The False Hope Revisited: The Modern Awards System and The Defined Contribution Superannuation Market.

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Table of Contents

1. Background and Motivation

Australia's superannuation pool currently stands at $1.84 trillion and has maintained a respectable average nominal return of 11.5 per cent over the past 10 years (APRA, 2014). Contributing to its development into the world's fourth largest pension market has been the introduction of the compulsory Superannuation Guarantee ("SG") (Towers Watson, 2014). Legislated in 1992 as a 3 per cent employer contribution of salary, the SG has now risen to 9.50 per cent and has extended superannuation coverage to almost three quarters of all Australian workers (Nielson & Harris, 2010). Responding to the shock of the global financial crisis, the Government has re-interpreted the appropriate policy response to, what it considers to be, the two primary drawbacks of the existing superannuation system (Cooper Review, 2010).

Firstly, participation in super is not voluntary, and as such members will likely do whatever requires the least effort, resulting in the member's passive acceptance of employer default funds and default investment choices notwithstanding the merits of the choice to their long-term financial best interests (Choi *et al*, 2002; Choi *et al*, 2004). Empirical evidence supports this view that members are opting-out of making a choice, with ABS statistics revealing that 70 per cent of member contributions are still placed in default employer funds (Australian Bureau of Statistics, 2007). Employers have no legal duty in selecting their default superannuation products, and upon being presented with an employer's fund selection, individuals are subject to what Mitchell and Utkus (2006) describe as 'the broader behavioural phenomenon, namely the power of the "default option"'. Parrish and Delpachitra (2012) sought to understand this link between members and default choice, finding that 82 per cent of employees were invested with the default fund notwithstanding highly visible fund labelling or fee information which could prompt employees to exercise choice.

Secondly, there is no strong evidence linking the portability of funds to increasing competitive pressures within the superannuation industry. Drew and Stanford (2003) suggested that removing barriers to member choice would help to reduce Australia's persistently high administration fees through increased competitive pressures. However since the introduction of fund portability the total cost per member increased over the later part of the decade to 2010 in real terms and has since stagnated (KPMG, 2012; Qu, 2014). Acknowledging the benefits that scale can provide in reducing fees and improving investment outcomes (Basu and Andrews, 2014), regulators have generally encouraged the trend towards the consolidation of superannuation funds (Cooper

Review, 2010). The average large Australian Prudential Regulatory Authority ("APRA") regulated fund has grown in size from $700 million in 2004 to $4.2 billion in 2013 but this has been primarily driven by the rapid market exit of the corporate super fund sector (Qu, 2014). In addition, rather than leading to a consolidation of accounts, the number of accounts per member rose from 3.15 accounts at the introduction of Choice legislation, to 3.29 accounts by 2007 and still there are almost 32 million registered superannuation accounts (APRA, 2007; Commonwealth Government, 2013). Given the cumulative long-term impact administration fees can have on member balances (Bateman, 2002) this suggests that the competitive market pressures which would ordinarily lead to better outcomes for members have not been evident within the superannuation market.

Recognising these inherent structural impediments, the Australian Government commissioned the Super System Review to undertake a wholesale review of the superannuation industry. This review analysed the superannuation industry from its governance structures to operational efficiency with a view to improving the long-term financial outcomes for members. The key recommendation of the Cooper Review was the introduction of 'MySuper', a 'simple cost-effective product with a diversified portfolio of investments for the vast majority of Australian workers who are invested in the default option of their current fund' (Cooper Review, 2010). With employers owing no duty to their employees when selecting a default fund (Donald, 2011), the Government accepted the need for a new standardised default product and introduced the Part 2C – MySuper amendments into the Superannuation Industry (Supervision) Act 1993 (Cth). The amendments (1) heighten trustee responsibilities for MySuper products, (2) introduce a standardised fee and investment dashboard to help members compare product information and, (3) give APRA oversight over the licensing system to ensure that all MySuper products meet the minimum insurance, investment and fee standards required to maximise the long-term financial interests of members (Superannuation Industry (Supervision) Act 1993 (Cth); APRA, 2013).

Since 1 January 2014 it has been mandatory for all employers to make default Super Guarantee contributions into a MySuper product, and on 1 July 2017 all current default accounts will be transferred into MySuper products (Superannuation Legislation Amendment (MySuper Core Provisions) Act 2012 (Cth)). It is hoped that the new MySuper regime will provide a degree of competitive pricing and help to promote better long-term outcomes for default members. Whilst it is too early to comment on the success of MySuper, there have been recent policy concerns surrounding the continued inclusion of default superannuation listings within modern awards and its potential to derail the MySuper reforms. The modern awards are a set of minimum

employment entitlements for specific industries/occupations and can include clauses specifying into which superannuation funds employers can make award contributions for the benefit of their employees. It is estimated that from 20 to 30 per cent of total employer contributions are guided by the 122 modern awards (ASFA, 2012), amounting to roughly $6 billion to $9 billion in annual contributions (Productivity Commission, 2012). Of the 122 modern awards, there is at least one default fund listed in 109 awards, with some listing up to 18 funds. For the remainder of modern awards which do not list any fund, the employer is able to freely select any default fund. The recently introduced Division 4A provisions of the Fair Work Act 2009 (Cth) provide standing for MySuper products to seek listings in all modern awards. However MySuper funds must still satisfy the Full Bench of the Fair Work Commission that inclusion in a modern award would serve in the best interests of employees subject to the award. This subjective best interest test provides the Full Bench with broad authority and in most cases up to 10 funds can be listed unless special circumstances warrant additional listings. The Productivity Commission (2012) recommended that all MySuper products satisfying APRA's licensing requirements should be listed in the modern awards, reasoning that even listing marginal products served in the best interest of the market as the benefits to the award employees would outweigh the potential costs of any unintended consequences. As such, to comply with the new MySuper provisions employers must send SG contributions to MySuper funds listed in a relevant modern award or, in the absence of any direction, to an eligible fund of their choosing. However, employees can direct their employer to have their contributions placed in a fund of their choosing, so long as it is an eligible fund and the employer is able to make contributions into the fund.

1.1. Research Question and Significance

The modern award process has played a key role in facilitating the development of industry funds to receive default employer contributions. However to the best knowledge of the author, there has been no research examining the modern award system and the default superannuation product market. Against this backdrop, this research proposes to explore the relationships between and impacts of the modern award process in selecting default superannuation products. The research aims to address the following questions:

"(1) To what extent do our measures of superannuation performance outcomes significantly explain the variation in modern award listing status?; (2) to what extent do our performance outcomes influence modern award listing status (and the number of listing)?; and (3) to what

extent are the probabilities of modern award listing status linked to product classification (industry, master trust) and our measurement of product outcomes?"

The research is significant for several reasons. Firstly, whilst the modern awards have played a significant role in shaping the default superannuation market, to our knowledge this is the first study to investigate the modern award system and its selection of award superannuation products. The underlying purpose of a modern award listing is to protect employee contributions for retirement by ensuring that employer selection costs are reduced and employee benefits maximised by limiting the choice through the pre-selection of 'appropriate' products. With an estimated 20 to 30 per of employees subject to modern award listings (ASFA, 2012), the importance of ensuring member protection and understanding the efficiency of the default superannuation system cannot be overstated. In sum, the author acknowledges the pressing need to contribute to this new and original body of research with, the aim of providing foundational knowledge for understanding the role modern awards play in the default superannuation market.

Secondly, the relationship between modern awards and the default superannuation market has also been informed by recent policy discussions. In its terms of reference for the Productivity Commission's Inquiry into Default Superannuation Funds in Modern Awards (2012), the Government acknowledged the benefits accruing to listed default funds and provided scope for the review of the competitiveness and transparency of the modern award selection process. The Government's recently released discussion paper, *Better regulation and governance, enhanced transparency and improved competition in superannuation* (2013), has proposed the abolishment of the modern awards regime as an attempt to 'even out' the competitive playing field for default superannuation contributions. On that basis, the research contributes useful information to regulators, policy makers, members and other market participants as to the relationships between modern award listing status and default superannuation member outcomes.

2. Theoretical Background for Research

2.1. Fund Classification

Most default superannuation products awarded listing in at least one modern award are typically classified as belonging to industry funds. This position has been historically attributed to the industrial relation reforms of the 1980s, where national wage bargaining led to these industry-specific funds being set up to receive default contributions from employees in their respective industries (Productivity Commission, 2012). In its recent recommendation for reform to modern awards, the Productivity Commission (2012) noted that the current selection process for modern award listings was primarily based on precedent, skewed to benefit funds supported by industrial parties and lacked the elements of procedural fairness and transparency which, at times, overrode the best interests of default members. The differences in classification of funds has therefore played a disproportionate role in the modern awards selection process, as for-profit funds have struggled to gain industrial support from groups who are represented at a board-level in many not-for-profit funds. Chant (2012) summarises the benefits of a modern award listing as providing listed products with higher levels of employer contributions than non-listed products. This is significant because employer contributions are generally more stable than voluntary contributions and thus constitute a reliable inflow which reduces liquidity constraints and unlocks exposure to greater levels of asset diversification. For-profit products generally exhibit lower asset allocations to alternative unlisted asset classes than not-for-profit products (APRA, 2011), a finding that may in part be attributable to increased liquidity requirements stemming from an inability to secure stable modern award default contribution flows.

2.2. Asset Allocation

Asset allocation is a significant determinant of investment performance and has been shown to impact on both the level and variance of investment returns (Brinson, Hood & Beebower 1986; Brinson, Singer & Beebower 1991; Ibbotson & Kaplan 2000). In the Australian context, not-for-profits allocate more of their portfolio to illiquid assets and experience higher risk-adjusted returns than retail funds that allocate less of their portfolio to illiquid assets (APRA, 2011). However the role asset allocation plays in the return variation between funds is much less certain, with Ibbotson and Kaplan (2000) concluding that only about 40 per cent of the return variation

amongst funds is attributable to asset allocation. In an Australian study, Sy (2010) comes to a similar conclusion, finding that asset allocation contributes around 40 per cent to the average return differential between small APRA funds and other funds. Focusing purely on funds invested in default investment options, Basu and Andrews (2014) documented that much of the variance in returns was derived from the significant active management of assets. Their analysis found that only 36 per cent of the variation in returns for funds between 2004 and 2012 could be explained by asset allocation, implying that active management of assets could better explain fund variation of returns than asset allocations. This finding confirms previous Australian studies of large superannuation funds, namely that active asset management has failed to deliver benchmark returns for members (Drew & Stanford; 2003, Drew & Stanford 2001; Stanford & Taranenko 2001).

2.3. Fees

Whilst there is evidence in uncertain markets that consumers reference price as a signal of quality (Tull *et al* 1964; Leavitt 1954), there has been a large regulatory push to associate MySuper's low cost as a positive development benefitting members (Cooper Review, 2010). Bateman (2002) explored the link between fund administration fees and member account balances, highlighting how administration fees and superannuation taxes reduced member statutory contributions from a rate of 9 per cent to 5.1 per cent. Drew and Stanford (2003) have attributed Australia's high superannuation administration costs to constraints on market competition. In their study they summarised the five key principal and agent conflicts within a superannuation fund's governance structure and concluded that fund portability could successfully discipline funds by providing incentives to reduce fees. Retail funds have been shown to exhibit administration expenses 50 per cent higher than the industry average (Bateman *et al* 2001), with Bateman and Mitchell (2001) concluding that fund designs may lead to varying administration costs with industry funds being the cheapest. In a recent study Basu and Andrews (2014) highlight that retail fund expenses are not significantly different from industry funds when controlling for scale in superannuation funds primarily invested in the default investment option. However, as industry funds are able to spread their fixed costs over a larger member base, the average cost per member is lower than retail funds. Superannuation funds have also been encouraged to merge as a means of gaining economies of scale (Cooper Review, 2010) which, can be leveraged through increased bargaining power, to negotiate lower investment fees with fund managers (Bateman & Mitchell 2004; Coleman, Esho & Wong 2006; Cummings 2012).

2.4. Investment Returns

Consumers are sensitive to investment returns when selecting an investment option (Harless & Peterson 1998) and use price as an implied signal of quality (Tull et al 1964; Leavitt 1954), even though risk-adjusted outperformance of investment returns are more likely the result of good luck rather than skilled management (Fama, 1979). After analysing the impact of fund attrition on a sample of superannuation fund managers between 1991 and 1999, Drew and Stanford (2001) found that survivorship bias led to an over-estimation of fund manager performance. In the first study of its kind, Bird et al (1983) analysed superannuation fund performance on a 'risk-adjusted' return basis and found no evidence of persistence in manager performance over time, concluding that overall fund performance was inferior to market benchmarks. Drew and Stanford (2003) find no evidence of a positive relationship between management fees and investment manager returns, concluding from their summary of the Australian and US literature that active management strategies destroy value on a risk-adjusted basis. Coleman, Esho & Wong (2006) find evidence of not-for-profit outperformance over retail funds between 1996 and 2002 on both a net return and risk-adjusted basis. Whilst both industry and retail funds delivered lower returns and volatilities than public sector and corporate funds, the industry outperformance was attributed to fund design which reduced agency conflicts and costs relative to retail funds. In a more recent finding, Basu and Andrews (2014) confirm that gross returns for default invested superannuation funds underperform index benchmarks before accounting for costs associated with their active management strategies. Whilst they find overall evidence of a negative relationship between expense ratios and returns, industry funds tend to exhibit a positive relationship.

3. Methodology and Data

As stated in the background and motivation, this study proposes to investigate the relationships between modern awards selections and default superannuation products as they relate to the key fee and investment outcomes experienced by members. Our study therefore requires us to work with a dependent variable taking discrete values, and by using a combination of binary logistic and OLS approaches we are able to overlook many of the strong assumptions and weaknesses built into alternative models such as Multiple Discriminant Analysis (MDA) whilst at the same time gaining a deeper understanding of the data and its relationships (Kwak & Clayton-Matthews, 2002).

3.1. Complementary Approaches

When dealing, as in our case, with a discrete variable which takes values from 0 to 1 (product with no modern award listings = 0, product with one or more modern award listings =1), the Ordinary Least Squares method (OLS) assumes an equal distance between successive modern award listing classes (Liao, 1996). This assumption is quite problematic given that the study's dependent variable may be ordinal but not necessarily linear. Whilst not certain, the literature does suggest that a modern award listed product should produce 'better' member outcomes than a non-listed product. Without factoring in the absolute magnitude of the differences between these categories we cannot know how such outcomes vary, meaning that an OLS regression could bias the estimations. The MDA method avoids the equal interval assumption whilst also taking into account a nominal scale for the dependent variable (Hair *et al*, 2006). However, whilst this model specifies whether certain classes produce 'better' outcomes than others, it does not provide any further analysis regarding the relationship between the classes (Amdouni & Soumare 2013).

The binary logistic approach does not require similar assumptions on the dependent variable due to its conditional nature and therefore overcomes the weaknesses of the above two approaches. Whereas the MDA method assumes a normal distribution of errors, the binary logistic approach adapts itself to distribution and assumes nothing about it (Press & Wilson, 1978). The estimated coefficients of the model are understood in relation to a reference category, which in our case is represented by the class of non-modern award listed products (Kwak & Clayton-Matthews, 2002). The probability of belonging to the remaining class of a listed modern award product is determined with reference to the base class. The resulting coefficients and their exponential transformations yield the odds ratios which provide the probability that a product with certain

characteristics (such as investment returns, asset allocation) would be classified in that specific class (Liao, 1999).

In addition to the binary logistic model, we have chosen to utilise the OLS estimator as a useful exploratory tool. We previously mentioned the potentially biased estimations that OLS may provide, but in practice it also can provide a fairly reasonable guide as to which variables are statistically significant. Assuming linearity between modern award listing status and member outcomes we can distinguish between the role that modern award listing status has on a default product's fee and investment return outcomes and examine the resulting coefficients as the extent to which listing status contributes to the fees that a product charges or its historical investment return. Taking this complementary approach means we are able to further explore the data and posit implications which may better frame the current debate surrounding the modern award system and default superannuation products.

3.2. Model Specification

Binary Logistic Model

Below we describe our binary logit model. Our dependent variable outcome, modern award listing status, takes one of two values:

$$y = \begin{cases} 1 \\ 0 \end{cases}$$

Where the probability of a product being listed in one or more modern awards is:

$$P[y_i = 1] = p_o \tag{1}$$

And the probability for not being listed in any modern award is:

$$P[y_i = 0] = 1 - p_o \tag{2}$$

These probabilities are determined by product specific variables and the X_i are assumed to come from a logistic distribution function. As such we can re-write the probability of being a product listed in a modern awards as a function of Xs as follows:

$$P[y_i = 1|X] = \frac{1}{1+\exp(\sum_j X_{j\,i}\beta_i)} \tag{3}$$

Whilst the probability of a product not being modern award listed would be:

$$P[y_i = 0|X] = \frac{\exp(\sum_j X_{j\,i}\beta_i)}{1+\exp(\sum_j X_{j\,i}\beta_i)} \quad (4)$$

This allows us to re-arrange our final representation of the logit model as follows:

$$P_i = f(X_i, \beta_i) \quad (5)$$

Where P_i takes the value of 1 if *i* is found to be a modern award listed product, or the value of 0 if it is not listed in any modern award. Vector X_i represents the set of explanatory variables which include measurements corresponding to member outcomes of the product and dummy variables of product classification and therefore can be categorical or continuous. The maximum likelihood estimates ("MLEs") of the parameters β_i and $P_i$are obtained by maximising the log-likelihood function.

By re-arranging equations (1), (2) and (4) we are able to interpret the coefficients of the logit model in terms of marginal effects on the odds ratio rather than probability:

$$\ln\left(\frac{p_o}{1-p_o}\right) = \sum_j X_{j\,i}\beta_i \quad (6)$$

The bracketed term on the left hand side of equation (6) measures the probability that product *i* is listed in at least one modern award (y=1) relative to the probability that it is not listed in any modern award (y=0). The resulting ratio determines the odds of product *i* being listed in a modern award with, for example, a ratio of 3 meaning that the odds of product *i* being listed are twice those of being non-listed.

Ordinary Least Squares Model

Below we describe our OLS model where; Y_i refers to a member outcome variable, $\beta_2 X_{2i}$ is the modern award status dummy, the $\beta_k X_{ki}$ refer to control variables and $u_i$represents the error term.

$$Y_i = a + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + + \beta_k X_{ki} + \varepsilon_i \quad (7)$$

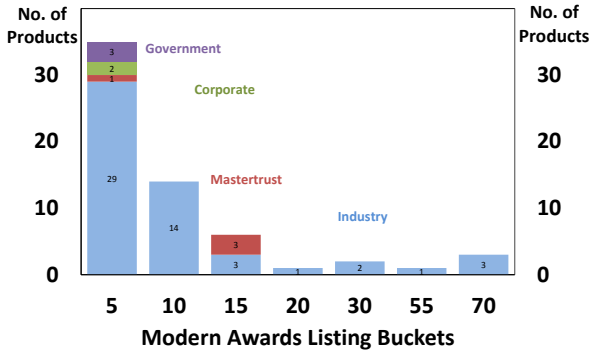
3.3. Data and Sample

Modern award default superannuation data were retrieved from the relevant modern award legislation found on the Fair Work Australia website as at January 2014. Typically the modern

awards panel reviews default superannuation arrangements on a four-year cycle. However with the considerable regulatory changes currently taking place, the modern awards panel has postponed its review in light of uncertainty surrounding the new MySuper regime and the formation of the new expert panel. For our purposes we have chosen to read the legislation as it stood as at 30 July 2013. Changes to the superannuation component of the modern awards beyond the 4 year review are rare (Productivity Commission, 2013) and so by reading the legislation as at July 2013, we are able to filter out the impact of the recent MySuper changes - that is, ensuring that our dataset includes the funds who in the past year were removed from the modern awards for choosing not to create a MySuper product.

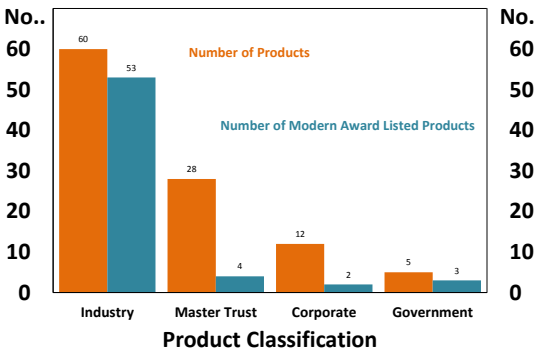
Looking more closely at the data, although there are 122 modern awards, only 106 included default superannuation listings as at July 2013. As shown in Graph 1, the total number of products selected for modern award listings in our SuperRatings dataset are 63, with the majority of products listed in 5 or less awards, whilst there are 6 products listed in at least 21 awards. Out of the total 62 products listed in modern awards, 53 are classified as industry funds, 3 are Government affiliated, 4 are retail master trusts and 2 are corporate super fund products. As Graph 2 illustrates, whilst there are 28 master trust products in our dataset, only 4 of these products have access to at least 1 modern award listing. This is in stark contrast to the industry group, where 53 out of the 60 products have access to at least one modern award listing.

Graph 1
Modern Award Listings*
for Default Superannuation Funds



*As at 30 June 2013. Buckets serve as a range, ie: bucket 5 includes products listed in 1 to 5 modern awards. Sources: Commonwealth Government, SuperRatings

Graph 2
Distribution of Modern Award Listing Status*
for Default Superannuation Products



*As at 30 June 2013
Sources: Commonwealth Government, SuperRatings

Superannuation fund data were supplied by SuperRatings, an independent superannuation research provider which sources, verifies and monitors data from publicly available superannuation reporting documents. The total number of superannuation products selected for the regression analysis are 105 and represent in total 76 superannuation funds. That the number of selected products, is higher than the number of funds, is attributable to the fact that certain

funds offer a variety of employer focused products which compete directly for employer-sponsored and Award contributions. These selected products have been active and maintained in the SuperRatings database for a period of seven years, from 2004 to 2013. This period is significant as it covers the years before, during and after the global financial crisis (GFC), a global event which has factored heavily on 10 year and 7 year superannuation returns. Out of the total 105 products, 60 are industry products, 28 are retail master trusts, 5 are Government affiliated and 12 are corporate super products. Our dataset includes products for 58 out of the 63 default superannuation *funds* listed in the modern awards default superannuation lists, with these 58 funds comprising of 63 modern award listed *products*.

Critically, we have screened out from our dataset products which are not designed to cater for employer sponsored contributions. This decision was made to increase the comparability of the products and relevance of the findings. For example, retail master trusts offer a variety of WRAP products, which due to favourable taxation and investment selection features necessitate a higher overall product fee. WRAPs are generally not viewed as valid employer sponsored products due to the high degree of personalisation and ongoing financial advice. To include these products would skew our results to favour the current modern award listed products, a result attributable to the fact that personal account products are directed at a different sub-market. In sum, our screened dataset includes 105 products from 76 unique superannuation funds, of which 45 are included as modern award listed superannuation funds. As expected, industry superannuation products make up more than half of the dataset. Whilst only 3 retail master trust funds are listed in modern awards, there are 4 affiliated products in the dataset. This is to be expected as, unlike their industry fund counterparts, retail master trusts engage multi-brand strategies whereby a single fund will have numerous products which compete (at-times) for contributions in the same employer-contribution sub-market.

3.4. Variable Specification

For this research, variable specification was primarily based on the factors influencing modern award selection as set out by the modern awards selection panel in Fair Work Commission hearings and the existing academic literature. The variables are categorised as either a dummy variable (indicating modern award or product classification status) or variables which attempt to best estimate the kinds of outcomes upon which members would judge competing superannuation products.

- Net Investment Return

The modern awards selection panel is mandated to select superannuation products which best represent value for members in a specific modern award class. There are numerous studies which capture investment returns on a gross before tax basis, however in our present study we are not interested in measuring the efficiency or adjusted performance of funds. SuperRatings calculates investment return as net earnings after tax, allowing us to focus specifically on the ultimate benefit to the member, that is, what the member's account balance would look like after all return, fee and tax adjustments have been made. Whilst the investment return variable seeks to capture the differences in tax rates and performance fees amongst products, it must be acknowledged that fixed fees are not included in the net returns. As such we need to be vigilant when analysing and interpreting any net return results, although the overall impact should not necessarily distort any findings as by and large all products maintain a similar fixed fee structure. It is also important to acknowledge the effect of investment return compounding on what is at times a thirty five to forty year investment horizon. Using geometric averages to calculate returns allows us to 'correct' for the effects of the compounding of investment return values over the long term (Blume, 1974; Indro and Lee, 1997). However in the interests of providing readily transferable findings, we have chosen to use the mean of 10 year investment returns (2004-2013). This decision was made to align our study with the language and formula used by superannuation Product Disclosure Statements, annual reports and the recently issued MySuper product dashboard. Doing so, allows us to better relate our findings to superannuation members and provides a better yardstick by which policymakers can reference this report to possible policy responses.

Standard Deviation

Standard deviation ("SD") depicts how widely a product's returns have varied over a historical period and helps to predict the range of returns that award members could most likely expect to realise in the future. Where a product has a high standard deviation, the predicted range of performance is wide, implying greater volatility. In the aftermath of the Global Financial Crisis the volatility of returns has formed a critical part in evaluating the performance of super funds, and indeed the selection panel would look towards standard deviation of returns as a proxy for how 'safe' a member's award contributions would be. SD has been calculated for the 10 year historical return period, 2004-2013 and is computed based on the following formula:

$$\sigma_y = \sqrt{\frac{1}{n-1}\sum_{i-1}^{n}(NR_i - \overline{NR})^2}$$

Where σ_y is the standard deviation of annual returns, n is the number of annual return periods, NR_i is the return of the investment in year *i*, and $\overline{NR}$ is the average annual total return.

- Expenses

There are substantial differences in the cost structures of superannuation products which are attributable, in part, to differing administration, investment and operational structures. For our study, we are interested in capturing the total cost to a member of being invested in the specific product, and for this reason we combine investment management, administration expenses, operating expenses and any other automatic and ongoing expenses that impact on the member's account balance net of any applicable rebates. As fixed member fees are not directly comparable to the previously mentioned account balance percentage fees, we have separated the expenses variable into a fixed fee ($) which includes the product's member fee, and a percentage based fee which accounts for all fees levied as a percentage.

Benchmark Strategic Asset Allocations

We use benchmark asset allocation data as it provides a forward looking indicator of the product's return characteristics. Superannuation is a long-term investment, and using actual allocations may skew the understanding of the product's long-term investment strategy and profile – characteristics which can be masked where a product chooses to arbitrage short-term overweight/underweight asset class positions to take advantage of prevailing economic/financial circumstances. SuperRatings provides strategic asset allocation data which it segments into the following classes: (1) Australian shares, (2) International shares – hedged and unhedged, (3) Australian listed property, (4) International listed property, (5) Australian unlisted property (growth and defensive), (6) International listed property, (7) Australian infrastructure (growth and defensive), (8) International infrastructure (growth and defensive), (9) Australian hedge funds, (10) International hedge funds, (11) Australian private equity, (12) International private equity, (13) Australian emerging markets, (15) International emerging markets, (16) Absolute returns (growth and defensive), (17) Alternatives (growth and defensive), (18) Other growth, (19) Australian diversified fixed interest, (20) International diversified fixed interest, (21) Australian

inflation linked fixed interest, (22) International inflation linked fixed interest, (23) Mortgages, (24) Cash.

We apportion the funds between six distinct asset classes – Australian equities, international equities, fixed interest, property, cash and alternatives. The decision to group the individual asset classes comes from, in part, a lack of consistency in the data where, for example, alternative exposure is listed for some products in infrastructure, whilst others with the same exposure have their allocation disclosed in the general alternatives asset class. Whilst this is not ideal, the decision to group asset classes should provide, in aggregate terms, a more consistent understanding of the data. We also include the growth/defensive asset composition ratio as a means of better analysing whether there is any evidence of different growth profiles for selected and non-selected funds.

4. Results

4.1. Descriptive Statistics

As shown in table 1, the total fixed fee charged by modern awards listed products tend, on average, to be higher than their non-award listed counterparts. Whereas non-award listed products typically charge their members an annual fixed fee of $59.92, award-listed products charge a higher annual fixed fee of $70.11. Whilst this result may be interpreted as contrary to our initial expectations, this result may be, in part, attributable to the difference in price-signalling practices amongst listed and non-listed products. For example, non-award listed products may choose to reduce highly visible up-front fixed fees as a means of demonstrating 'value for money'. Strengthening this view, is the much higher percentage based fee non-listed products typically charge, compared to modern award listed products. The difference is quite significant, with award listed products charging members a percentage of account balance fee which is an average 48 basis points lower than their non-listed product competitors. This may suggest that non-award products recoup the 'cost' of their typically lower fixed fees by charging members with higher 'indirect' percentage of account fees.

Table 1: Descriptive Statistics of Fee Sample

Product Type	No. Products	Fixed Fee (Mean)	Fixed Fee (SD)	Percentage Fee (Mean)	Percentage Fee (SD)
Listed	**62**	**70.11**	**27.09**	**0.88**	**0.29**
1st Q	25	61.13	31.15	0.76	0.19
2nd Q	9	83.26	21.25	1.04	0.24
3rd Q	15	70.72	11.36	0.93	0.21
4th Q	13	77.57	29.03	0.97	0.42
Non-listed%	**43**	**59.92**	**45.15**	**1.36**	**0.74**

1st Q First quartile products which refers to products with 1 or 2 modern award listings. 2nd Q Second quartile products which refers to products with 3 or 4 modern award listings. 3rd Q Third quartile products which refers to products with 5 to 10 modern award listings. 4th Q Fourth quartile products which refers to products with 11 to 69 modern award listings.

% For the calculation of the fixed fee (mean and SD) results the non-listed sample did not include product ID: 933 due to an extreme outlier in its fixed fee. Including the outlier changes the results as follows: Fixed Fee (Mean) 81.78, Fixed Fee (SD) 148.55.

Contrary to our expectations, fixed and percentage based fees do not seem to decrease as a function of the number of modern award listings a product has access to. The average fixed fee for 1st quartile products stands at $61.13, increases to $83.26 for 2nd quartile products, and decreases to $77.57 for 4th quartile products. This pattern is continued for the total percentage based fee where 4th quartile products, on average, charge a marginally lower fee than 2nd quartile products, but also charge members with a fee which is 21 basis points higher than that typically charged by 1st quartile products.

Table 2: Descriptive Statistics of Investment Return Sample							
Product Type	**No. Products**	**10 Year (Mean)**	**10 Year (SD)**	**5 Year (Mean)**	**5 Year (SD)**	**1 Year (Mean)**	**1 Year (SD)**
Listed	**62**	**7.24**	**0.70**	**4.27**	**1.08**	**14.97**	**2.01**
1st Q	25	6.89	0.59	4.27	0.78	13.65	2.22
2nd Q	9	7.48	0.38	4.17	0.58	15.39	0.64
3rd Q	15	7.57	0.72	4.66	1.28	16.32	1.38
4th Q	13	7.36	0.76	3.87	1.37	15.65	1.14
Non-listed	**43**	**6.43**	**1.43**	**3.72**	**1.83**	**14.76**	**2.93**

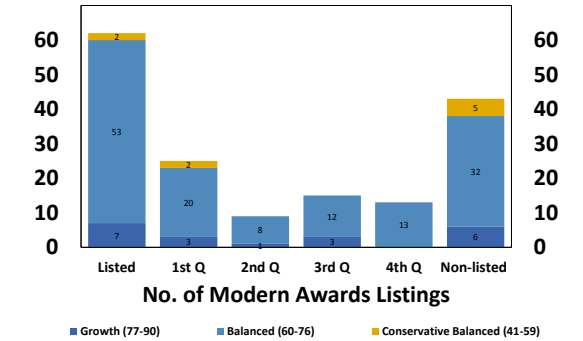
1st Q First quartile products which refers to products with 1 or 2 modern award listings. 2nd Q Second quartile products which refers to products with 3 or 4 modern award listings. 3rd Q Third quartile products which refers to products with 5 to 10 modern award listings. 4th Q Fourth quartile products which refers to products with 11 to 69 modern award listings.

As shown in Table 2, award listed products have typically exhibited higher investment returns over all time-horizons, ranging from an outperformance of 81 basis points over 10 years, 55 basis points over 5 years and 21 basis points over 1 year. Over the 10-year and 5-year horizons there is evidence of a weak linear relationship between returns and number of modern award listings, although this relationship breaks down when we include fourth quartile returns. However, it is important to note that these findings are in line with our expectations, as they confirm a difference in asset allocation strategies between modern award listed and non-award listed default products. Whereas the former tend to display higher allocations to the equities, property and alternative asset classes, the latter, on average, tend to invest a greater percentage of assets in the defensive asset classes such as fixed interest and cash. This helps to explain the investment return differential between listed and non-listed products, but it is also interesting to note that non-award listed products have not only underperformed over all time-horizons, but they also have exhibited a much higher degree of volatility in their returns. Focusing on the 10-year horizon, non-award listed products have, on average, experienced greater volatility than award listed products, with their average standard deviation of return of 1.43 per cent, 73 basis points greater than the award listed product average of 0.70 per cent.

This greater degree of volatility within non-listed product returns is in part attributable to their broader range of default asset allocation profiles. Focusing on Graph 3's growth profiles of the 62 modern award listed products, seven are termed as growth (77 to 90 per cent), 53 are termed as balanced (60-76 per cent), and just 2 products are termed as conservatively balanced (41 to 59 per cent). In comparison, out of the 43 non-award listed products there are 5 products termed as conservatively balanced. By virtue of the greater variety of asset allocation strategies present within non-award listed products, there will be a greater difference in returns. What this suggests

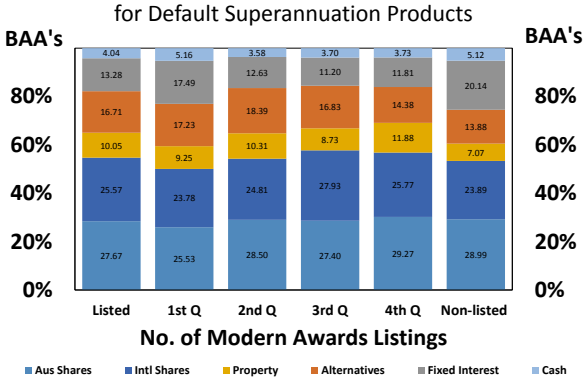
is that, typically, modern award listed products will exhibit a lesser degree of volatility simply because a greater proportion of products subscribe to similar investment profiles.

Graph 3
Growth Asset Allocation Profiles*
for Default Superannuation Products



*As at 30 June 2013
Sources: Commonwealth Government , SuperRatings

Graph 4
Benchmark Asset Allocations*
for Default Superannuation Products



*As at 30 June 2013
Sources: Commonwealth Government , SuperRatings

Looking more closely at the benchmark asset allocations as shown in Graph 4, there is no substantial discrepancy between the award listed quartiles in their allocations for domestic and international shares, property and cash. However there is a significant difference in the allocations for the alternatives and fixed interest asset classes. First and second quartile products typically allocate 17.23 and 12.63 per cent of their investment mix into the alternatives asset class, whilst third and fourth quartile products allocate, on average, 16.83 and 14.38 per cent. Moreover, whereas first quartile products allocate 17.49 per cent to fixed interest, second, third and fourth quartile products only invest 12.63, 11.20 and 11.81 per cent. This stark contrast may partly be attributable to differences in investment scale and liquidity requirements whereby first quartile products, not only benefit from exposure to stable award contributions and members, but due to their smaller alternative portfolios (in real terms), are better placed than second, third and fourth quartile products to invest a greater proportion of assets in the alternatives asset class.

Table 3: Descriptive Statistics of Asset Allocation Sample (Mean)[%]

Product Type	Growth Ratio	Def Ratio	Aud Shares	Int Shares	Full Prop	Full Alts	Full Fixint	Cash
Listed	**73.29**	**26.71**	**28.67**	**26.33**	**10.66**	**17.00**	**13.30**	**4.04**
1st Q	70.41	29.59	26.20	23.89	9.95	17.30	17.49	5.16
2nd Q	73.26	26.74	29.06	25.81	10.42	18.50	12.63	3.58
3rd Q	75.82	24.18	28.60	28.93	10.07	17.43	11.27	3.70
4th Q	73.65	26.35	30.81	26.69	12.19	14.77	11.81	3.73
Non-listed	68.04	31.96	29.54	24.06	7.24	13.88	20.16	5.12

1st Q First quartile products which refers to products with 1 or 2 modern award listings. 2nd Q Second quartile products which refers to products with 3 or 4 modern award listings. 3rd Q Third quartile products which refers to products with 5 to 10 modern award listings. 4th Q Fourth quartile products which refers to products with 11 to 69 modern award listings.

% See appendix for descriptions of the dependent variables.

4.2. Discussion of results

The objective of this research is threefold; (1) to examine whether our measure of superannuation performance outcomes significantly explain the variation in modern award listing status, (2) to examine if, and how, our performance outcomes influence modern award listing (and the number of listing), and (3) to investigate whether the probabilities of modern award listing status are linked to product outcomes and product classification (industry, master trust). Given the focus of the three objectives, a combination of OLS and binary logit models have been estimated to better capture and analyse the results.

4.2.1. Variance in Modern Award Outcome Status

We firstly analyse the question of how much of the variation in modern award listing status can be explained by our measurement of product outcomes. Numerous papers have attempted to explain cross-sectional variance by employing ordinary least squares regressions (Ibbotson and Kaplan 2004; Basu and Andrews 2014). A key appeal for the use of OLS stems from the interpretation of its R-squared statistic ("r^2") which essentially squares the coefficient of multiple correlation between the model's predicted values and its actual values and generates a value between 0 and 1 which can also be interpreted as the general goodness of fit of the model to the sample data.

When employing OLS with a binary dependent variable (product is not modern award listed=0, product is modern award listed=1) several complications can arise from the fact that the predicted values may be less than 0 or more than 1. This can create complications when using a binary dependent variable which in our case assigns a value of 0 or 1 depending on whether a product is modern award listed or not. Unfortunately, even using a more suitable binary logistic model has its own issues, as there is currently no consensus on the calculation of r^2 values measuring the proportion of variation in a dependent variable explained by covariates (Mittböck Martina & Schemper 1996). To provide a more definitive assessment of the degree of variation explained, OLS and binary logistic regressions were estimated and compared. In running the following OLS and binary logit regressions, care was taken to ensure that the predicted values were not lower than zero and higher than one:

$$ModAwrdDummy = a + \beta_1 NetFee + \beta_2 FixedFee + \beta_3 Ar10yr + \beta_4 Sd10yr + \beta_5 Industry + \varepsilon \quad (8)$$

Where the dependent variable $ModAwrdDummy$ serves as a dummy variable classifying whether product *i* is or is not listed in one or more modern awards. $NetFee$ is the net fee charged as a percentage of account balance by product *i*, $FixedFee$ refers to the annual fixed fee charged by product *i*, $Ar10yr$ refers to the 10-year average investment return and $Sd10yr$ the 10-year standard deviation of the 10-year investment return. The same variables were used for the binary logistic regression. Here we calculated Tjur's coefficient of discrimination ("Tjur r^2") – an increasingly popular r^2 value for binary logit models which has an upper bound of 1.0 (unlike the Cox-Snell r^2) and is closely related to the r^2 definitions of linear models (Tjur 2009). Table 4 presents the r^2 values for each of the regressions, representing the variation in modern award listing status that is explained by our measurement of direct member outcomes.

Table 4: Cross-Sectional Variance in Binary Modern Award Outcome (OLS/Logit)

	Obs	F-stat/Chi2	R-sqd
OLS			
Regression #^	103	12.31	0.2451
With industry dummy^	103	29.73	0.5037
Binary Logistic			
Regression	103	27.70	0.2607&
With industry dummy	103	58.97	0.5096&

^ Normality of residuals assumption has also been violated and is a weakness of the model.

 # Regression was run with robust standard errors to account for the violation of the heteroskedasticity assumption.

&The r-squared result represents the Tjur's coefficient of discrimination.

The OLS r^2 of 24.51 per cent and the Tjur r^2 of 26.07 per cent present very close results and taken together indicate that only around one quarter of the variation in modern award outcome status can be explained by the fees, investment returns and volatility outcomes experienced by members. Another way of interpreting these results is to state that around seventy five per cent of the variation is explained by additional factors; a result which tends to confirm the findings of the Productivity Commission that the determination of modern award status for products largely depended on factors non-related to direct member outcomes. This view gains further credence when we include the industry fund classification dummy, where the OLS r^2 of 50.37 per cent and the Tjur r^2 of 50.96 per cent suggest the inclusion of industry fund status explains around 50 per cent of the variation in modern award outcome status. These results tend to confirm two

conclusions from the existing literature, namely, (1) that industry funds were created in order to specifically accept modern award contributions and therefore we would expect their products to have a disproportional modern award listed status, and (2) that factors beyond our measurement of direct member outcomes explain a significant proportion of the variance in modern award outcome status.

Of further interest, is gaining an understanding of how well the variation in the *number* of modern award listings is explained by our measurement of direct member outcomes. Table 6 presents our results using OLS where we run separate regressions on the aggregate and quartile level, and use both the complete data set and a reduced data set excluding products which are not listed in any modern awards. As mentioned earlier, there are issues with interpreting results of an ordinal nature when using an OLS framework given that OLS assumes that the distances between listing categories are the same. However it is argued that the number of listings is not ordinal in nature, as the number of listings in and of itself should not be construed as points on a scale,: the Selection Panel has repeatedly pointed to its mandate to assess each modern award category on its own merits – merits which in certain cases mean that products picked for certain awards will not be suited for others. This being said, the purpose of this exercise is simply to examine to what extent, if any, our member outcomes explain the variation in the number of modern award listings, with the OLS framework adequate for this purpose.

Table 5 presents the r^2 values for the regressions. The r^2 of 6.91 per cent for aggregate listings and 13.98 per cent for quartile based listings indicate that our measurement of member outcomes account for very little of the variation in the number of modern award listings. When restricting our data set to products listed in modern awards, there is no real change in the r^2 values, with our measurement of member outcomes accounting for 11.26 per cent and 18.59 per cent of the variation in the number of modern award listings. These results tend to confirm our belief that the *number* of modern award listings dependent variable is not ordinal in nature, and that as every modern award category is assessed on its own merits, there is no real relationship between overall member outcomes produced by products and the number of modern award listings they have access to.

Table 5: Cross-Sectional Variance in Modern Award Listings (OLS)			
	Obs	**F-stat/Chi2**	**R-sqd**
All Obs			
Number of Listings			
Regression	105	1.86	0.0691^#
Listing Quartiles			
Regression	105	4.12	0.1398^#
Only Listed Obs			
Number of Listings			
Regression	62	1.81	0.1126^#
Listing Quartiles			
Regression	62	4.48	0.1859&

^ Normality of residuals assumption has also been violated and is a weakness of the model.

 # Regression was run with robust standard errors to account for the violation of the heteroskedasticity assumption.

&This is the adjusted r-squared result.

4.2.2. Influence of Modern Awards

Having examined how our measurement of member outcomes does not sufficiently explain the variation in modern award listing status, we now turn to the second question; namely, what direct influence, if any, do modern award listing status and the number of modern award listings have on our superannuation performance outcomes . This is a particularly significant question, given the ongoing policy debate over the benefits of the modern award system, both to members and the superannuation funds and products set up to cater for them. The literature tends to suggest, that products with access to modern awards should receive additional benefits, in the form of increased (and stable) contribution flows and, with it, the flow on benefits of greater access to asset diversification and scale. In turn, these benefits lead to cheaper fees and long-term better performance outcomes for members of these products relative to non-modern award listed products. Tables 6 and 7 present the results for simple OLS regressions which attempt to estimate the influence of modern award listing status on member outcomes and benchmark asset allocations. The specific estimations of the following OLS regressions can be found in the Appendix, although we have included below the Table 6's estimation for the reader's benefit:

$$Ar10yr = a_1 + \beta_2 NetFee + \beta_3 FixedFee + \beta_4 ModAwrdDummy + \beta_5 Sd10yr + \beta_6 Industry + u \quad (9)$$

Where the dependent variable $Ar10yr$ refers to the 10-year average investment return for product *I*, $NetFee$ is the product's net fee charged as a percentage of account balance, $FixedFee$

refers to the annual fixed fee charged by the product, $Sd10yr$ is the 10-year standard deviation of the 10-year investment return and the $ModAwrdDummy$ and $Industry$ dummy variables classify whether product *i* is or is not listed in one or more modern awards and is an industry product. The control variables were selected through examination of a correlation matrix of all the variables in our dataset along with stepwise regressions to ensure the best fitting model. Certain regressions suffer from a lack of fit, which may be the result of the lack of additional product/fund specific data which could have provided additional control variables.

Table 6: Influence of Modern Awards Dummy Variable on Member Outcomes (OLS)

Dependent Variable[%]	Coefficient	P-value	F-stat	Adj R-sqd
Ar10yr	0.177	0.465	12.90	0.5073
Fixed fee	16.426	0.067***	4.06	0.1733#
Net fee	0.008	0.935	13.86	0.6162#
Sd10yr	-0.279	0.267	14.34	0.3908

*****Statistical significant p-value at 10% confidence level**

 # Regression was run with robust standard errors to account for the violation of the heteroskedasticity assumption. Normality of residuals assumption has also been violated and is a weakness of the model.

% See appendix for descriptions of the dependent variables.

The coefficient values displayed in Table 6 represent the influence of modern award listing on the corresponding variable. Unexpectedly, the coefficients for our net fee, 10 year investment return and standard deviation variables, are all insignificant, indicating that modern award listing status does not influence these dependent variables in a statistically significant way. Phrased in another way, this result suggests that modern award status is not associated with a decrease in net fee, an increase in 10 year investment return or a decrease in the standard deviation of this return – all outcomes which the literature (and policy advocates of the modern award system) suggests could be present. However at the 10 per cent level of significance, the value of the fixed fee variable for award listed products is, on average, $16.43 higher than for non-listed products. This result suggests, that fixed fees are higher for modern award listed products than for those which are not, as suggested previously by the simple descriptive statistics. This result confirms recent literature which points out that industry funds tend to exploit their larger membership base by charging a higher fixed fee and a lower percentage of assets under management fee (Basu and Andrews 2014).

Table 7: Influence of Modern Awards Dummy Variable on Benchmark Asset Allocations (OLS)				
Dependent Variable[%]	**Coefficient**	**P-value**	**F-stat**	**Adj R-sqd**
Cash	0.025	0.966	13.01	0.1966[#]
Intshare	-0.415	0.629	29.73	0.3630[#]
Audshare	-0.797	0.392	15.33	0.5229
Fullprop	2.068	0.004[***]	10.26	0.2161[#]
Fullfixint	-2.785	0.026[**]	41.34	0.5169[#]
Fullaltns	-2.326	0.350	15.71	0.2469[#]
Grdfratio	0.675	0.007[***]	6.60	0.3771[#]

[***]Statistical significant p-value at 1% confidence level, [**] at 5% confidence level, [*] at 10% confidence level

 # Regression was run with robust standard errors to account for the violation of the heteroskedasticity assumption. Normality of residuals assumption has also been violated and is a weakness of the model.

% See appendix for descriptions of the dependent variables.

Table 7 presents the coefficient value for the number of listings for each asset allocation dependent variable. Cash, international shares, Australian shares and our catch-all alternatives variable are all insignificant. Modern award listed products tend to have a higher allocation to growth assets. At the 1 per cent level of significance, the growth to defensive asset ratio coefficient of 0.675 indicates that modern award products on average have an 11.5 per cent higher allocation to growth assets. Modern award products also tend to allocate an extra 2.1 per cent of total assets to property, whilst these products also tend to have a -2.79 per cent lower asset allocation to fixed interest than non-modern award listed products. Taken together, these results suggest that modern award products tend to have greater exposure to growth assets, with the greater exposure to property and lower allocation to fixed interest placing modern award products (and their members) in a position to generate higher returns over the medium to long term (Chant West 2013).

Tables 8 and 9 display the coefficient results of OLS regressions which attempt to analyse the question of whether the *number* of modern award listings influences our variables representing member outcomes and benchmark asset allocations. Providing further support for the findings above, the results in Table 8 indicate no significant relationship between the *number* of modern award listings and a product's net fee, 10 year investment return and standard deviation of return. However, the fixed fee variable is significant at the 10 per cent level of significance, with a product's fixed fee increasing, on average, by $0.405 for every additional award listing. As has been mentioned previously, the OLS estimate infers an equal distance between the intervals of modern award listing values and as such the result should only be examined in this context. As

such, it is fair to suggest that there may be a slight relationship between the number of modern award listings a product has access to and the fixed fee that particular product charges. Potentially this relationship could be attributed to the idea that as a product gains access to a larger number of modern award listings, they take on a greater number of members which allows the product's fixed fee to cover a larger proportion of the product's expenses and charges relative to non-listed products.

Table 8: Influence of No. Modern Award Listings on Member Outcomes (OLS)

Dependent Variable[%]	Coefficient	P-value	F-stat	Adj R-sqd
Ar10yr	0.005	0.393	12.95	0.5083
Fixed fee	0.417	0.063[*]	5.22	0.1333[#]
Net fee	-0.00007	0.971	13.67	0.6162[#]
Sd10yr	-0.0009	0.915	13.92	0.3832

***Statistically significant p-value at 10% confidence level**

 # Regression was run with robust standard errors to account for the violation of the heteroskedasticity assumption. Normality of residuals assumption has also been violated and is a weakness of the model.

% See appendix for descriptions of the dependent variables.

The results displayed in Table 9 suggest that the *number* of modern award listings has an influential relationship with product benchmark asset allocations. International shares are significant at the 1 per cent level of significance, with a product's exposure to international shares increasing, on average, by 0.048 per cent for every additional award listing. For every additional listing, a product's allocation to property increases by 0.057 per cent. 'Alternatives' are also significant at the 5 per cent level of significance, although unexpectedly the sign of the coefficient is negative, indicating that for every additional modern award listing, the allocation to alternatives decreases by 0.073 per cent. Given that a product's assets under management should increase with additional product listings, this result could be partly explained as a consequence of the lack of sufficiently large and viable alternative assets which could absorb the larger product's allocation to the alternatives class without consequences for investment mandates. Fixed interest is also significant at the 1 per cent level, decreasing by 0.073 per cent for each additional modern award listing. Taken as a whole, these results suggest that the *number* of listings does influence, to an extent, the benchmark asset allocations of products.

Table 9: Influence of No. Modern Award Listings on Benchmark Asset Allocations (OLS)				
Dependent Variable[%]	**Coefficient**	**P-value**	**F-stat**	**Adj R-sqd**
Cash	-0.008	0.344	13.20	0.1978[#]
Intshare	0.048	0.006[***]	41.29	0.3771[#]
Audshare	-0.027	0.307	15.12	0.5222
Fullprop	0.057	0.000[***]	16.81	0.1872[#]
Fullfixint	-0.120	0.000[***]	55.69	0.5262[#]
Fullaltns	-0.073	0.013[**]	15.52	0.2470[#]
Grdfratio	0.003	0.434	7.86	0.3295[#]

*****Statistical significant p-value at 1% confidence level, ** at 5% confidence level, * at 10% confidence level**

 # Regression was run with robust standard errors to account for the violation of the heteroskedasticity assumption. Normality of residuals assumption has also been violated and is a weakness of the model.

% See appendix for descriptions of the dependent variables.

4.2.3. Log Odds and Predicted Probabilities

Coefficients and Odds Ratios

In recent times there has been considerable policy debate surrounding the modern awards system and a possible bias in the selection process which favours incumbent industry products at the expense of their master trust counterparts. This policy debate frames our third and final question which attempts to investigate whether the probabilities of modern award listing status are linked to product classification (industry, master trust) and our measurement of product outcomes. The results of our binary logit model are shown in Table 10. Unexpectedly, our analysis of the coefficients and log odds ratios of our binary logistic regression finds that the net fee, fixed fee and 10 year standard deviation of returns are all insignificant. This being said, the negative sign of the coefficients for the variables are what we would expect, as lower fees and levels of volatility in historical investment returns are outcomes that one should expect in a product that is selected for a modern award listing.

Table 10: Binary Logit Regression for Modawrddummy[#]			
Variables[%]	**Coefficient**	**Odds Ratio**	**P-value**
Net Fee	-0.0358	0.96	0.96
Fixed fee	-0.0004	0.99	0.81
Ar10yr	0.5693	1.77	0.087*
Sd10yr	-0.2328	0.79	0.25
Industry	3.5240	33.92	0.00***
Mastertrust	0.3192	1.37	0.82
Constant	-2.9704	0.05	0.29
Statistics	**Wald chi2(6)**	**Prob>chi2**	**Pseudo R2**
	38.89	0.0000	0.4226

*****Statistically significant p-value at 1% confidence level. * Statistically significant p-value at 10% confidence level.**

 # Regression was run with robust standard errors to account for the violation of the heteroskedasticity assumption.

% See appendix for descriptions of the dependent variables.

Whilst these findings are unexpected, the 10-year investment return variable is significant at the 10 per cent confidence level, and has a positive log odd of 1.78. This indicates that a one unit increase in a product's ten year investment return increases the odds of a being listed in a modern award 1.77 times. A one standard deviation increase in the 10-year investment return increases the per cent change in odds by 91.5 per cent, suggesting that at least for long term investment return there is a link between historical performance and modern award status.

As expected, the industry product classification dummy is highly significant, with a positive coefficient at the 1 per cent level of significance. The log odds ratio for an industry product classification indicates that the odds of a modern award listing for industry products are 33.92 times higher than for those that are not classified as an industry product. This finding tends to support the Productivity Commission and their assertion of a built-in selection bias towards industry products applying for modern award listings. Support for this viewpoint is also provided by the master trust dummy variable which, unlike its industry counterpart, is highly insignificant (p- value = 0.821). The limited standing afforded to master trust products historically and the role of precedent in the selection process, provide strong explanations for the difference in significance between the two dummy variables and, when viewed in the context of the overall insignificance of the member outcome variables, tend to suggest that by and large, the odds of being modern award listed typically depend on industry status, rather than any merit based variables.

Predicted Probabilities

The predicted probabilities for our binary modern award dependent variable provides an opportunity to extend our study to include hypothetical cases and their probabilities of a modern award listing. By doing so, we gain a greater understanding of our dataset and the ways in which the probability of a product being selected for a modern award listing is influenced by both product classification and their average 10-year annual return. This is done by isolating the impact on probability of a change in X by holding all other independent variables at their mean. Table 11 displays the predicted probabilities for a modern award listing given a change in product classification status.

Table 11: Predicted Probabilities of Modern Award Listing Status[#]

Variable	Pr(y=1/0|x)	Prediction (%)	95% Confidence Interval%	
Industry	=1	88.23	75.21	94.88
	=0	11.77	5.12	24.79
Master trust[#]	=1	23.33	5.07	63.42
	=0	76.67	36.58	94.93
Mean Values	**Fixed fee ($)**	**Net fee (%)**	**Ar10yr (%)**	**SD (%)**
	74.89	1.08	6.91	10.29

% Confidence intervals were calculated using endpoint transformation.

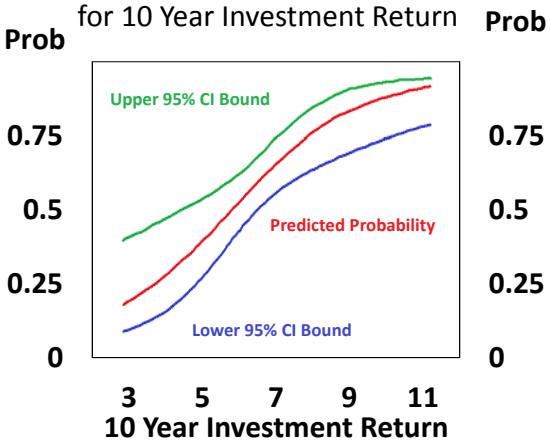
 # Master trust results are not statistically significant.

 # Regression was run with robust standard errors to account for the violation of the heteroskedasticity assumption.

Looking at the predicted probabilities we can clearly see how product classification impacts upon the probability of modern award listing status. When the 'average' product is classified as an industry product there is an 88.23 per cent probability that the product will be modern award listed. Conversely, for the same 'average' product which is classified as a master trust, there is only a 23.33 per cent probability that it would be listed. An implication of this finding is to suggest that the selection process places considerable weight on the classification of the product rather than on the relative merits of its historical outcomes for members. Whilst it must be noted that the master trust variable was not significant (and therefore these results are tentative at best), this result does at the very least provide some evidence that selection to a modern award listing has not been undertaken on a purely equal basis for products with equivalent fixed fees, net fees, 10 year investment return and 10 year standard deviation of investment returns.

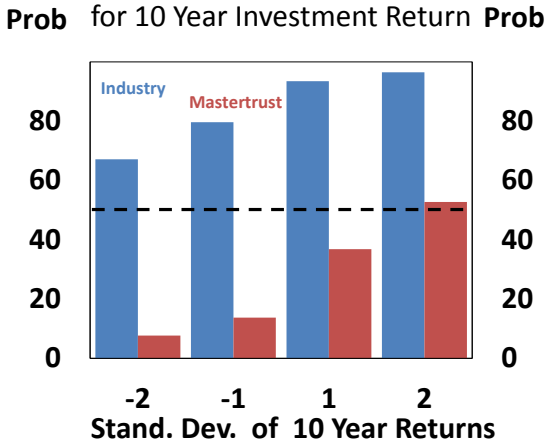
Graph 5 displays the observed probabilities and predicted probabilities for changes in the average product's 10-year average investment return variable. A higher average 10-year investment return is associated with an increased predicted probability of a modern award listing. An examination of the observed probabilities validates our initial expectation of two loose groupings of products: (1) products with no observed probability of a modern award listing which tend to be grouped towards the lower spectrum of average annual 10-year returns, and (2) products with an observed probability for modern award listed products of 1 which tend to be grouped towards the higher end of the average 10-year investment return spectrum. This finding, along with the predicted probability line, infers that, holding all else constant, a product increases its probability of being listed in a modern award when it increases its average 10-year investment return.

Graph 5
Predicted Probabilities*
for 10 Year Investment Return



*For mean product values; Sources: SuperRatings

Graph 6
Predicted Probabilities*
for 10 Year Investment Return



*As at 30 June 2013; Sources: SuperRatings

However, as noted earlier, product classification seems to be strongly related to modern award listings. Graph 6 displays the results of changes in the predicted probabilities of products on the basis of the standard deviations in the 10-year investment return and whether the product is classified as an industry fund or master trust. Whereas Graph 5 inferred a product's 10-year investment return increases the probability of a modern award listing, the inclusion of industry and master trust interaction terms in Graph 6 allows us to examine the question of whether the probabilities change for products based on the relationship between investment return and product classification. For both industry and master trust products, the probability of inclusion on a modern award list increases when performance improves in its 10-year investment return. However, an industry product with an investment return two standard deviations *below* the average, still has a 67 per cent probability of being modern award listed. Conversely, a master trust product with an investment return two standard deviations *above* the average, only has a 52 per cent probability of being modern award listed. Whilst it must again be noted that the master

trust variable is insignificant, and these results are viewed as tenuous at best, its inclusion does provide some insight into the role that product classification plays in the interpretation of 10-year investment returns and the predicted probabilities of a modern award listing. What is clear is that there is some inconsistency in the interpretation and review by the modern award Selection Panel of default superannuation product investment returns based on, whether they are classified as an industry or master trust product.

5. Summary and conclusions

5.1. Summary of Findings

In this study we have attempted to draw out the relationships between the modern awards system and our measurement of member outcomes for default superannuation products as at June 2013. The member outcomes include an individual product's net and fixed fees, net 10-year investment return and the standard deviation of this return. The sample size is 105 products and only includes products with a default investment option with a single benchmark asset allocation (as opposed to life-cycle strategies dependent upon age). Four product types are covered in the sample: corporate, industry, public sector and retail master trust. Each product is also categorised depending on (1) whether they are listed in a modern award, and (2) the *number* of modern award listings they have access to.

Our measurement of member outcomes do not significantly account for the variation in modern award outcome status. Using both OLS and binary logistic models, the corresponding r^2 of 24.51 per cent and the Tjur r^2 of 26.07 per cent indicate that only around one quarter of the variation in modern award outcome status can be explained by the product's net fees, fixed fees, 10-year investment return and 10-year standard deviation of returns. However, the inclusion of the industry fund dummy variable significantly increases the explanatory power of the model, raising the OLS r^2 to 50.37 per cent and the Tjur r^2 to 50.96 per cent. These results tend to support the view of the Productivity Commission that modern award listing status is only partly explained by a product's member outcomes, and that product classification tends to play a much larger role in explaining the variance than one should expect from a merit based selection process.

The member outcomes explain even less of the variation in the *number* of modern award listings. The OLS $r^2$of 6.91 per cent and 13.98 per cent for our restricted quartile sample suggest that member outcomes are of nominal value in explaining how the *number* of modern award listings is allocated to various products. When focusing on the aggregate sample of products, the r^2 values are not much higher at 11.26 per cent and 18.59 per cent respectively. These results may be attributable to the mandate of the modern award selection panel to assess each modern award on its own merits, meaning that products which are seen as a good fit for one modern award may be considered inappropriate for another due to the differing requirements, expectations and classes of employees in the relevant modern awards.

From our second series of OLS regressions we find that modern award status does not influence the net fee, 10-year investment and standard deviation variables in a statistically significant way. This means that modern award status is not significantly associated with decreasing net fees, higher 10-year investment returns and lower levels of volatility – all outcomes the literature suggests should be present. However at the 10 per cent level of significance, the fixed fee variable is significant and for award listed products is, on average, $16.43higher than for non-listed products. It is not unexpected that modern award listed products would have higher fixed fees, as the literature does suggest that funds with a higher number of members tend to take advantage of their scale by charging higher fixed and lower percentage of asset fees. Further credence for this view is provided by the fixed fee coefficient in the OLS regression estimating the influence of the *number* of modern award listings. At the 10 per cent level of significance, for every additional modern award listing a product's fixed fee increases by $0.405 per annum.

Modern award products are also estimated to have an 11.5 per cent higher allocation to growth assets, an extra 2.1 per cent allocated to property and a -2.79 per cent lower allocation to fixed interest. Although the 'alternatives' class was not significant, infrastructure by itself was highly significant with modern award listed products tending, on average, to have a 5 per cent higher allocation to this illiquid asset class. The *number* of modern award listings also has an influence on product benchmark asset allocations. A product's exposure to international shares and property was estimated to increase by 0.048 and 0.057 per cent respectively, for every additional modern award listing. At the 5 per cent level of significance the allocation to 'alternatives' decreased by 0.073 per cent for every additional modern award listing. This result may be attributable to the fact that as a product increases its assets under management from award listings, the extra size makes it harder to invest the same proportion of assets (but at a larger dollar amount) in illiquid assets, given restrictions on investment mandates.

The odds ratios from our binary logistic regression indicate that of our member outcomes only the 10-year investment return is significant with a positive log odds of 1.78. This indicates that a one unit increase in a product's 10-year investment return increases the odds of being listed in a modern award by 1.77 times, with a one standard deviation increase in the 10-year return increasing the per cent change in odds by 91.5 per cent. This suggests that at least for the 10-year investment return there is a link between a member outcome and modern award status. As

expected the industry product classification dummy is also significant, with the odds ratio of a modern award listing 33.92 times higher for an industry product. The master trust dummy is highly insignificant (p-value=0.821), and taken together suggests that industry products have a greater odds of being listed in a modern award than master trusts. The predicted probabilities provide further support for this view. An 'average' product with mean values for all variables will have an 88.23 per cent chance of being modern award listed if they are classified as an industry product, with the probability for the same product being modern award listed decreasing to only 23.33 per cent if the product is classified as master trust. Although the master trust probability can only be considered preliminary due to its insignificance, this finding does tend to support the view of the Productivity Commission, namely, that industry products have been selected to modern awards based primarily on precedent.

That being said, a higher average 10-year investment return is associated with an increased predicted probability of a modern award listing. For both industry and master trust products the probability of inclusion on a modern award list increases when performance improves in its 10-year investment return. However, an industry product with an investment return two standard deviations *below* the average, still has a 67 per cent probability of being modern award listed. Conversely, a master trust product with an investment return two standard deviations *above* the average, only has a 52 per cent probability of being modern award listed. In our view, the insignificance of the master trust dummy variable only strengthens the support for the view that, based on our measurements of member outcomes, master trust products have much lower predicted probabilities of being selected for a modern award than industry products with equivalent member outcomes.

5.2. Implications

This research looks into the modern award system of default superannuation product listings using both OLS and binary logistic models. This is probably the first study of its kind in Australia and introduces a member outcome based alternative to the traditional analyses of overall fund efficiency scores and risk-adjusted returns commonly used for superannuation funds. The research findings indicate that modern award listings are not primarily driven by our definition of member outcome based selection processes. The low explanatory power of member outcomes variables in the variation in modern award status supports the Productivity Commission's findings that there needs to be a wholesale review of how and why default superannuation products are provided access to modern award default lists.

There also appears to be a degree of inequality in the selection of products based upon their classification. That a product, with the same member outcomes, has significantly different probabilities of being modern award listed based upon whether they are an industry product or not, suggests that further work needs to be done in identifying and clarifying the roles and responsibilities of the selection panel in satisfying the members 'best interests test'. Products with a higher 10-year investment return do have a greater probability of being listed in a modern award. However, the fact that even low-performing industry products have a higher predicted probability than top performing master trust products, only underlines the need for greater change and equity in the selection of modern award listing status.

Taken as a whole, the results of this study imply the need for a stronger, more transparent and competitive selection process for modern award listings. The 'best interest test' has long been considered opaque and subjective, with our results confirming that, at least in our measurement of member outcomes, the selection of products has fallen short of this standard. A greater emphasis on the ultimate cost/benefit to the member should be taken, and accordingly, a greater focus should be given not only to the products' fees, volatility and investment returns, but also to how these outcomes interact with one another. This study should not be taken to suggest that as industry products tend to have higher fixed fees, they should not be considered for a modern award. Fees after all, are necessary to manage the investments of the members, and as such, it would be unwise to make decisions based on fees without taking into consideration the investment outcomes of the product. Instead this research emphasises the real need for a substantial review of the modern award selection process; including but not limited to the clarification of how 'best interest' is to be interpreted, and ways in which competition and transparency can be built into the selection of products.

5.3. Limitations of the research

Whilst there is a considerable amount of publicly available data for overall superannuation funds, the lack of product specific data resulted in the use of a limited dataset, both in terms of the number of products it holds and, the scope of what the data relates to. The difficulties encountered have been noted by APRA, who in view of the new MySuper regime, now generate quarterly product level statistics available to the public at large. As a result, the OLS regressions generated in this report, despite being useful for exploratory purposes, lacked the inclusion of more powerful control variables. This gap could be filled by future research given that future academics will have access to the quarterly MySuper data.

Moreover, the results of the research only serve to provide a snapshot of the relationships as at 2013. This is again attributable to the lack of product level data but also represents the lack of aggregated modern award listings data. Survivorship bias therefore may influence our findings, although this impact may be over-estimated given the lack of historical movement in listing status (Productivity Commission, 2012).

MySuper has also generated considerable change in the superannuation industry, with master trusts, by and large, building new products for their members. This means that there will be considerable differences in the specific characteristics of the master trust products in our data and that which now exists. However, the purpose of this study was to provide an insight into the selection of products for modern award default listings and, even in light of the recent changes, the implications of the result are no less significant nor relatable to the new MySuper regime.

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Appendix

Definition of Variables:

$Ar10yr$ = Average of the product's 10 year historical investment return.

$Sd10yr$ = Standard deviation of the product's 10 year historical investment return.

$NetFee$ = The total fee charged by a product based as a percentage of total account balance.

$FixedFee$ = The total fee charged by a product based as a fixed dollar amount.

$Cash$ = Cash asset class.

$IntShare$ = International shares asset class.

$AudShare$ = Domestic (Australian) shares asset class.

$FullProp$ = Includes Listed/Unlisted Domestic/International property asset classes.

$FullFixint$ = Includes Domestic/International Hedged/Unhedged fixed interest classes (including debentures, mortgages etc).

$FullAlts$= Includes all alternative asset classes; private equity, infrastructure etc.

$GroRatio$ = Ratio of total growth assets to defensive assets.

$ModAwrdDummy$ = Dummy variable; =1 if product is listed in 1 or more modern awards and =0 if it is not.

$ModAwrdQrt$ = Dummy variable which assigns a value of 1, 2, 3 or 4 depending on which modern award listing quartile the product belongs to.

$ModAwrd$ = Dummy variable which lists the number of modern award listings a product has access to.

Influence of modern awards dummy variable on Member Outcomes (OLS)

$$Ar10yr = a + \beta_1 NetFee + \beta_2 FixedFee + \beta_3 ModAwrdDummy + \beta_4 Sd10yr + \beta_5 Industry + \varepsilon$$

$$FixedFee = a + \beta_1 NetFee + \beta_2 Ar10yr + \beta_3 ModAwrdDummy + \beta_4 Sd10yr + \beta_5 Industry + \varepsilon$$

$$NetFee = a + \beta_1 FixedFee + \beta_2 Ar10yr + \beta_3 ModAwrdDummy + \beta_4 Sd10yr + \beta_5 Industry + \varepsilon$$

$$Sd10yr = a + \beta_1 FixedFee + \beta_2 Ar10yr + \beta_3 ModAwrdDummy + \beta_4 NetFee + \beta_5 Industry + \varepsilon$$

Influence of modern awards dummy variable on Benchmark SAA's (OLS)

$$Cash = a + \beta_1 ModAwrdDummy + \beta_2 GroRatio + \varepsilon$$

$$IntShare = a + \beta_1 GroRatio + \beta_s ModAwrdDummy + \varepsilon$$

$$AudShare = a + \beta_1 Sd3yr + \beta_2 Ar2013 + \beta_3 ModAwrdDummy + \beta_4 FullAltns + \varepsilon$$

$$FullProp = a + \beta_1 Ar2008 + \beta_2 Cash + \beta_3 ModAwrdDummy + \varepsilon$$

$$FullFixint = a + \beta_1 FullAltns + \beta_2 Ar2011 + \beta_3 ModAwrdDummy + \beta_4 NetFee + \beta_5 Mastertrust + \varepsilon$$

$$GrdfRatio = a + \beta_1 Ar2004 + \beta_2 Sd10yr + \beta_3 ModAwrdDummy + \varepsilon$$

Influence of No. of Modern Award Listings on Member Outcomes (OLS)

$$Ar10yr = a + \beta_1 NetFee + \beta_2 FixedFee + \beta_3 ModAwrd + \beta_4 Sd10yr + \beta_5 Industry + \beta_6 AudShare + \beta_7 Intshare + \beta_8 FullProp + \beta_9 FullFixInt + \varepsilon$$

$$FixedFee = a + \beta_1 Mastertrust + \beta_2 Ar10yr + \beta_3 ModAwrd + \beta_4 Sd7yr + \beta_5 Government + \beta_6 Ar2008 + \varepsilon$$

$$NetFee = a + \beta_1 FullAltns + \beta_2 Ar10yr + \beta_3 ModAwrd + \beta_4 Sd3yr + \beta_5 Industry + \beta_6 Mastertrust + \varepsilon$$

$$Sd10yr = a + \beta_1 FixedFee + \beta_2 Government + \beta_3 ModAwrd + \beta_4 NetFee + \beta_5 IntShare + \varepsilon$$

Influence of No. of Modern Award Listings on Benchmark SAA's (OLS)

$$Cash = a + \beta_1 ModAwrd + \beta_2 GroRatio + \varepsilon$$

$$IntShare = a + \beta_1 GroRatio + \beta_s ModAwrd + \varepsilon$$

$$AudShare = a + \beta_1 Sd3yr + \beta_2 Ar2013 + \beta_3 ModAwrd + \beta_4 FullAltns + \varepsilon$$

$$FullProp = a + \beta_1 Ar2008 + \beta_2 Cash + \beta_3 ModAwrd + \varepsilon$$

$$FullFixint = a + \beta_1 FullAltns + \beta_2 Ar2011 + \beta_3 ModAwrd + \beta_4 NetFee + \beta_5 Mastertrust + \varepsilon$$

$$GrdfRatio = a + \beta_1 Ar2004 + \beta_2 Sd10yr + \beta_3 ModAwrd + \varepsilon$$