings by simulating copycat funds that emulate the reported holdings of a fund (disclosed at periods ranging from 1 month to 1 year) on a delayed basis (with delays ranging from 1 month to 1 year). The funds are partitioned into quartiles based on their mean DGTW characteristics-adjusted excess returns over the period they were observed. A number of trends are immediately obvious in the results (table 6): (a) copying a top (bottom) quartile fund based on their periodic disclosure tends to result in significant underperformance (outperformance); (b) lower reporting frequency amplifies the difference between copycat and underlying funds; and (c) longer lags enhance the effectiveness in copying funds at all levels.

Since top-quartile funds are more susceptible to copycatting than average performers, this is promising. Even at the most frequent reporting period (monthly), top quartile funds still outperform their copycat funds by 0.97% annualised (or 0.64% at a 12 month lag), which more than covers the typical range of institutional management fees (0.3% to 0.6% of funds under management). Furthermore, longer gaps between reporting increase their advantage over copycats. There also does not appear to be any advantage with respect to IP protection by instituting longer lags between the holdings snapshot date and the public disclosure date – longer lags actually lessen the disadvantage of copying a top-tier fund, and increases the copycat's outperformance when copying a bottom-tier one. We note that copycats can artificially lengthen lags by delaying their trades after receiving the disclosed holdings positions; hence the apparent performance boost of longer delays is easily achieved under a short lag regime.

Concluding Remarks

It is clear that as we stand, Australia lags behind other developed financial markets such as the US and Canada in our standard of fund manager transparency and disclosure. By introducing a regulatory reporting regime that is informed by robust academic research, we can potentially implement a system that will reap the benefits of a more efficient and effective funds management industry, while at the same time circumventing some of the issues encountered when such regimes have been introduced to other countries.

Our findings suggest that high frequency disclosure both increases the accuracy with which reported holdings reflect the true performance of the underlying funds, while at

the same time not significantly impeding the competitiveness of those funds that are most likely to be copied (i.e. top quartile funds). We recognise that front-running of fund transactions may still pose an issue, though this requires a measure of skill in execution and hence is difficult to explicitly test *ex-ante*. However, given the success of periodic holdings disclosure in a number of other developed institutional fund markets, this is not likely to pose a large hindrance.

Disclosing portfolio holdings at a monthly level results in inferred excess returns and volatilities that are significantly closer to those when holdings are taken at a daily level, particularly for top quartile funds where investor interest is likely to be concentrated. We show that reporting at longer frequencies significantly underestimates both the excess performance and volatility of top-tier funds, which may lead investors to not only undervalue these funds but also to misjudge the additional risks that these funds bear.

The results also show that risk of copycat funds should not be a significant concern to top tier funds, since even at maximal reporting, they still generate sufficient outperformance over the copycats to cover typical management fees. On the other hand, copycat funds may provide additional incentive for poor performing managers to lift their game by either improving their investment decisions or lowering their fees. Furthermore, the effectiveness of copycat funds does not appear to be degraded by increasing the lag between the snapshot date and the public disclosure date (in the range of 1 month to 1 year). From an investment client's perspective, more frequent disclosure incentivises improvements in trading performance while simultaneously providing a barrier to inflated management fees.

Finally, the provision of greater frequency data would provide more opportunities to scrutinise the performance of funds from academic, commercial and regulatory perspectives, which may ultimately improve transparency, market competition and investor outcomes.

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Appendices

Table 1: Comparison of fund alphas derived from reported holdings at different disclosure frequencies versus actual underlying fund alphas. Percentages represent annualised DGTW characteristics-based excess returns (see main text for construction method and rationale). Actual fund alphas vary due to differences in included data for the different reporting intervals (see main text for details). Results are based on trades and holdings data described in the Data section, as well as daily price level and dilutions data from the SIRCA Australian Equities Tick History database, market capitalization and dividend data from the Share Price and Price Relative database and financial statement data from the Aspect Huntley database.

	Reported Fund Alpha	Actual Fund Alpha	Alpha Difference
Monthly	1.20%	1.36%	-0.16%***
Quarterly	1.36%	1.42%	-0.06%*
Semi-annual	1.17%	1.17%	0.00%
Yearly	1.44%	1.35%	0.09%

*** <1% significance, ** <5% significance, * <10% significance

Table 2: Difference between DGTW alphas derived from reported holdings and true alphas of the underlying fund, partitioned by underlying fund performance (as measured by mean alpha actually generated). Percentages represent reported fund alpha less actual fund alpha. Results are based on trades and holdings data described in the Data section, as well as daily price level and dilutions data from the SIRCA Australian Equities Tick History database, market capitalization and dividend data from the Share Price and Price Relative database and financial statement data from the Aspect Huntley database.

	Monthly	Quarterly	Semi-annual	Yearly
Quartile 1 - best	-0.39%***	-0.61%***	-0.73%*	-1.20%**
Quartile 2	-0.03%	-0.01%	0.19%	0.24%
Quartile 3	-0.16%**	0.22%	0.20%	0.73%**
Quartile 4 - worst	-0.14%	-0.04%	0.15%	0.42%

*** <1% significance, ** <5% significance, * <10% significance

Table 3: Comparison of root mean squared errors (RMSE) of annualized alphas derived from periodically reported holdings versus true alpha. The RMSE provides a better indication of the error magnitude on each individual measurement than the mean error. Results are based on trades and holdings data described in the Data section, as well as daily price level and dilutions data from the SIRCA Australian Equities Tick History database, market capitalization and dividend data from the Share Price and Price Relative database and financial statement data from the Aspect Huntley database.

	RMSE Alpha
Month	2.12%
Quarter	2.57%
Semi-annual	2.73%
Year	3.39%

Table 4: Errors between volatility (standard deviation of inter-day returns) and idiosyncratic volatility (standard deviation of inter-day DGTW alpha) measured from periodically disclosed holdings snapshots, and those of the true portfolio. Underlying daily returns were annualised to produce annualised volatility measurements, and consequently annualised differences in volatility. Negative errors denote the reported portfolios exhibiting lower volatility and idiosyncratic volatility than the true portfolios. Results are based on trades and holdings data described in the Data section, as well as daily price level and dilutions data from the SIRCA Australian Equities Tick History database, market capitalization and dividend data from the Share Price and Price Relative database and financial statement data from the Aspect Huntley database.

	Inter-day Returns Volatility Error	Inter-day Idiosyncratic Volatility Error
Month	-0.64%*	-0.93%**
Quarter	-1.03%***	-1.46%***
Semi-annual	-2.16%***	-2.92%***
Year	-3.34%***	-4.72%***

*** <1% significance, ** <5% significance, * <10% significance

Table 5: Errors between volatility (standard deviation of inter-day returns) when measured from periodically disclosed holdings snapshots, and that of the true portfolio. Results have been partitioned into quartiles by underlying fund performance (as measured by mean alpha actually generated). Underlying daily returns were annualised to produce annualised volatility measurements, and consequently annualised differences in volatility. Negative errors denote the reported portfolios exhibiting lower volatility and idiosyncratic volatility than the true portfolios. Results are based on trades and holdings data described in the Data section, as well as daily price level and dilutions data from the SIRCA Australian Equities Tick History database.

	Monthly	Quarterly	Semi-annual	Yearly
Quartile 1 - best	-0.22%	-1.62%**	-2.50%**	-4.49%***
Quartile 2	0.01%	-0.55%	-1.84%*	-3.09%
Quartile 3	-0.16%	-0.71%	1.04%	-0.45%
Quartile 4 - worst	-2.10%	-1.87%**	-6.08%**	-6.48%

*** <1% significance, ** <5% significance, * <10% significance

Table 6: Differences in DGTW alphas between copycat funds and the underlying funds across four different reporting periods and 4 different lags. Results have been partitioned into quartiles by underlying fund performance (as measured by mean alpha actually generated) with the first quartile being the best performing fund managers and the fourth quartile being the worst. Results are based on trades and holdings data described in the Data section, as well as daily price level and dilutions data from the SIRCA Australian Equities Tick History database, market capitalization and dividend data from the Share Price and Price Relative database and financial statement data from the Aspect Huntley database.

First Quartile		Reporting Period (Months)			
		1	3	6	12
Lag (Months)	1	-0.97%***	-1.02%***	-1.25%***	-1.98%***
	3	-0.76%**	-1.23%***	-1.54%***	-1.85%***
	6	-0.76%**	-1.18%***	-1.53%***	-1.61%***
	12	-0.64%	-0.77%	-0.79%	-0.84%
Second Quartile		Reporting Period (Months)			
		1	3	6	12
Lag (Months)	1	-0.15%	-0.08%	-0.40%*	-0.83%**
	3	-0.13%	-0.35%	-0.30%	0.03%
	6	-0.55%	-0.86%**	-0.48%	0.32%
	12	-0.49%	-0.28%	-0.06%	-0.47%
Third Quartile		Reporting Period (Months)			
		1	3	6	12
Lag (Months)	1	0.24%	0.02%	0.16%	0.21%
	3	0.37%	0.39%	-0.01%	-0.27%
	6	0.29%	0.46%	0.52%	0.54%
	12	0.59%*	0.30%	0.21%	0.62%
Fourth Quartile		Reporting Period (Months)			
		1	3	6	12
Lag (Months)	1	0.15%	0.33%	0.76%	0.85%***
	3	0.33%**	0.29%**	0.83%**	1.02%***
	6	0.62%***	0.77%***	0.99%***	0.94%***
	12	1.73%***	1.73%***	2.00%**	2.26%**

*** <1% significance, ** <5% significance, * <10% significance