Superfund Consolidation Following the Performance Test

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Certificate of Original Authorship

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text. I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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Abstract

The *Your Future Your Super* legislation is arguably the most significant change to Australian superannuation in 30 years, impacting $3.5 trillion in assets across 23.2 million accounts. Despite heavy criticism of consolidation resulting from the legislation, I find evidence that it has led to synergies, which improved member outcomes. I also find that superannuation fund members are more engaged as a result of the legislation and the performance test it introduced and that they respond to performance test failures. Lastly, I find evidence to suggest that the legislation is working as intended to reduce administration fees charged to members, but investment fees seem to have increased due to larger fund sizes resulting from fund mergers. As the trend of consolidation continues, these findings provide valuable insights for decision-makers, guiding them to pursue mergers that align with members' best interests and to develop investment strategies that are tailored to the specific objectives of fund members.

Keywords: superannuation, consolidation, policy change

JEL Classification: J32, G28

1 Introduction

The *Your Future, Your Super* (*YFYS*) legislation, introduced in 2021, has sparked considerable debate among policymakers and industry experts, with opinions divided on whether the reforms are truly serving the best interests of superannuation fund members. The reforms, aimed at empowering members with better choices, protecting savings from underperformance, and ultimately increasing the value of retirement savings, have been met with mixed reactions. Critics have questioned the design and implementation of the annual YFYS performance test used to measure fund performance, and the trend of fund consolidations resulting from the legislation. This paper seeks to answer the following question: How does superfund consolidation, driven by the YFYS legislation's performance test, affect member outcomes, fee structures, and member engagement?

To assess the impact on member outcomes, I have developed a novel propensity score model that identifies potential synergies between merging funds. Utilizing random sampling and bootstrap regression techniques, I constructed and analyzed hypothetical merger pairs to calculate their propensity scores, and compared those scores to the scores of actual merger pairs to determine if realized consolidations are characterized by higher synergistic potential. Next, I assessed the impact of the YFYS performance test on member engagement by examining the influence of failing the test on fund rollovers. Here the question is whether a failed performance test prompts members to switch voluntarily to another fund. Finally, I evaluated whether the legislation's promise of reduced fees has come to fruition, by examining the impact of fund mergers on the fees charged to members

My findings reveal that pairs of funds that merge have higher average propensity

scores compared to those that do not merge. Specifically, the average propensity score for pairs of funds that have not engaged in mergers is 0.921, while for those that have merged, it is 0.951. This pattern is confirmed by a regression on hypothetical merger pairs, which shows a statistically significant increase in propensity scores among pairs of funds that have actually merged. These results suggest that funds that merge exhibit more similar member demographics and asset allocation strategies, compared to arbitrary pairs. This is significant, as a mismatch in member demographics or asset allocation can result in sub-optimal outcomes for members due to varying investment objectives required by different member age groups. Based on these findings, I expect mergers to create enhanced synergies, leading to, on average, improved outcomes for their members.

The evidence I have gathered points to the *YFYS* legislation achieving its intended effect of bolstering member engagement. In delving into fund rollovers—the voluntary switching behavior of members—it becomes clear that a fund's failure to pass the performance test precipitates a significant asset outflow, averaging 3% of the fund's total assets. This exodus is largely attributed to members heeding written advisories to explore alternative funds. Such substantial outflows lead me to hypothesize that funds may be incentivized to adjust their asset allocation strategies with the primary goal of passing the performance test, potentially at the expense of aligning with their members' best interests. Additionally, my analysis suggests that members give considerable weight to historical performance when selecting a fund, with funds experiencing an average net asset inflow of 0.5% for every percentage point increase in net returns from the previous year.

My research supports the assertion that consolidation results in lower adminis-

tration fees, lending credence to the economies of scale argument. Specifically, after a merger, for every percentage point increase in the total number of accounts, there is a corresponding decrease of 0.0144% in the administration fees charged to a representative account. Furthermore, for all funds, I observe a reduction of 0.0122% in administration fees for every percentage point growth in total assets managed by the fund. Contrasting with the common belief that consolidation leads to fee reduction, my analysis reveals a counterintuitive trend for investment fees, in which post-merger investment fees rise by 0.0865%. Additionally, there is a noticeable increase in investment fees of 0.0024% for every percentage increase in the total number of member accounts. This increase in investment fees can be attributed to increased investment expenses, post-merger, possibly due to higher costs of pursuing alpha at scale. Should the pressure to reduce fees intensify, I expect that funds will shift their investment strategies towards index-matching as a cost-saving measure, rather than striving for higher active returns.

The long-term ramifications of the performance test remain uncertain, particularly in light of potential amendments to the legislation. However, my research sheds light on the immediate transformations within the superannuation industry following the initial two years of its implementation. My findings suggest that the *YFYS* legislation has effectively heightened member engagement and contributed to fee reduction. Additionally, there is evidence to support the notion that consolidation enhances member outcomes, attributable to the synergies found in member demographics and asset allocation strategies. These early indicators point to a positive shift in the industry which are aligned with the objectives set forth by the *YFYS* reforms.

The implications of my findings extend beyond the current state of the superan-

nuation industry. Given the ongoing trend of consolidation, which is anticipated to persist, industry experts forecast an optimal landscape comprising around 15 funds (Williamson, 2020). It is my aspiration that this research will equip fund managers with enhanced capabilities to identify potential merger targets more effectively. By doing so, they can engineer more favorable outcomes for their members, ensuring that the consolidation process aligns with the overarching goal of member benefit maximization. Furthermore, it is my hope that the insights gleaned from this research will mitigate some of the regulatory uncertainty surrounding the outcomes of the *YFYS* legislation. By shedding light on the tangible effects of the current policy, this work should contribute to a more informed and evidence-based approach to future legislative amendments, guiding policymakers towards decisions that enhance the superannuation landscape for all stakeholders. Lastly, I aspire for this research to serve as a valuable resource for superannuation fund managers by providing deeper insights into the dynamics of the performance test. With this knowledge, they can devise asset allocation strategies that not only comply with regulatory benchmarks but also promote superior member outcomes. This is particularly crucial in an evolving superannuation landscape where members are becoming increasingly knowledgeable and the repercussions of failing the performance test are becoming more pronounced.

This research addresses a critical void in the literature on fund management by offering the first empirical investigation into the Australian superannuation industry in the wake of the newly implemented performance test. Drawing upon and expanding the foundational work presented in industry research papers such as those by (KPMG, 2023), (J.P. Morgan, 2022), (J.P. Morgan, 2023) and (Keskiner & Matthias, 2018), this study aims to highlight the issues faced as a result of unprecedented structural

change present in the superannuation sector. Lastly, this research endeavors to establish a robust foundation for future research into the dynamics of Australian superannuation, setting the stage for a deeper understanding of its regulatory impacts and long-term financial implications for members.

2 Literature Review and Hypothesis Development

This review of literature navigates several topics relevant to the trend of consolidation within the context of the Australian superannuation industry. This section reviews the changes in legislation to the superannuation industry, recent trends of consolidation both locally and overseas, and the arguments for and against consolidation in the superannuation industry.

2.1 Australia's Superannuation Landscape

Australia's superannuation system underwent its most significant change on 1 July 1992, with the introduction of the superannuation guarantee (SG) under the 1992 Superannuation Guarantee (Administration) Act (SGAA). Under the SGAA employers must make superannuation contributions into a complying fund on behalf of their eligible employees, in accordance with minimum prescribed levels (Australian Taxation Office, 1996). The purpose of the SG was to meet the urgent need for much greater self-provision for retirement income through compulsory superannuation contributions, strengthening Australia's national savings performance (Drew & Stanford, 2003). This policy initiative not only aimed to secure financial stability for retirees, but also sought to reduce the long-term burden on the public pension system. By

mandating compulsory contributions, it also encouraged a culture of saving, leading to broader economic benefits, such as increased investment and reduced reliance on foreign capital. Since the introduction of the SG, Australia's superannuation pool has grown from around $148 billion in 1992 to over $ 3.3 trillion in 2022 (Australian Prudential Regulation Authority, 2022c), which currently represents 139.6% of gross domestic product (GDP) and makes Australia's pension pool the fourth largest in the OECD (Organisation for Economic Cooperation and Development, 2022). The percentage of an employee's wage compulsorily contributed to a superannuation fund by an employer has also grown since the inception of the SG, from 9% in 2002 to 11% in 2023, with future growth to 12% by 2025 (Australian Taxation Office, 2023).

Since the inception of the SG, the most significant change to Australia's superannuation system occurred as a result of the Royal Commission into misconduct in the banking, superannuation, and financial services industry. The *YFYS* legislation, introduced in 2021, which aimed at increasing member engagement, reducing fees, increasing performance, and holding trustees accountable for their decision-making (Department of the Treasury, 2022). Changes introduced by the *YFYS* legislation include the stapling of member accounts to reduce the creation of unintended multiple superannuation accounts, and increased accountability and transparency, to encourage decision-making in the best interest of fund members. One of the most notable impacts of the *YFYS* legislation was the introduction of an annual performance test, designed to reduce investment under-performance by assessing superannuation funds against clear and objective benchmarks, combined with strict penalties on funds that fail. Trustees of funds that fail the test for the first time are required to notify all invested members through a letter. If a fund fails for a second consecutive year, it must

be closed to new members and existing members must receive further correspondence explaining the failure (Crawford, 2023). The performance test benchmarks funds strategic asset allocation (SAA) against a selection of indices to create a benchmark portfolio. The indices used to construct benchmark portfolios are shown in Table 1 (Australian Prudential Regulation Authority, 2023b).

Table 1: APRA Annual Performance Test benchmark indexes and corresponding Bloomberg tickers

Asset Class	Index	Bloomberg Ticker
Australian Equity	S&P/ASX 300 Total Return Index	ASA52
International Equity (hedged)	MSCI All Country World Ex-Australia Index with Special Tax (100% hedged to AUD)	DE725341
International Equity (unhedged)	MSCI All Country World Ex-Australia Index with Special Tax (unhedged in AUD)	DN714533
Australian Listed Property	S&P/ASX 300 A-REIT Index	ASA6PROP
International Listed Property	FTSE EPRA Nareit Developed ex Aus Rental 100% Hedged to AUD Net Tax (Super) Index	RAHRSAH
Australian Unlisted Property	MSCI/Mercer Australia Core Wholesale Monthly Property Fund Index – NAV-Weighted Post-Fee Total Return (All Funds)	N/A
International Unlisted Property	MSCI/Mercer Australia Core Wholesale Monthly Property Fund Index – NAV-Weighted Post-Fee Total Return (All Funds)	N/A
Australian Listed Infrastructure	FTSE Developed Core Infrastructure 100% Hedged to AUD Net Tax (Super) Index	FDCIISAH
International Listed Infrastructure	FTSE Developed Core Infrastructure 100% Hedged to AUD Net Tax (Super) Index	FDCIISAH
Australian Unlisted Infrastructure	MSCI Australia Quarterly Private Infrastructure Fund Index (Unfrozen) – NAV-Weighted Post-Fee Total Return (All Funds)	N/A
International Unlisted Infrastructure	MSCI Australia Quarterly Private Infrastructure Fund Index (Unfrozen) – NAV-Weighted Post-Fee Total Return (All Funds)	N/A
Australian Fixed Interest	Bloomberg Ausbond Composite 0+ Index	BACM0
International Fixed Interest	Bloomberg Barclays Global Aggregate Index (hedged to AUD)	LEGATRAH
Australian Cash	Bloomberg Ausbond Bank Bill Index	BAUBIL
International Cash	Bloomberg Ausbond Bank Bill Index	BAUBIL
Other (assets categorised as Other / Commodities)	25% International Equity (hedged), 25% International Equity (unhedged), 50% International Fixed Interest	

The methodology used to determine fund performance involves the calculation of a performance measure for each product tested:

$$\begin{aligned}\text{Performance measure} = &\left(\text{Actual Return} - \text{Benchmark return}\right) \\ &+ \left(\text{Benchmark RAFE} - \text{Actual RAFE}\right) \end{aligned} \tag{1}$$

The first metric used to calculate performance is the net investment return of a fund over the past eight years, compared to a benchmark consisting of the aforementioned indices tailored to the fund's strategic asset allocation. The use of a benchmark portfolio aims to account for influences on investment markets that are beyond the fund's control (Department of the Treasury, 2022). The second metric used is the fund's representative administration fees and expenses (actual RAFE) for the most recent financial year, compared to the median RAFE (Benchmark RAFE). To obtain an even metric between funds, RAFE is calculated based on a member with a $50,000 superannuation balance. Failure of the performance test occurs if the performance measure is less than -0.005 (-0.5%).

The first performance test in 2021 saw 80 funds tested with 67 funds passing and 13 funds failing. The funds that failed the inaugural performance test represented 6% of total superannuation assets and 7% of member accounts (Australian Prudential Regulation Authority, 2021). The 2022 performance test saw a total of 69 funds tested, with 64 funds passing, one fund failing for the first time, and four funds failing for a second time, with the funds failing for a second time, prohibited from onboarding new members (Australian Prudential Regulation Authority, 2022b). The most recent

performance test in 2023 saw one fund fail, that fund being AMG Super, having failed the performance test for a third consecutive period (Australian Prudential Regulation Authority, 2023a).

2.2 Issues Surrounding the *YFYS* Legislation

To better understand key stakeholders' views regarding the *YFYS*, Department of the Treasury, 2023 outlines key issues regarding the performance test. While stakeholders generally supported the policy objectives of performance testing, noting improved outcomes for members through pressure for funds to reduce fees and improve returns, merge, or exit the industry, several concerns were raised. The first major issue expressed is the use of a single measure of performance, based solely on implementing an investment strategy, as a simple and objective measure of performance. As a result, this performance metric may unintentionally impact investment decisions by funds to reduce the risk of failure. As a result of this benchmarking process, stakeholders expressed strong incentives to hug the benchmark ensuring funds pass the annual performance test, leading to potential short-term decision-making, discouragement of investment in asset classes not well represented by benchmarks, reducing funds from active to passive management style, and increasing systematic risk potentially reducing long-term returns for members. In a survey conducted by J.P Morgan, 76.8% of funds surveyed believe the *YFYS* performance test will result in more benchmark-like returns (J.P. Morgan, 2022). This trend towards benchmark-hugging could lead to an increase in correlation between superannuation fund returns, limiting the effectiveness of diversification and ultimately increasing systematic risk (Delpini et al., 2019). Another concern raised by stakeholders is the single metric measure of per-

formance, which captures the implementation of an investment strategy, but not the risk associated with the strategy. This inability to capture risk has the potential for well-performing funds to fail the performance test leading to reduced member choice and underperforming funds passing the performance test reducing member outcomes. In its submission to APRA's superannuation performance test review, Australia's largest superannuation fund, AustralianSuper, proposed a potential solution to this problem, advocating for a single industry-wide benchmark that would allow for more clarity and consistency for fund members (Korporaal, 2023).

2.3 Consolidation in Australia

In a 2022 speech, APRA Deputy Chair Margaret Cole emphasized the need for further consolidation in the superannuation industry, stating there are "still too many funds and products on the market", despite ongoing efforts since 2013 to reduce the number of funds and products (Australian Prudential Regulation Authority, 2022a). APRA has become increasingly outspoken about this issue, citing studies demonstrating that larger funds are generally more effective at delivering higher net returns and lower fees to their members over the long term (Australian Prudential Regulation Authority, 2022a). This assertive stance has even extended to specific cases. For instance, APRA publicly criticized Christian Super in late 2021 for its "persistent investment underperformance", effectively calling for the fund's exit from the industry (Read, 2021). This increase in regulatory pressure can be observed in the market, with 15 mergers occurring during 2011–2016, to 17 mergers occurring during 2020-2021 (KPMG, 2022) while an additional 10 mergers occurred during between 2021-2022 (Nath, 2023). Additionally, the number of APRA-regulated funds fell by almost 30%

from 2317 in June 2016 to 1656 in June 2021 (Read, 2022).

KPMG, 2023 lists the key factors driving mergers as scale to deliver better outcomes for members, sustainability considerations in relation to investment performance, fees, net cash flow ratios, and strategic partnering to improve market positioning. The increased rate of consolidation has led to the creation of mega-funds within the superannuation industry, with 17 funds now sporting over $50b in assets under management (AUM) (Warren, 2023b) and Australia's largest superannuation funds, AustralianSuper and Australian Retirement Trust (ART) aiming to reach $500b in AUM by 2030 (Bragg, 2023). As of June 2023, there are currently three funds with AUM greater than $100b and one fund managing $250b in assets (KPMG, 2023). This trend of consolidation is expected to continue, with executives predicting that fewer than 75 funds will remain by 2025, compared to 134 funds at the end of March 2023 (J.P. Morgan, 2023). For example, Spirit Super's Chief Investment Officer (CIO) Ross Barry stating "It is widely understood that there will be more consolidation in the industry" (Chong, 2022).

2.4 Consolidation Globally

Looking globally, we can see the consolidation of pension funds emerging as a global trend. (State Street, 2022) outlines that the global trend towards pension fund consolidation is characterized by the merging and restructuring of multiple pension plans into single entities, with the aim of improving pension member outcomes and streamlining operations across various countries. In Canada, 72% of pension funds are considering consolidation options, with 50% of funds focusing on implementing consolidation strategies over the next three to five years (Canadian Investment Review,

2021). In Oman, eight pension funds were consolidated into two in 2021, with one fund for military and government employees and one fund for private sector employees (Schulkes, 2022) in a move to save costs and enhance efficiencies (Thomas, 2014). One of the pioneers in pension fund consolidation, The Netherlands saw a decrease in listed funds from 1000 in 2000 to 200 in 2022. Since 2008, 400 corporate pension funds have liquidated, with 15 liquidating in 2021 and a further eight funds liquidating in the first half of 2022 (Hoekstra, 2022). Also in Europe, the United Kingdom has seen the number of defined contribution (DC) funds decrease from 45,150 in 2011 to 27,700 in 2011, showing a 40% consolidation of the DC market in the last decade (The Pensions Regulator, 2022). Globally, this trend of consolidation is driven by a *strength in numbers approach* with smaller funds facing increasingly more difficult challenges, such as costs, maintenance, and management, as well as limited access to fund managers and investment opportunities.

2.5 Arguments for Consolidation

One of the key drivers of consolidation is the potential to achieve economies of scale, enabling access to more attractive investment opportunities and reducing administration costs. By increasing scale, funds should be able to attain greater investment returns since larger funds have access to more attractive investment opportunities. One example of this is AustralianSuper's acquisition of a 20.5% stake in WestConnex, Australia's largest infrastructure project (Warren, 2023a). Illiquid investment opportunities, like private equity (PE) and venture capital (VC), are often available only through special access or preferential treatment granted by external fund managers. Keskiner and Matthias, 2018 finds that often, the best investment opportunities are

given to the largest investors who can make significant commitments, allowing for reduced administrative costs, making access to the same opportunities unobtainable for smaller funds. By consolidating, funds can access a broader and more lucrative range of investment opportunities.

Another key benefit of consolidation is the potential to reduce average costs per member, for both administration and investment with Carlo et al., 2023 finding larger funds have reduced costs per member when investing in infrastructure investment. Through achieving scale across the business system, consolidated funds should achieve more efficient processes, and improve efficiency through moving services such as investment management in-house, as a larger capital base is able to attract top talent and build in-house private market teams (Nangle, 2023). As seen in Keskiner and Matthias, 2018 larger funds drastically reduce operating costs through economies of scale, with administration costs per member reducing by 61% for every tenfold increase in members. Keskiner and Matthias, 2018 also discovers that larger funds manage a greater percentage of assets in-house, finding that funds that manage $100b in AUM save 28 basis points on investment costs compared to funds that manage $1b in AUM, presenting a cost saving of $280m when managing investments in-house. While consolidation can lead to significant cost savings, there is no guarantee that these savings will be passed on to members in the form of lower fees.

The process of achieving economies of scale through consolidation also allows for stronger governance and health. Many proponents of consolidation believe that larger funds have the ability to implement stronger governance practices, thereby reducing risk and leading to greater risk-adjusted returns, with this correlation revealed in (Bregnard & Salva, 2023). Clark and Unwin, 2008 found that pension funds with

strong governance delivered 2% of additional returns over their respective benchmarks while Ambachtsherr, 2011 documented that strong governance enhances fund value by up to 1% per year. While these benefits may be achieved through increasing fund size, there is no guarantee that funds will capture these benefits by consolidating rather than growing organically, to capture through mergers these efficiencies may be difficult as funds need to merge systems and processes during the consolidation process. Finally, there is no evidence in Keskiner and Matthias, 2018 suggesting that larger funds are better at governance. The evidence only shows that there is greater variability in governance amongst smaller funds.

2.6 Arguments Against Consolidation

There are also several arguments against the consolidation of superannuation funds that highlight several challenges and limitations of consolidation. While larger funds have more money to invest, they often have to do more work to find good investments also leading to higher search costs. This is because larger funds need to make larger investments in undervalued assets to generate the same active performance (alpha) as smaller funds, meaning that as funds grow their opportunities to invest in public-market segments such as mid-cap equities decrease (Warren, 2023a). Furthermore, while larger funds have access to large infrastructure investments, for example, with $200b expected to be invested in infrastructure by 2025 (Financial Services Council, 2014), direct investments are costly and could limit the fee reductions associated with consolidation. These investments also carry capacity constraints, and as a result, limit the scope of investable assets to larger more established sectors with less growth potential. Additionally, as funds grow, they become more complex and less flexible,

resulting in less personalized services (Hurley, 2022). The lack of understanding of members' needs among large superannuation funds may see a pivot towards smaller funds where member satisfaction is higher.

Australia's superannuation industry may also face adverse systematic pressures as a result of consolidation. Firstly, market resilience may be reduced as a result of similar investment strategies implemented by a handful of large mega-funds, whose primary incentive is to limit tracking error by sticking to the *YFYS* performance benchmarks. Additionally, if a small number of large super funds dominate the share registries of Australian companies, they could cause massive disruptions by adjusting their holdings in unison (Warren, 2023a). Another concern is if a large fund falls into trouble, since the consequences become more severe as fund size grows and more members are affected. The underperformance of a large fund, or actions that erode trust among its members, could lead to substantial market disruptions due to significant cash withdrawals. The risk of such disruptions is amplified by the *YFYS* legislation, which mandates member notifications and imposes restrictions on enrolling new members following sub-par performance. The trend toward consolidation might also diminish market competition and curtail the diversity of product offerings. Smaller funds, which often act as pioneers and bring innovative disruptions to the market, are particularly vulnerable to consolidation.

Consolidation within the superannuation industry, while often seen as a means to achieve economies of scale, may not always yield the anticipated benefits. Higgs and Worthington, 2012 highlights the potential for significant economies of scale within the Australian superannuation industry, particularly among the country's largest funds. This implies that as these funds grow and their AUM and their member base increase,

they can potentially reduce average costs, which may lead to higher net returns for their members. However, research on the Netherlands' largest pension funds paints a more nuanced picture (Bikker & Meringa, 2022). While economies of scale were identified, especially among larger funds, Bikker and Meringa, 2022 finds that the benefits of scale tapered off beyond a certain fund size. More critically, even though larger funds might achieve cost efficiencies due to scale, this does not always translate to higher net returns for members. This suggests that while consolidation might offer cost advantages initially, excessive consolidation could lead to diminishing returns. It underscores the need for caution since unchecked consolidation might not always serve the best interests of members.

2.7 Hypotheses

In recent years, the Australian superannuation industry has seen substantial restructuring as a result of regulatory changes, with the consolidation of superfunds emerging as a notable trend. While consolidation promises better fund efficiency and improved investment opportunities, its immediate and long-term effects on cost and returns remain subjects of debate.

As limited literature exists on the consolidation of pension and superannuation funds, I address this research by first formulating a hypothesis concerning the performance test and its impact on fund flows. I then formulate a hypothesis concerning the similarity of fund characteristics as a driver in the decision to merge. Lastly, I formulate a hypothesis on the impact of consolidation on fees.

I aim to test if member engagement has increased post *YFYS* legislation, by measuring the impact of written communication to members of a fund that has failed the performance test. I test this by measuring net rollovers—that is members voluntarily switching between funds as a percentage of net assets and net fund flows.

Hypothesis 1: *Funds that have failed the performance test, but have not yet undergone a merger have greater outward rollovers.*

I aim to test if funds that merge exhibit increased similarities in member characteristics and asset allocation. I do this by creating a novel propensity score that assesses the similarity of pairs of funds.

Hypothesis 2: *Funds that undergo mergers will exhibit higher propensity scores compared to those that do not merge.*

I aim to test if consolidation leads to lower fees for members. The rationale being that larger funds can distribute management and investment costs across a larger pool of members. I assess whether economies of scale are present in funds post-merger, however I also expect a lag between fund mergers and reduced fees due to system integration challenges and transitional costs.

Hypothesis 3: *Funds that have consolidated should exhibit reduced fees.*

3 Data and Empirical Design

3.1 Superannuation Fund Data

My study is concerned with Australian superannuation funds and the resulting effects of consolidation. To obtain data on Australia's superannuation funds, I use quarterly and annual superannuation statistics provided by APRA. The quarterly MySuper statistics[1] contain data relating to fund profile, asset allocation targets, investment performance, and net returns, as well as fees and costs. The quarterly data covers the period from September 2013 to June 2023. I also use annual fund-level superannuation statistics[2], which contain data on fund profile and structure, financial performance and position, and fees and membership. The annual data covers the period from June 2004 to June 2022.

To build a database of superannuation fund mergers I used KPMG, 2022 as the primary source to identify merger activity. For mergers occurring after 2022, I used fund press releases and industry news sources to identify merger activity. For each merger found using the above sources, I confirmed whether the merger took place or not. To confirm if a merger actually occurred, I verify that a target fund has an RSE wind-up date, which is the date of the successive fund transfer (SFT) of all members' funds to the new fund (McGushin, 2019). I also used inward and outward SFT rollovers as a secondary indicator that a merger occurred, since a target fund will have a large outward SFT rollover in the last period it is listed in the dataset, which in the subsequent period, the acquiring fund will have a large inward SFT rollover.

I constructed three dummy variables to track mergers in the dataset. First, the

[1] https://www.apra.gov.au/quarterly-superannuation-statistics
[2] https://www.apra.gov.au/annual-fund-level-superannuation-statistics

dummy variable *Acquirer* indicates whether a fund was the acquirer in a merger, in the first post-merger period. Second, the dummy variable *Target* indicates whether a fund was the target in a merger, in the final period it was listed in the data. Finally, the dummy variable *Merger* indicates whether a pair of funds merged. In constructing these variables, I excluded the merger of Colonial First State and Kohlberg Kravis Roberts (KKR) and the acquisition of MLC Wealth by IOOF Holdings, due to anomalies in the source data from APRA.

Following the construction of these variables, the data was refined for funds that merged and for funds that did not merge. To streamline the analysis, I constructed simplified datasets that encompass only the essential variables for the subsequent analysis. Analogous datasets were constructed for annual and quarterly data, and I constructed an additional dataset for propensity score matching (see Section 3.3). Due to shifts in reporting standards and regulatory modifications, some data is not available for certain periods. In such cases, the entries were recorded as zeros.

The final dataset contains 127 unique superannuation funds with quarterly data covering the period between from 30 2013 to March 31 2023. There are 41 unique superannuation funds in the annual merger sample and 182 unique funds in the annual non-merger sample, covering the period from June 30 2004 to June 30 2022. However, since several key variables are only reported from June 30 2014, I used this date as the starting date for my analysis. For propensity score matching I obtained 41 unique superannuation funds in the merger sample and 208 unique superannuation funds in the non-merger sample, covering the period from June 30 2015 to June 30 2022.

3.2 Merger Information

I obtained a sample of 35 merger observations since 2011 using annual data and 27 merger observations since 2014 using quarterly data, shown in Table 2. By observing merger activity, I gained a greater insight into the merger dynamics of the superannuation industry in recent years. Starting with sporadic merger activity in the early 2010s, I observed two mergers in each of 2011, 2012, and 2013, followed by a solitary merger in 2014. Merger activity increased in 2016, with two mergers in that year and three in 2017. In 2019 and 2020 the frequency had risen to five mergers per year, while 2021 witnessed four mergers. As a result of the newly implemented *YFYS* legislation, there was a sudden dramatic increase in merger activity in 2022, with 11 mergers recorded in that year. So far, however, 2023 has only witnessed two mergers.

I can also observe the role of a few key funds such as AustralianSuper, Aware Super, and Hostplus, which acquired several target funds in 2022, highlighting the industry disruptions in the wake of the *YFYS* legislation. Finally, five of the 13 superannuation funds that failed the first performance test in 2021 have since been the targets of mergers. These mergers include Equipsuper's acquisition of BOC Gases superannuation fund, AustralianSuper's acquisition of the Labour Union Co-Operative Retirement Fund, Mercer's acquisition of Retirement Wrap, Aware Super's acquisition of The Victorian Independent Schools Superannuation Fund (VISS) and UniSuper's acquisition of Australian Catholic Super.

Table 2: Comprehensive list of mergers in the data set for analysis with the corresponding target and acquiring fund. Annual and quarterly refer to the first period in the dataset post-merger

Annual	**Quarterly**	**Acquiring Fund**	**Acquired Fund**
30/6/2011		CONSTRUCTION AND BUILDING UNIONS SUPERANNUATION FUND	Connect Superannuation Plan
30/6/2011		AustralianSuper	Westscheme
30/6/2011		Aware Super	Health Super Fund
30/6/2012		LGIAsuper	Brisbane City Council Superannuation Plan
30/6/2013		Statewide Superannuation Trust	Local Government Superannuation Scheme
30/6/2013		AustralianSuper	Australian Government Employees Superannuation Trust
30/6/2014	30/6/2014	Prime Super	Health Industry Plan
30/6/2016	31/12/2015	Tasplan Superannuation Fund	Quadrant Superannuation Scheme
30/6/2017		Sunsuper Superannuation Fund	Reserve Bank of Australia Officers Superannuation Fund
30/6/2017	31/12/2016	Mercer Super Trust	Virgin Superannuation
30/6/2017		Sunsuper Superannuation Fund	Bluescope Steel Superannuation Fund
30/6/2018	30/9/2017	equipsuper	Rio Tinto Staff Superannuation Fund
30/6/2018	31/3/2018	Aware Super	Concept One The Industry Superannuation Fund
30/6/2019	31/12/2018	Smart Future Trust	The Executive Superannuation Fund
30/6/2019	31/12/2018	Russell Investments Master Trust	Nationwide Superannuation Fund
30/6/2019	30/6/2019	NGS Super	Queensland Independent Education & Care Superannuation Trust
30/6/2019	31/3/2019	Sunsuper Superannuation Fund	Austsafe Superannuation Fund
30/6/2020	30/6/2019	Retirement Portfolio Service	OnePath Masterfund
30/6/2020	31/12/2019	HOSTPLUS Superannuation Fund	Club Super
30/6/2020	30/6/2020	Aware Super	Victorian Superannuation Fund
30/6/2021	31/12/2020	Sunsuper Superannuation Fund	IAG & NRMA Superannuation Plan
30/6/2021	30/6/2021	Spirit Super	Tasplan Superannuation Fund
30/6/2021	31/12/2020	Aware Super	WA Local Government Superannuation Plan
30/6/2021	30/6/2021	equipsuper	Toyota Super
30/6/2022	31/3/2022	Australian Retirement Trust	Sunsuper Superannuation Fund
30/6/2022	30/6/2022	CONSTRUCTION AND BUILDING UNIONS SUPERANNUATION FUND	Media Super
30/6/2022	30/9/2021	LGIAsuper	Energy Super
30/6/2022	31/12/2021	equipsuper	Boc Gases Superannuation Fund
30/6/2022	31/12/2021	Aware Super	The Victorian Independent Schools Superannuation Fund
30/6/2022	30/6/2022	Australian Retirement Trust	Australia Post Superannuation Scheme
30/6/2022	31/12/2021	HOSTPLUS Superannuation Fund	Intrust Super Fund
30/6/2022	31/12/2021	AustralianSuper	Club Plus Superannuation Scheme
30/6/2022	30/6/2022	HOSTPLUS Superannuation Fund	Statewide Superannuation Trust
30/6/2022	30/6/2022	AustralianSuper	Labour Union Co-Operative Retirement Fund
30/6/2022	30/6/2023	LGIAsuper	SPSL Master Trust
	30/6/2023	Mercer Super Trust	Retirement Wrap
	31/12/2022	Unisuper	Australian Catholic Superannuation and Retirement Fund

3.3 Propensity Scores

To assess the similarities between target and acquiring funds, I constructed a propensity score that accounts for the age distribution, account balance distribution and strategic asset allocation of a pair of funds. Intuitively, this variable quantifies the alignment between two funds with respect to the ages and account balances of their members and their strategic asset allocations. The motivating idea is that pairs of funds with high propensity scores are more closely aligned than average, and may thus result in successful mergers. The propensity score for a pair of funds was calculated as the weighted average of the absolute differences between the values of the chosen fund characteristic variables for the two funds. In detail, the propensity score ($PropScore_{i,j}$) for funds i and j is determined by

$$PropScore_{i,j} = 1 - \frac{\sum_{k=1}^{n} w_k \times |x_{i,k} - x_{j,k}|}{\sum_{k=1}^{n} w_k}, \tag{2}$$

where

- n is the number of fund characteristic variables
- w_k is the weight given to the k^{th} fund characteristic variable
- $x_{i,k}$ is the value of the k^{th} fund characteristic variable for fund i
- $x_{j,k}$ is the value of the k^{th} fund characteristic variable for fund j

To simplify the calculations, all fund characteristic variables were assigned equal weights ($w_k = 1$).

To test my second hypothesis that funds that merged exhibit increased similarities in member composition and asset allocation, I performed random propensity score

matching across two sub-samples—one representing funds involved in mergers and other funds not involved in mergers. I started by cleaning the data to exclude any funds from the non-merger sub-sample with more than five asset allocation variables equal to zero, which suggested a probable absence of any assets under management. Following this, 250 funds from each sub-sample were randomly selected, ensuring that target and acquiring funds were not the same entity. This random selection process was repeated 100 times, generating a total of 25,000 hypothetical merger scenarios for each sub-sample. The analysis yielded an average propensity score of 0.951 for the merger sample and 0.921 for the non-merger sample.

To investigate whether pairs of funds that actually merged have higher propensity scores—indicating an increased similarity in member age and account balance demographics and asset allocation—I performed the following regression, with the calculated propensity score $PropScore_{i,j}$ as the dependent variable:

$$PropScore_{i,j} = \beta_0 + \beta_1 \times Merger_{i,j} + \beta_2 \times Diff1YrRet_{i,j} + \beta_3 \times LogDiffAssets_{i,j} + \epsilon_{i,j} \quad (3)$$

The independent variables were $Diff1YrRet_{i,j}$, the difference in one-year returns between funds i and j, $LogDiffAssets_{i,j}$, the logarithm of the difference in net assets between the two funds, and the previously defined dummy variable $Merger_{i,j}$, which indicates whether the two funds actually merged.

Prior to running the regression, I further cleaned the data to remove observations with net assets equal to zero. This was done to guard against skewing the propensity scores since funds with zero net assets are likely inactive and do not have any members.

3.4 Performance Test on Fund Rollovers

To test my first hypothesis and to quantify the *YFYS* legislation's impact on member engagement (Guiamatsia, 2023), I used a regression model to test the effect of failing the performance test on fund rollovers. I first limited the data to the time period 2020–2022, since the first annual performance test results were released on August 31 2021 (Australian Prudential Regulation Authority, 2021). Inward rollovers can be defined as member benefits that have been rolled over or transferred into a fund from another superannuation fund, while outward rollovers can be defined as money transferred out of a fund to another superannuation fund (Australian Prudential Regulation Authority, n.d.). I aimed to capture only voluntary rollovers from superannuation fund members and SMSFs. This excludes successive fund transfers, which occur as a result of merger activity.

I constructed two dependent variables to capture the size of the net rollovers of a fund. The first variable *NetRollPercAst* expresses net rollovers as a percentage of net assets at the beginning of a period:

$$NetRollPercAst = \frac{Inward\ Rollovers - Outward\ Rollovers}{Net\ Assets} \tag{4}$$

The second variable *NetRollNetFlow* expresses net rollovers as a percentage of net flows:

$$NetRollNetFlow = \frac{Inward\ Rollovers - Outward\ Rollovers}{Fund\ Flows\ In - \text{Fund Flows Out}} \tag{5}$$

In these expressions,

$$\begin{aligned} \textit{Fund Flows In} = &\text{Employer Contributions} + \text{Member Contributions} \\ &+ \text{Defined Benefit Contributions} - \text{Contribution Tax and Surcharge} \\ &+ \text{Other Members' Benefits Flows In} \end{aligned} \tag{6}$$

and

$$\begin{aligned} \textit{Fund Flows Out} = &\text{Total Benefit Payments} \\ &+ \text{Repatriation to Employer Sponsor} \\ &+ \text{Other Members' Benefits Flows Out} \end{aligned} \tag{7}$$

I then constructed the following independent variables. The dummy variable *Fail* indicates whether a fund failed the annual performance test, while *Lag1YrRet* is the one-year return over the prior period. The inclusion of this variable was motivated by the findings of Gupta and Jithendranathan (2015), which shows that retail investors base their investment decisions in mutual funds on the prior performance of a fund. By including it, I aim to test if the same rationale is applicable to superannuation funds. Finally, I created the variable *LogAvgMemBal*, defined as the logarithm of the

average member account balance. The resulting regression model is expressed by

$$NetRollPercAst_i = \beta_0 + \beta_1 \times Fail_i + \beta_2 \times Lag1YrRet_i + \beta_3 \times LogAvgMemBal_i + \epsilon_i \tag{8}$$

$$NetRollNetFlow_i = \beta_0 + \beta_1 \times Fail_i + \beta_2 \times Lag1YrRet_i + \beta_3 \times LogAvgMemBal_i + \epsilon_i \tag{9}$$

Prior to running the regression, I cleaned the data by removing outliers in the dependent variables, by excluding observations outside of the interquartile range (IQR). This ensured that the regression was not biased by large outliers. Additionally, I dropped all observations with *NaN* values for the variables *Fail*, *Log1YrRet* and *LogAvgMemBal*. This left 133 unique observations.

3.5 Consolidation on Fees

To evaluate my third hypothesis, which examines the impact of the *YFYS* legislation in enhancing member outcomes through fee reduction, I construct a regression model to measure the effect of consolidation on fees. This model analyzes data spanning from June 30, 2014, to June 30, 2023. My analysis focuses on four specific fee categories: administration fees, investment fees, advice fees, and insurance fees. Among these, administration and investment fees constitute the primary charges incurred by superannuation fund members.

Administration fees can be defined as fees that cover the general operational and administrative costs of managing the superannuation entity. Investment fees can be

defined as fees associated with the handling and investment of superannuation fund assets. Advice fees can be defined as fees directly related to costs incurred during the provision of financial product advice to a superannuation fund member. Lastly, insurance fees can be defined as fees related to insurance premiums or insurance provision costs for members.

As fees are reported in the data set as a percentage of account balance, I control for member balance by using fees charged as a percentage of member balance for a representative member with a $50,000 account balance. I create the following dependent variables: *InvFee* for investment fees per representative member, *AdmFee* for administrative fees per representative member, *AdvFee* for advice fees per representative member and *InsFee* for insurance fees per representative member. As fees are reported annually on a quarterly basis, I calculate the average fee charged per fund per period.

I create the variable *Acquirer*, which is a binary if a fund has acquired another fund. I then create two variables to capture fund size, the first $LogTtlAst$ is the natural logarithm of total assets managed by a fund, allowing the model to measure the cost-effectiveness of fund management in relation to the fund's overall financial value. The second variable *LogTtlAcc* is the natural logarithm of total accounts, allowing the model to measure the cost-effectiveness of fund management per member. Lastly, I construct an interaction term between *LogTtlAcc* and *Acquirer*.

I define this model using the following formula:

$$InvFee_i = \beta_0 + \beta_1 \times Acquirer_i + \beta_2 \times LogTtlAst_i + \epsilon_i \tag{10}$$

$$InvFee_i = \beta_0 + \beta_1 \times Acquirer_i + \beta_2 \times LogTtlAcc_i + \beta_3 \times (LogTtlAcc_i \times Acquirer_i) + \epsilon_i \tag{11}$$

$$AdmFee_i = \beta_0 + \beta_1 \times Acquirer_i + \beta_2 \times LogTtlAst_i + \epsilon_i \tag{12}$$

$$AdmFee_i = \beta_0 + \beta_1 \times Acquirer_i + \beta_2 \times LogTtlAcc_i + \beta_3 \times (LogTtlAcc_i \times Acquirer_i) + \epsilon_i \tag{13}$$

$$AdvFee_i = \beta_0 + \beta_1 \times Acquirer_i + \beta_2 \times LogTtlAst_i + \epsilon_i \tag{14}$$

$$AdvFee_i = \beta_0 + \beta_1 \times Acquirer_i + \beta_2 \times LogTtlAcc_i + \beta_3 \times (LogTtlAcc_i \times Acquirer_i) + \epsilon_i \tag{15}$$

$$InsFee_i = \beta_0 + \beta_1 \times Acquirer_i + \beta_2 \times LogTtlAst_i + \epsilon_i \tag{16}$$

$$InsFee_i = \beta_0 + \beta_1 \times Acquirer_i + \beta_2 \times LogTtlAcc_i + \beta_3 \times (LogTtlAcc_i \times Acquirer_i) + \epsilon_i \tag{17}$$

4 Descriptive Statistics

4.1 Propensity Score Descriptive Statistics

In Table 3 I present descriptive statistics of the variables used to construct propensity scores used to identify the similarity in fund characteristics between target and acquiring funds. I obtained 1427 unique observations from a period between June 2015 to June 2022, covering three key characteristics: Membership age as a percentage of total members, member account balance as a percentage of total members, and asset

allocation.

In my analysis of member age characteristics, I observe members below 25 exhibiting a low mean of 0.9% of total fund members, suggesting this demographic has limited engagement with superannuation funds, given that these are the newest members of the workforce. I observe members aged between 35–44 represent the largest proportion of members with a mean of 12.5%. This group also has the highest standard deviation at 10.4% suggesting increased variability in the data set for this age bracket. I also observe a decline in member engagement from 65 to 85+ as a result of members reaching retirement age and entering the withdrawal phase. I include member age in my propensity score model, as a greater mismatch between age characteristics between target and acquiring funds is likely to cause a mismatch in asset allocation, as younger members allow for illiquid long-term investment opportunities such as infrastructure, and older members require liquid investments such as cash and equity as they are actively withdrawing funds for retirement.

In my analysis of member balance characteristics, I observe balances between 0 to $24,999 constitute 38.5% of total accounts on average across all funds, with another 29.4% of members exhibiting account balances between $25,000 to $199,999 on average. I observe members with account balances between $200,000 to $999,999 makeup 13.4% of total accounts on average. Lastly, I observe a decrease in account balances, with only 1% of accounts having a balance of $1,000,000+ on average. The rationale behind this decrease is that higher fund balances are correlated with member age, and therefore members with higher fund balances are actively withdrawing funds to fund retirement. Additionally, the low percentage of members with account balances over $1,000,000 can be attributed to high net worth (HNW) individuals opting for SMSFs

to fund retirement. I include member account balance in my propensity score model, as funds that manage higher value accounts are likely to provide more personalised services and likely charge higher fees, and the opposite for funds that manage lower value accounts.

In my analysis of asset allocation, I observe the majority of assets being held in equities, with equity comprising 40.8% of total holdings on average, however, I observe a standard deviation of 21.8% indicating high variability in equity holdings across superannuation funds. I observe funds on average hold 14.7% of total holdings in cash and 17.6% in fixed income, highlighting a preference for liquidity in asset allocation across the board. I observe average holdings of 6.3% in property 2.9% in infrastructure, 0.1% average holdings in commodities, and 3.2% average holdings in other investments. I include asset allocation in my propensity score model, as a mismatch in asset allocations between target and acquiring firms may lead to decreased member outcomes as asset allocation directly influences the risk and return profile of a funds portfolio, thereby affecting its financial stability and security in retirement.

Table 3: **Descriptive Statistics: Propensity Scores**. This table provides a comprehensive breakdown of the propensity score metrics across three primary variables: member age, account balance brackets, and asset allocation. Each variable is analyzed across multiple categories. For member age, the distribution spans from below 25 years to 85 and above. The asset allocation is parsed into specific investment types including cash, fixed income, equity, property, infrastructure, commodities, and other. All values are presented as decimals in the table but should be interpreted as percentages.

Variable	**Count**	**Mean**	**Std**	**Min**	**25%**	**50%**	**75%**	**Max**
<25	1427	0.009	0.037	0	0	0	0.01	0.47
25 to 34	1427	0.057	0.071	0	0	0.04	0.08	0.42
35 to 44	1427	0.125	0.104	0	0.02	0.12	0.2	0.48
45 to 49	1427	0.09	0.062	0	0.03	0.11	0.14	0.29
50 to 54	1427	0.104	0.069	0	0.05	0.12	0.15	0.41
55 to 59	1427	0.12	0.077	0	0.08	0.13	0.17	0.47
60 to 64	1427	0.115	0.081	0	0.05	0.13	0.17	0.62
65 to 69	1427	0.084	0.075	0	0.015	0.07	0.13	0.33
70 to 74	1427	0.053	0.064	0	0	0.03	0.07	0.44
75 to 84	1427	0.038	0.072	0	0	0	0.05	0.82
85+	1427	0.003	0.011	0	0	0	0	0.2
<$1,000	1427	0.151	0.209	0	0	0.08	0.2	1
$1,000 to $24,999	1427	0.234	0.184	0	0.07	0.23	0.37	0.88
$25,000 to $49,000	1427	0.086	0.059	0	0.03	0.1	0.13	0.28
$50,000 to $99,999	1427	0.103	0.071	0	0.03	0.12	0.16	0.28
$100,000 to $199,999	1427	0.105	0.084	0	0.01	0.11	0.18	0.52
$200,000 to $499,999	1427	0.099	0.111	0	0	0.06	0.17	0.89
$500,000 to $999,999	1427	0.035	0.062	0	0	0.01	0.05	0.5
$1,000,000+	1427	0.01	0.028	0	0	0	0.01	0.29
Cash	1427	0.147	0.174	−0.01	0.07	0.12	0.17	1
Fixed Income	1427	0.176	0.129	0	0.11	0.18	0.24	0.99
Equity	1427	0.408	0.218	0	0.355	0.49	0.55	0.87
Property	1427	0.063	0.048	0	0.02	0.07	0.09	0.35
Infrastructure	1427	0.029	0.037	0	0	0.01	0.05	0.19
Commodities	1427	0.001	0.005	0	0	0	0	0.08
Other	1427	0.032	0.092	−0.02	0	0.01	0.04	1

4.2 Propensity Score Regression Descriptive Statistics

In Table 4 I calculate every unique merger pair in the data set, including hypothetical mergers to obtain descriptive statistics for the 45,156 observations used in the propensity score regression model. I obtain an average propensity score of 0.914 with a standard deviation of 0.038, with a median propensity score of 0.911. I observe a minimum propensity score of 0.790, and a maximum propensity score of 1. I observe merger pairs at the 25th percentile obtain a propensity score of 0.885 and merger pairs at the 75th percentile obtain a propensity score of 0.945.

I account for differences in fund size using the variable *LogDiffAssets*. I observe an average *LogDiffAssets* of 0.000 with a standard deviation of 8.268 and a median value of 0.000. In the dataset, each pair of target and acquiring firms is balanced by the inclusion of their reverse counterparts. This selection approach results in an average value of 0.000, as the effects of each pair effectively cancel each other out. I observe a minimum value of 19.420 and a maximum value of 19.420, indicating the largest differences between fund size in the dataset. Lastly, I observe merger pairs at the 25th percentile obtain a difference in assets of -3.709 and merger pairs at the 75th percentile obtain a difference in assets of 3.709.

I account for differences in fund performance using the *Diff1YrRet* variable. I observe an average *Diff1YrRet* of 0% with a standard deviation of 9.2% and a median value of 0%. In the dataset, each pair of target and acquiring firms is balanced by the inclusion of their reverse counterparts. This selection approach results in an average value of 0.000, as the effects of each pair effectively cancel each other out. I observe a minimum value of 34.7% and a maximum value of 34.7%, indicating the largest differences between fund performance in the dataset. Lastly, I observe merger pairs

at the 25th percentile obtain a difference in returns of 6.6% and merger pairs at the 75th percentile obtain a difference in returns of 6.6%.

Table 4: **Propensity Score Regression Descriptive Statistics** This table reports the descriptive statistics used in the propensity score regression covering a period between 2015 and 2022. Propensity score is a measure of fund similarity, log difference of total assets is a measure of the difference in fund size between a target and the acquiring firm. The difference in 1-year returns, provided as a decimal is a measure of the difference in fund performance between target and acquiring firms.

Variable	**Count**	**Mean**	**Std**	**Min**	**25%**	**50%**	**75%**	**Max**
Propensity Score	45156	0.914	0.038	0.790	0.885	0.911	0.945	1.000
LogDiffAssets	45156	0.000	8.268	−19.420	−3.709	0.000	3.709	19.420
Diff1YrRet	45156	0.000	0.092	−0.347	−0.066	0.000	0.066	0.347

4.3 Fund Rollover Descriptive Statistics

In Table 5 I provide descriptive statistics for variables used in my regression to measure fund rollovers. For net rollovers as a percentage of net flows (*NetRollNetFlow*) I observe an average value of 17.672% with a standard deviation of 254%, and a median value of −2.493%. In my analysis of minimum and maximum values, I observe a minimum value of −709.453% indicating a high level of outward rollovers, when inspecting the data further I observe MLC Super experience $4.4b in member flows in and $3.9b in member flows out with $1.2b in inward rollovers and $4.5b in outward rollovers in 2022. Conversely, I observe a maximum value of 796%, belonging to the Holden Employees Superannuation in 2020, that saw $7.7m in member flows in and $13.6m in member flows out, with only $640,000 in inward rollovers and $48m in outward rollovers, with the fund recently being the target of an acquisition by Mercer (Mercer, 2023) but not yet reflected in the data.

For net rollovers as a percentage of net assets (*NetRollPercAst*), I observe an

average value of -2.078% with a standard deviation of 3.888%, and a median value of -1.703%. In my analysis of minimum and maximum values, I observe a minimum value of -12.479% indicating a high proportion of outward rollovers to net assets, when inspecting the data further I observe the SMF Eligible Rollover Fund in 2020 experiencing $184,000 in inward rollovers and $8.1m in outward rollovers with net assets of $63.5m. alternatively, I observe a maximum value of 8.606% belonging to the Fiducian Superannuation Fund in 2020 experiencing $154.4m in inward rollovers and $30.2m in outward rollovers with net assets of $1.4b.

I observe an average return in the year prior ($Lag1YrRet$) of 7.520% with a standard deviation of 11.553% and a median value of 1.5%. In my analysis of minimum and maximum values, I observe a minimum value of -7.100%, belonging to Commonwealth Essential Super in the period 2020, likely as a result of COVID. I observe a maximum value of 84.6%, belonging to CommInsure Corporate Insurance Superannuation in 2020.

Lastly, I observe an average log average member balance ($LogAvgMemBal$) of 4.495 ($89,568) with a standard deviation of 1.175 ($3,238) and a median value of 4.673 ($107,018). Note this variable is expressed in thousands, to keep the correct scale as fund flows, rollovers, and net assets.

Table 5: **Descriptive Statistics on fund rollover variables.** This table reports the descriptive statistics on fund rollovers and control variables during the periods preceding the introduction of the *YFYS* legislation as well as the period prior. Net rollovers as % of net flows and net rollovers as % of net assets are measures of voluntary fund switching. Lag 1-Year Returns is a measure of the previous year's fund performance and Log Average Member Balance is a measure of member sophistication.

Variable	**Count**	**Mean**	**Std**	**Min**	**25%**	**50%**	**75%**	**Max**
NetRollNetFlow	248	17.672	254.801	−709.453	−100.156	−2.493	142.406	796.403
NetRollPercAst	248	−2.078	3.888	−12.479	−4.275	−1.703	−0.121	8.606
Lag1YrRet	133	7.520	11.553	−7.100	−1.200	1.500	16.200	84.600
LogAvgMemBal	248	4.495	1.175	0.000	4.060	4.673	5.213	6.915

4.4 Fee Regression Summary Statistics

In Table 6 I provide descriptive statistics for the variables used to conduct analysis on fees as a result of consolidation. I observe an average administration fee charged on a balance of $50,000 (*AdmFee*) of 0.33% with a standard deviation of 0.197% and a median value of 0.27%. I observe funds at the 25th percentile charge 0.21% on a representative account balance and funds at the 75th percentile charge 0.4%.

I observe an average investment fee charged on a balance of $50,000 (*InvFee*) of 0.37% with a standard deviation of 0.28% and a median value of 0.4%. I observe funds at the 25th percentile charge 0.016% on a representative account and funds at the 75th percentile charge 0.55% on a representative account.

I observe an average advice fee charged on a balance of $50,000 (*AdvFee*) of 0.00% with a standard deviation of 0.001% and a median value of 0.00%. I observe funds at the 25th percentile charge 0.00% and funds at the 75th percentile charge 0.00%, with a maximum fee of 0.01% charged indicating advice fees are essentially non-existent for superannuation funds in the data set.

I observe an average insurance fee charged on a balance of $50,000 (*InsFee*) of 0.002% with a standard deviation of 0.002% and a median value of 0.00% indicating insurance fees are essentially non-existent for most superannuation funds in the dataset with funds at the 75th percentile also having a value of 0.00%.

I observe an average natural logarithm of total net assets of (*LogTtlAst*) 15.97 ($8.8b) with a standard deviation of 2.81 ($16,643) and a median value of 16.24 ($11.3b). I observe funds at the 25th percentile manage 14.77 ($2.6b) in net assets and funds at the 75th percentile manage 17.78 ($52.7b) in assets. Note this variable is expressed in thousands.

Lastly, I observe an average natural logarithm of total accounts (*LogTtlAcc*) of 7.36 (1,571) with a standard deviation of 11.90 (148,005) and a median of 11.48 (96,858). I observe funds at the 25th percentile have a total of 9.91 (20,050) accounts and funds at the 75th percentile have a total of 13.57 (782,305) accounts.

Table 6: **Descriptive statistics on fee variables** This table reports the descriptive statistics on fees charged by superannuation funds and control variables. Admin, Investment, Advice, and Insurance fees represent the fees charged as a percentage of member balance on a %50,000 account balance. Log Total Assets and Log Total Accounts are measures of fund size. Note, all fee variables are expressed as percentages.

Variable	**Count**	**Mean**	**Std**	**Min**	**25%**	**50%**	**75%**	**Max**
AdmFee	1090	0.332	0.197	0.000	0.207	0.270	0.4	1.210
InvFee	1090	0.374	0.281	0.000	0.016	0.400	0.555	1.390
AdvFee	1090	0.000	0.001	0.000	0.000	0.000	0.000	0.010
InsFee	1090	0.002	0.022	0.000	0.000	0.000	0.000	0.470
LogTtlAst	1090	15.966	2.812	−23.026	14.768	16.243	17.781	19.420
LogTtlAcc	1090	7.360	11.905	−23.026	9.906	11.481	13.570	14.872

5 Main Results

5.1 Propensity Score Results

In Table 7 I employ a t-test to determine whether there are statistically significant differences in the age composition and strategic asset allocation for different cohorts of funds. I compare the average value for each variable between acquiring and target funds, acquiring funds pre and post-merger, and lastly funds who passed versus failed the performance test. In every test, the null hypothesis states that the two cohorts of funds have no difference in means, and the alternate hypothesis states that the means differ.

I find moderate statistical significance that the proportion invested in infrastructure differs between failed and successful funds, being significant to the 5% level. Additionally, I find weak statistical significance that the proportion of members aged between 70–74 differ between target and acquiring funds, being significant to the 10% level. Lastly, I find weak statistical significance that the proportion of members aged between 60–64 differs between failed and successful funds, being significant to the 10% level. Overall, given the lack of statistical significance, it is reasonable to assume none of these cohorts of funds differ from each other.

Table 7: This table employs t-tests to discern statistically significant differences in investment distribution and member age categories between Target and Acquiring funds, before and after mergers, and between funds that did not meet and those that surpassed performance benchmarks. Values are presented as t-statistics with corresponding p-values in parentheses.

	Difference between Target and Acquiring funds	Difference between funds Pre and Post Merger	Difference between fund that failed and passed performance test
Asset Allocation			
Cash	1.26 (0.2133)	0.22 (0.8275)	−0.34 (0.7375)
Fixed income	−0.69 (0.4921)	0.21 (0.8333)	1.52 (0.1292)
Equity	−1.56 (0.1256)	−0.25 (0.8062)	0.88 (0.3785)
Property	−0.40 (0.6946)	−1.15 (0.2711)	1.46 (0.1467)
Infrastructure	−0.61 (0.5433)	−1.66 (0.1202)	2.31 (0.0215)
Commodities	−1.52 (0.1369)	0.56 (0.5816)	−0.30 (0.7622)
Other	0.90 (0.3731)	0.94 (0.3636)	−0.47 (0.6357)
Age Breakdown			
<25	0.71 (0.4830)	−0.00 1.000	−0.75 (0.4567)
25 to 34	−0.38 (0.7044)	1.60 (0.1323)	−0.43 (0.6674)
35 to 44	−0.60 (0.5539)	0.69 (0.4985)	0.54 (0.5906)
45 to 49	0.21 (0.8352)	0.82 (0.4243)	0.89 (0.3740)
50 to 54	0.58 (0.5631)	−0.00 1.000	1.24 (0.2125)
55 to 59	0.48 (0.6310)	−0.25 (−0.8062)	0.97 (0.3337)
60 to 64	−0.65 (0.5182)	−0.41 (0.6848)	1.85 (0.0655)
65 to 69	−1.27 (0.2103)	−1.23 (0.2377)	1.36 (0.1765)
70 to 74	−2.00 (0.0519)	−1.74 (0.138)	1.16 (0.2475)
75 to 84	−1.58 (−0.1221)	−1.74 (0.138)	0.19 (0.8518)
85+	0.91 (0.3672)	nan (nan)	0.38 (0.7032)

* Significant at 10% level, ** Significant at 5% level, *** Significant at 1% level

In the subsequent phase of my analysis, the focus shifts to determining whether pairs of funds that merge exhibit synergies and heightened conformity in aspects such as member age, account balances, and strategic asset allocation. Figure 1 visualizes the results from hypothetical merger sampling between pairs of funds involved in a merger, and those that are not. I find pairs of funds in the merger sample exhibit a higher average propensity score of 0.951, compared to pairs of funds in the non-merger sample which exhibited an average propensity score of 0.921. This suggests that on average, pairs of funds who have been involved in a merger, exhibit more similar membership profiles and asset allocation strategies, suggesting that on average, these funds are more closely aligned and are able to generate synergies as a result of consolidation.

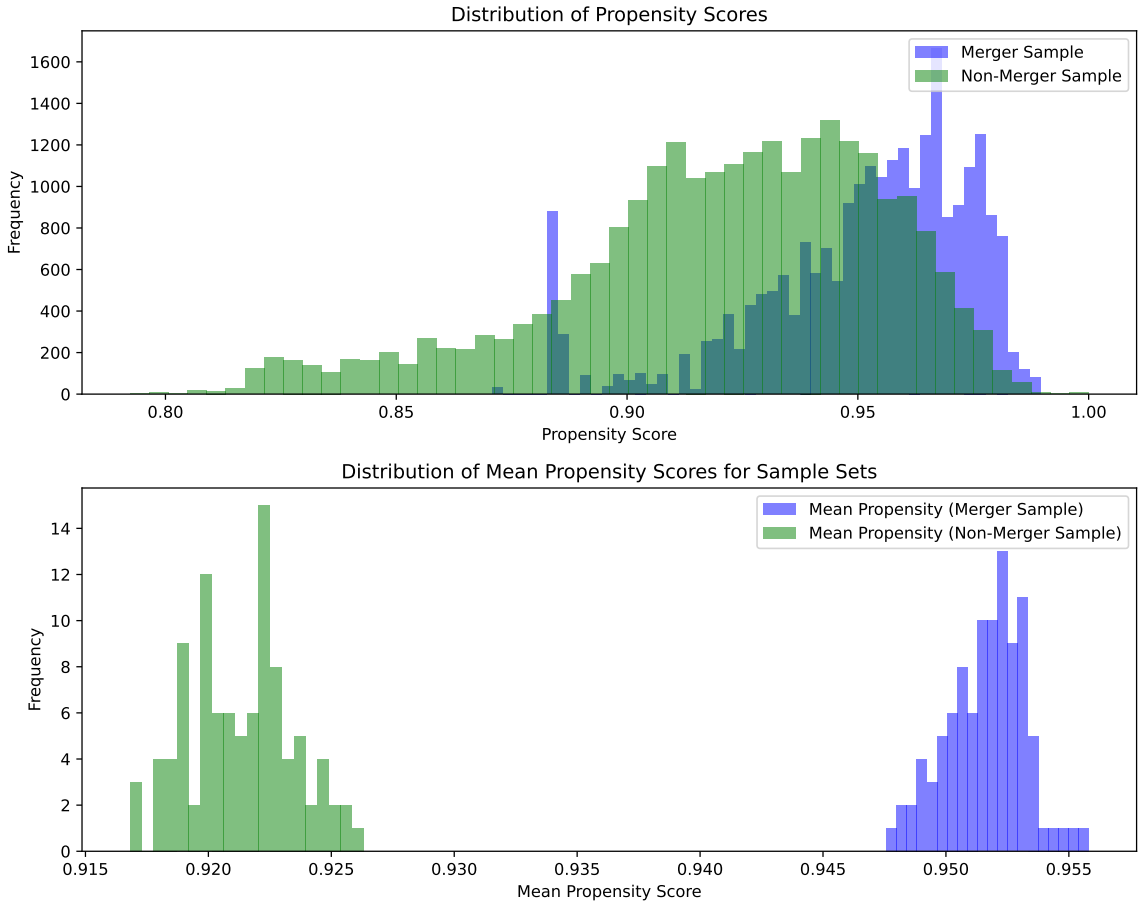

Figure 1: Comparative Distribution of Propensity Scores for Merged and Non-Merged Fund Samples. The top histogram displays the individual propensity scores' distribution, while the bottom histogram illustrates the distribution of mean propensity scores across 100 sample sets.

Table 8 presents the results from estimating the regression model (3) using all hypothetical pairs of funds from the sample, over the period 2015–2022, giving us 45,156 hypothetical merger pairs. I observe a statistically significant constant of 0.9141, suggesting that holding all other variables constant, the average propensity score for a merger pair is 0.9141. I find a coefficient of 9.232e-05, for the variable *Diff1YrRet*, which is not significant, indicating differences in fund performance have

no impact on the propensity score of a merger pair. Furthermore, I find a coefficient of -1.07e-06 for the variable *LogDiffAssets*, which is not significant, indicating that differences in fund size have no impact on the propensity score of a merger pair.

I observe a positive, statistically significant coefficient of 0.0430 for the *Merger* variable, where holding all else constant, an actual merger between a pair of funds exhibits a propensity score value of 0.0430 greater than a hypothetical merger between a pair of funds. These findings suggest that significant thought has been placed into determining whether a target fund matches the member demographics and asset allocation of the acquiring fund, indicating increased synergies, leading to improved outcomes for members, in line with APRA's goal of removing underperforming funds from the industry.

Based on this regression model, I obtain an average propensity score for merged funds of 0.9571, providing a similar result to the random sampling average propensity score of 0.951 for the merger sample. By using these figures as a benchmark, I can then assess whether historical mergers in the dataset have been successful in achieving synergies.

Table 8: Summary of propensity score regression coefficients and model fit statistics.

	Propensity Score
Const.	0.9141***
	(0.000)
LogDiffAssets	0.0001
	(0.002)
Diff1YrRet	0.0000
	(0.000)
Merger	0.0430***
	(0.008)
R^2	0.001
Adj. R^2	0.001
N	45156

Standard errors are reported in parentheses.
* Significant at 10% level, ** Significant at 5% level, *** Significant at 1% level

In Figure 2 I calculate the individual propensity scores for merger events in the dataset. In my analysis of 23 mergers, it is notable that seven of them registered propensity scores below the average of 0.951. Notably, the merger between OnePath Masterfund and Retirement Portfolio Service recorded the lowest score in this group, at 0.886. Similarly, the merger between the Reserve Bank of Australia Officers Superannuation Fund and SunSuper also yielded a below-average score of 0.905. Another merger involving SunSuper, this time with the BlueScope Steel superannuation fund, was also characterized by a lower-than-average score of 0.923. Additional mergers falling below the average include the Russell Master Trust's acquisition of Nationwide Super, marked by a score of 0.938; SunSuper's acquisition of the IAG & NRMA Superannuation Plan with a score of 0.943; the Mercer Super Trust's takeover of Virgin Super, which scored 0.944; and finally, the Aware Super's acquisition of the Concept One Industry Superfund, registering a score of 0.947.

Considering the pattern of SunSuper engaging in three mergers that appear sub-optimal, potentially diminishing member outcomes, it raises the hypothesis that there might be an inherent opportunity cost for funds between aiming to enhance member outcomes or expand market share. This situation suggests a possible conflict of interest, where acquiring funds might prioritize increasing market share through mergers with target funds that have different investment strategies and membership compositions, potentially at the expense of optimizing member outcomes.

In my analysis of mergers with above-average propensity scores, certain combinations stand out due to their high scores. Specifically, the Hostplus acquisition of Intrust Super achieved the highest score at 0.986, while the merger between AustralianSuper and Club Plus Superannuation registered a close second with a score of 0.984. These scores indicate a strong alignment and compatibility between the merging funds, suggesting a strategic fit that could lead to synergistic benefits. The analysis also shows that consolidations within similar sectors, such as hospitality and education, tend to have above-average propensity scores. This pattern implies that a strategic approach to fund mergers, with an emphasis on industry alignment, can potentially lead to more favorable outcomes for members.

Overall, I find evidence to suggest that funds who have engaged in mergers, on average exhibit higher propensity scores, compared to hypothetical mergers, potentially leading to improved member outcomes, as a result of similar member demographics and asset allocation.

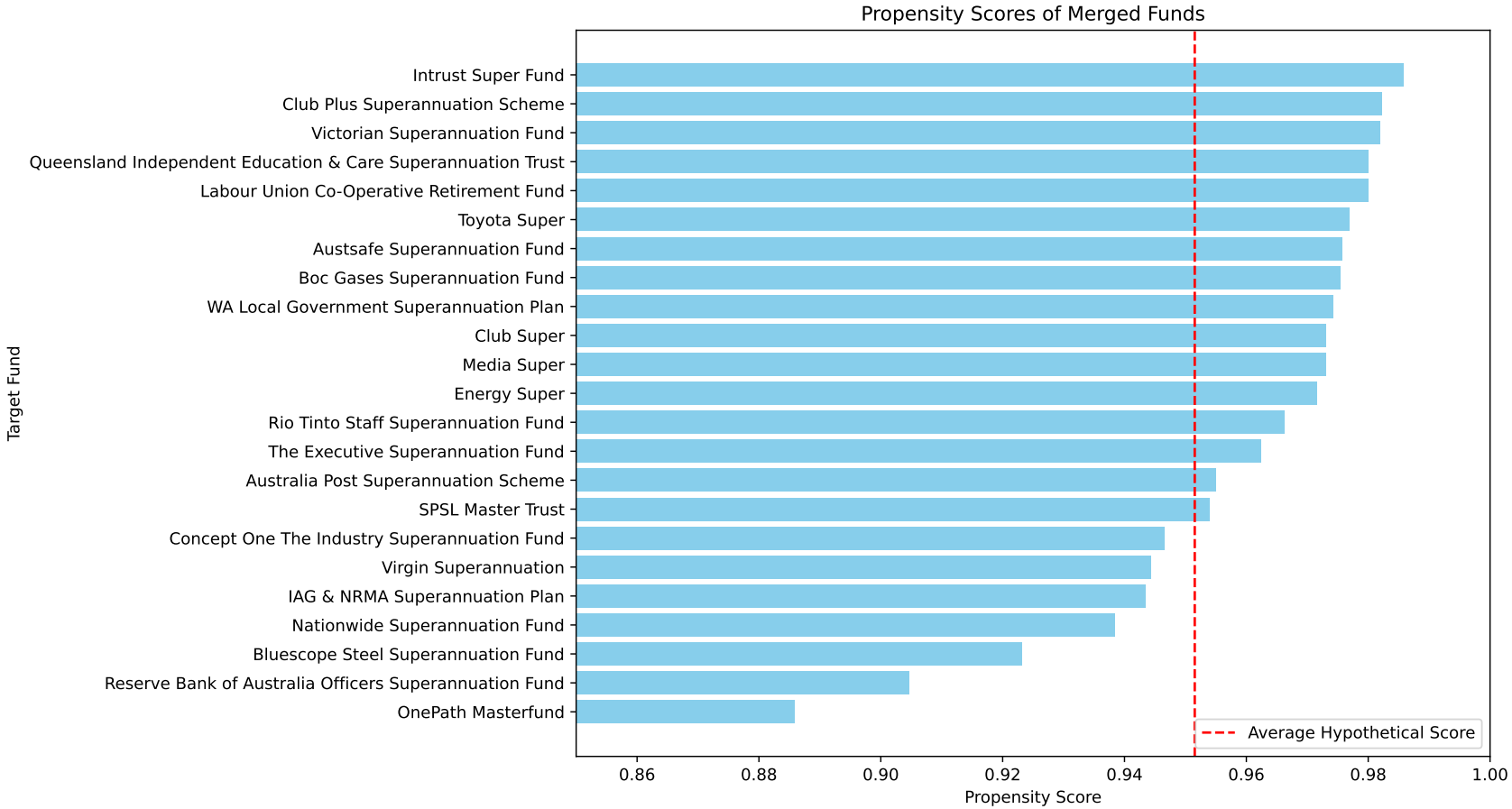

Figure 2: Propensity Scores of Merged Superannuation Funds. Each bar represents the propensity score of individual merger pairs present in the dataset, with the red dashed line indicating the average hypothetical score for reference.

5.2 Fund Rollover Results

Table 9 presents the results from estimating the regression models 8 and 9 which assess the relationship between fund rollovers and performance test outcomes. The analysis reveals a notable trend. When all other variables are held constant, the model exhibits a significantly negative constant of -4.8242 with *NetRollPercAst* as the dependent variable. This suggests that, in the absence of any other influencing factors, funds exhibit more outward rollovers, compared to inward rollovers with approximately 5% of net assets moving to an alternate fund in a given period. Conversely, the constant exhibits a positive but not statistically significant value of 155.3414 with *NetRollNetFlow* as the dependent variable. This suggests that, in the absence of any other influencing factors, funds exhibit more inward rollovers compared to outward rollovers with net rollovers being 1.5 times the size of net flows.

I find the variable *Fail* to be statistically significant at the 5% level, with a coefficient of -2.8372 when examining net rollovers as a percentage of net assets. This suggests that holding all else constant, a fund that fails the performance test sees close to 3% of assets voluntarily flow out of the fund. This active response by funds members is in line with the *YFYS* legislation's goal to bolster member engagement. I attribute this reaction to fund members being informed about their fund's performance and encouragement to explore better-performing alternatives, communicated via written communication. Conversely, I observe the *Fail* to have a positive coefficient of 13.71 when measuring net rollovers as a percentage of net flows, however, this variable is not statistically significant.

I find the variable *Lag1YrRet* to be statistically significant to the 10% level and positive, where holding all else equal, a one unit increase in the returns of a fund in

the period prior see net rollovers as a percentage of net assets increase by 0.0475. This suggests that funds with stronger performance, attract a greater amount of inward rollovers, or alternatively see a decrease in outward rollovers. Conversely, I find a negative coefficient of -2.7622 when measuring net rollovers as a percentage of net flows, however, this variable is not statistically significant.

Lastly, I find the coefficient *LogAvgMemBal* to be statistically significant to the 5% level and positive, where holding all else equal, a one percent increase in the average balance of members accounts leads to an increase in net rollovers as a percentage of net assets of 0.5629%. This suggests, that funds with wealthier members attract more members or are better at retaining current members, leading to an increase in net rollovers. Conversely, I find a negative coefficient of -26.5219 when measuring net rollovers as a percentage of net flows, however, this variable is not statistically significant.

Overall, I find measuring net rollovers as a percentage of net assets to be a much better model at estimating voluntary switching behavior, compared to net rollovers as a percentage of net flows. These findings suggest that members are more engaged in the financial performance of a fund, and actively seek alternate funds in the scenario that their current fund fails the performance test. This demonstrates that the *YFYS* legislation has been successful in increasing member engagement. Additionally, these results support the findings of Gupta and Jithendranathan, 2015, which find retail investors actively look at past performance when making investment decisions in mutual funds. Lastly, from these findings, I hypothesize that funds with wealthier members provide greater levels of service and flexibility, making these funds more attractive to members.

Table 9: Summary of fund rollover regression coefficients and model fit statistics.

	Net Rollovers as % of Net Assets	**Net Rollovers as % of Net Flows**
Const.	−4.8242***	155.3414
	(1.351)	(95.410)
Fail	−2.8372**	13.7100
	(1.259)	(88.947)
Lag1YrRet	0.0475*	−2.7622
	(0.024)	(1.726)
LogAvgMemBal	0.5629**	−26.5219
	(0.273)	(19.259)
R^2	0.068	0.026
Adj. R^2	0.047	0.03
N	135	135

Standard errors are reported in parentheses.
* Significant at 10% level, ** Significant at 5% level, *** Significant at 1% level

5.3 Fund Fees Results

Table 10 presents the results from estimating the regression models 11, 13, 15 and 17 which assess the impact of consolidation on investment fees (*InvFee*), administrative fees (*AdmFee*), advice fees (*AdvFee*) and insurance fees (*InsFee*), using the logarithm of total accounts to control for fund size.

In examining investment fees, I find a statistically significant constant of 0.3539, suggesting that in the absence of other factors, the baseline investment fee rate is 0.3539% of a representative member's account balance. I find the variable *Acquirer* to be negative but not statistically significant with a value of −0.0683. I observe the interaction term between variables *Acquirer* and *LogTtlAcc* to have a positive but statistically insignificant coefficient of 0.0119. Lastly, I observe the variable *LogTtlAcc* to be statistically significant at a 1% level, suggesting that holding all else constant, for every 1% increase in the total number of member accounts, investment fees on a representative member account increases by 0.0024%. This suggests that as funds

get larger, investment-related costs increase, leading to an increase in fees charged to members.

In examining administration fees, I find a statistically significant constant of 0.3344, suggesting that in the absence of other factors, the baseline administration fee rate is 0.3344% of a representative member's account balance. I find a positive but statistically insignificant coefficient of 0.1184 for the variable *Acquirer* and −0.0002 for the variable *LogTtlAcc*. However, I find the interaction term between *Acquirer* and *LogTtlAcc* to be statistically significant to the 5% level, with a coefficient of −0.0114, suggesting that holding all else equal, post-merger for every 1% increase in the total number of member accounts, administration fees decrease by 0.0114%. These results suggest that consolidation does lead to reduced administration fees, supporting the argument of economies of scale, when controlling for fund size using the number of member accounts.

In examining advice fees, the lack of statistical significance across all variables suggests that advice fees do not constitute a significant component of fund fee structures, implying that most funds probably do not levy an advice fee. Lastly, when examining insurance fees, I find a statistically significant constant of 0.0020, suggesting that in the absence of other factors, the expected baseline insurance fee is 0.0020% of a representative member balance. However, I find no statistical significance in any of the other variables, suggesting that the process of consolidation or fund size has a statistically significant impact on insurance fees.

Table 10: Summary of representative member fee regression coefficients and model fit statistics using the log of total accounts as a size control.

	Investment Fees	**Admin Fees**	**Advice Fees**	**Insurance Fees**
const.	0.3539***	0.3344***	0.0000	0.0020**
	(0.010)	(0.007)	(0.000)	(0.001)
Acquirer	−0.0683	0.1184	0.0000	−0.0017
	(0.104)	(0.073)	(0.000)	(0.008)
Acquirer × *LogTtlAcc*	0.0119	−0.0114**	0.0000	0.0000
	(0.008)	(0.005)	(0.000)	(0.001)
LogTtlAcc	0.0024***	−0.0002	0.0000	0.000
	(0.001)	(0.001)	(0.000)	(0.000)
R^2	0.017	0.005	0.001	0.000
Adj. R^2	0.014	0.002	−0.002	−0.002
N	1090	1090	1090	1090

Standard errors are reported in parentheses.
* Significant at 10% level, ** Significant at 5% level, *** Significant at 1% level

Table 11 presents the results from estimating the regression models 10, 12, 14 and 16 which assess the impact of consolidation on investment fees (*InvFee*), administrative fees (*AdmFee*), advice fees (*AdvFee*) and insurance fees (*InsFee*), using the logarithm of total assets to control for fund size.

In examining investment fees, I find a statistically significant constant of 0.3482, suggesting that in the absence of other factors, the baseline investment fee rate is 0.3482% of a representative member's account balance. I find the variable *Acquirer* to be statistically significant at the 10% level and positive with a coefficient of 0.0865, suggesting that holding all else equal, post-merger, investment fees increase by 0.0865. Lastly, I observe no statistical significance in the *LogTtlAcc* variable suggesting fund size measured by total assets has no impact on the level of investment fees charged by a fund on a representative member account.

In examining administration fees, I find a statistically significant constant of 0.5270, suggesting that in the absence of other factors, the baseline administration fee rate is 0.5270% of a representative member's account balance. I find no statis-

tical significance for variable *Acquirer*, suggesting no change in fees post-merger. I find variable *LogTtlAcc* to be statistically significant with a coefficient of -0.0122, suggesting that, holding all else equal, a 1% increase in a funds total assets leads to a -0.0122% decrease in administration fees. These findings align with the argument that larger funds benefit from economies of scale, in turn passing on the savings to members in the form of lower administration fees.

In examining advice fees, the lack of statistical significance across all variables suggests that advice fees do not constitute a significant component of fund fee structures, implying that most funds probably do not levy an advice fee. Lastly, when examining insurance fees, the lack of statistical significance in all variables suggests fund size or consolidation has no discernible impact on insurance fees charged by a fund to members.

Table 11: Summary of representative member fee regression coefficients and model fit statistics using the log of total assets as a size control.

	Investment Fees	**Admin Fees**	**Advice Fees**	**Insurance Fees**
Const.	0.3482***	0.5270***	0.0000	0.0048
	(0.049)	(0.034)	(0.000)	(0.004)
Acquirer	0.0865*	−0.0005	0.0000	−0.0012
	(0.046)	(0.032)	(0.000)	(0.004)
LogTtlAst	0.0014	−0.0122***	0.0000	−0.0002
	(0.003)	(0.002)	(0.000)	(−0.000)
R^2,	0.004	0.030	0.001	0.001
Adj. R^2,	0.002	0.029	−0.001	−0.001
N	1090	1090	1090	1090

Standard errors are reported in parentheses.
* Significant at 10% level, ** Significant at 5% level, *** Significant at 1% level

I attribute the increase in investment fees charged to members post-merger and as fund size increases to costs associated with generating alpha at scale. Since the implementation of the performance test, fund-managers either index-match to avoid failure

or seek to generate alpha. To generate alpha on a larger scale, fund managers need to seek out alternate investment options such as private equity, infrastructure, or real estate. While these asset classes offer potentially higher returns, they often carry higher investment and transactional costs, and often require external investment advisorsm leading to an increase in investment fees charged to members. Conversely, I attribute economies of scale as the key driver in reducing administration fees post-merger and as fund size increases. As funds become larger, there is more room for operational efficiencies, potentially reducing costs. This allows funds to lower administration costs on a per-member and per-asset-under-management basis, thus leading to improved outcomes for members, materialized through lower administration fees. This suggests that the *YFYS* has been successful in partially driving down fees charged to members.

5.4 Limitations

There are a few key limitations with the methodology and underlying data. Firstly, due to APRA reporting requirements, data is compiled on an annual basis. This presents a significant limitation in terms of granularity. Relying solely on annual data for the majority of this research restricts the ability to capture more frequent, subtle changes and trends that could occur on a quarterly or monthly basis. Such granularity could be crucial in understanding the dynamics of asset allocation, member demographics, and other factors relevant to the propensity scoring model as well as changes in fees and fund rollovers following a merger event. The use of annual data may mask short-term fluctuations and potentially important events that could significantly influence the outcomes of interest.

Furthermore, changes in reporting legislation have imposed limitations on the pe-

riods for which certain types of data are available. This is particularly relevant for critical variables such as asset allocation and member demographics. These changes mean that for certain time periods, the data necessary to robustly inform the propensity scoring model may be incomplete or entirely absent. This gap in the data can lead to challenges in drawing comprehensive and accurate conclusions from the analysis.

Another notable data limitation pertains to the sample size of mergers. With only 35 mergers available for analysis using annual data, and even fewer, with 27, when considering quarterly data, there is a significant constraint on the statistical power of the study. Such a limited sample size can impact the robustness of the statistical significance, making it difficult to generalize findings or draw firm conclusions. This small sample size also increases the risk of type II errors, where true effects may go undetected. Consequently, while the findings of this research provide insights into the trends and factors surrounding mergers, they should be interpreted with caution given these methodological and data-related limitations.

5.5 Implications For Future Research

This study seeks to establish a foundational framework for academic research into the ongoing trend of consolidation within the Australian superannuation industry. Given the recent introduction of the *YFYS* legislation, and the limited availability of data—currently restricted to just two post-legislation periods—this research opens avenues for future studies. By applying the methodologies developed in this paper to forthcoming datasets, researchers can deepen their understanding of the legislation's influence on the superannuation landscape.

Moreover, this paper introduces an innovative propensity score model. While

effective in its current form, there is potential for further refinement. By incorporating additional variables and enhancing the scaling techniques, future iterations of this model could yield more nuanced insights. Such advancements would not only refine the model's analytical capabilities but also enhance comprehension of the similarities or differences present in mergers.

Lastly, another area of interest not explored in this paper is the impact of consolidation on funds returns. This aspect holds significant importance as consolidation can lead to various economies of scale, potentially affecting investment strategies, operational efficiencies, and ultimately, the returns for fund members. Future research could investigate how the merging of funds influences their performance metrics, both in the short and long term. This includes examining whether larger, consolidated funds consistently outperform smaller, non-consolidated ones, and if so, identifying the underlying factors driving this performance. Additionally, it would be valuable to explore the impact of consolidation on risk-adjusted returns, as this could provide insights into whether any increase in returns is a result of higher risk-taking or more efficient fund management. Investigating these aspects could offer crucial insights for fund managers, investors, and policymakers, especially in an era where consolidation is becoming increasingly prevalent in the financial sector. Such research would not only fill a gap in the current literature but also aid in understanding the broader implications of fund consolidation on the financial market's stability and investor outcomes.

6 Conclusion

The *YFYS* legislation first announced in the 2020-21 budget, had the aim of delivering better outcomes for members, with the promise of reducing the $30b in fees paid annually (Vikovich, 2021) and holding funds accountable for poor performance. Despite these promised benefits, the legislation has been met with significant opposition from academics and industry. I specifically investigate the trend of consolidation triggered by recent legislative changes, with a primary focus on evaluating whether consolidation fosters synergies that lead to enhanced outcomes for fund members. I find that synergies are indeed prevalent among merging funds, marked by a notable alignment in member structure and asset allocation strategies. This congruence facilitates more effective integration post-merger, leading to significantly improved outcomes for members.

In the subsequent phase of my research, I scrutinize the effectiveness of the legislation in enhancing member engagement, particularly through the lens of the performance test and its influence on member-switching behavior. I find a notable uptick in member engagement, as evidenced by the significant impact of failing the performance test on net rollovers. Specifically, funds that fail this test experience a discernible negative effect, manifesting in increased outward rollovers. This finding underscores the performance test's role as a critical determinant in members' decision-making processes regarding fund selection. Additionally, I find correlation between a fund's financial performance in the previous year and its net rollovers. Funds that demonstrate superior financial performance attract more inward flows, indicating that members are not only engaged but also responsive to financial performance indicators. This trend highlights the growing sophistication of members in assessing fund

performance and making informed decisions based on these evaluations.

Lastly, I examine the effectiveness of the legislation in reducing member fees. The analysis reveals a nuanced picture: post-merger, as fund sizes expand, there is a noticeable decrease in administration fees per member, indicative of economies of scale in operational costs. This trend suggests that larger fund sizes facilitate more efficient administrative processes, thereby reducing the per-member cost burden.

However, a contrasting trend is observed in investment fees. Post-merger, as funds grow in size, investment fees per member tend to increase. This increase is likely attributable to fund managers pursuing more expensive investment strategies, such as allocations in private equity, infrastructure, and real estate. These asset classes, often sought for their potential to generate alpha, typically come with higher management and performance fees. This shift in investment strategy, aimed at capitalizing on the larger scale of merged funds, underscores a strategic pivot towards higher-cost, potentially higher-return investments.

This bifurcation in fee trends post-merger—decreasing administrative fees but increasing investment fees—highlights the complex interplay between scale, operational efficiency, and investment strategy in the post-legislation landscape. It suggests that while consolidation under the new legislative framework brings certain efficiencies, it also prompts a reorientation towards investment avenues that, while potentially offering higher returns, also carry higher costs.

These findings have significant implications, especially for fund managers and decision-makers involved in mergers. Decision-makers should carefully consider a fund's member composition and investment strategy when identifying potential targets, ensuring that consolidation leads to better outcomes. For fund managers, the

consequences of failing the performance test underscore the need for effective asset allocation and investment strategy. Rather than merely aiming to pass the performance test, strategies should be tailored to the fund's demographic. With ongoing pressure to reduce fees and as funds grow, managers should consider integrating previously outsourced investment teams in-house to further cut costs. Finally, regulators need to revise the performance test to prevent it from deterring investment in long-term assets.

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