Pacific-Basin Finance Journal 63 (2020) 101431

Contents lists available at ScienceDirect

Pacific-Basin Finance Journal

journal homepage: www.elsevier.com/locate/pacfin

Switching between superannuation funds: Does performance and marketing matter?

Xiaowen Peng*, Karen Alpert, Grace Chia-Man Hsu

UQ Business School, The University of Queensland, Colin Clark, 39 Blair Dr, St Lucia, QLD 4067, Australia

ARTICLE INFO

Keywords:
Superannuation
Retirement
Pension
Investment choice
Fund flow-performance
Individual investors

JEL codes:
G11
G23

ABSTRACT

This study examines the roles of fund performance and marketing in superannuation members' fund switching activity in Australia. Using member-nominated transfers from a unique data set of Australian Prudential Regulation Authority (APRA)-regulated superannuation funds from 2005 to 2014, our results indicate that members who switched funds do not chase after superior short-term returns but they do punish bad performers by withdrawing investments. We find a consistent positive relation between marketing effort and investor choice for retail funds, which engage in extensive marketing. However, marketing does not appear to be an effective strategy for industry-based funds to attract investments.

1. Introduction

With the policy goal of reducing future reliance on the social safety net for an aging population, an increasing number of countries have moved to retirement saving schemes that compel individuals to save and make their own investment choices to accumulate adequate funds for retirement (Disney, 2000; Perotti and Schwienbacher, 2009; Whiteford and Whitehouse, 2006). However, many future retirees are not sufficiently skilled to make informed investment choices with outcomes that are realised well into the future (Lusardi and Mitchell, 2007, 2014). The resulting investor inactivity plays out in costly inefficiencies such as large numbers of inactive, duplicate and lost accounts in underperforming funds (Mitchell et al., 2006; Productivity Commission, 2016). In Australia, fixing the problems of unintended multiple accounts and entrenched underperformers would benefit retirement savings fund members collectively to the tune of $3.8 billion each year (Productivity Commission, 2018). While the majority of the literature in the field studies investment choices within a retirement savings plan (e.g., benefit type (Brown and Weisbenner, 2014; Dobrescu et al., 2017), asset allocation (Gan et al., 2015; Gerrans, 2012; Gerrans et al., 2010; Gerrans and Yap, 2014), or opting out of the default option (Bateman et al., 2014; Chetty et al., 2014; Deetlefs et al., 2019; Mitchell et al., 2006)), few studies examine the choice of retirement savings plans or superannuation funds.[1] More recently, Butt et al. (2018) survey views of respondents who have actively chosen the default at either or both superannuation fund and investment option levels versus those who have been entirely passive. To improve our understanding of how individuals switch to and away from a superannuation fund and how superannuation funds can attract and retain investments, this study examines two potential determinants of superannuation members' decisions to switch funds

* Corresponding author at: UQ Business School, The University of Queensland, St Lucia, QLD, Australia.
E-mail addresses: x.peng@business.uq.edu.au (X. Peng), k.alpert@business.uq.edu.au (K. Alpert), g.hsu@business.uq.edu.au (G.C.-M. Hsu).

[1] Superannuation is the term used in Australia to describe the setting aside of income for retirement, generally known internationally as pension or retirement products.

https://doi.org/10.1016/j.pacfin.2020.101431
Received 6 May 2020; Received in revised form 4 September 2020; Accepted 4 September 2020
Available online 09 September 2020
0927-538X/ © 2020 Elsevier B.V. All rights reserved.

(as measured by member-nominated fund transfers) within the Australian superannuation system at the fund level: fund performance and marketing effort.

The Australian superannuation system is part of a retirement saving system that is ranked third among 25 developed countries in the Melbourne Mercer Global Pension Index.[2] Legislated in 1992, Australia's superannuation system is one of the earliest national schemes to provide for mandatory individual private retirement savings accounts (Holzmann, 2014). Under the mandatory Superannuation Guarantee (SG), employers are required to contribute a set percentage of each employee's wages (currently 9.5%)[3] to a privately managed individual account. There are also tax incentives and government co-contributions to encourage additional voluntary superannuation contributions. Consequently, superannuation assets in Australia have grown rapidly from just under $150 billion in 1992 to $3 trillion in December 2019, and are projected to reach $7.7 trillion by 2032.[4] The majority of superannuation accounts are defined contribution (DC) plans rather than defined benefit (DB) plans, reflecting a worldwide trend that puts the onus on members to invest their retirement savings responsibly. To facilitate the ability of members to take responsibility for their superannuation savings, the Australian government has increased fund portability with Choice of Fund legislation in 2005,[5] and encouragement for employees to consolidate multiple superannuation accounts. The institutional features described above make Australia an appropriate and interesting setting to examine superannuation members' fund switching choices.

The first potential determinant of a superannuation member's decision to switch funds examined is fund performance. Although performance is clearly a key consideration for most types of investments such as shares and managed funds, investment in superannuation is fundamentally different. A convex flow-performance relation is a well-documented phenomenon in managed funds literature where investors flock disproportionately to recent winners, but do not punish poorly performing funds proportionately by withdrawing their investments (Chevalier and Ellison, 1997; Goetzmann and Peles, 1997; Gruber, 1996; Huang et al., 2007; Lynch and Musto, 2003; Sirri and Tufano, 1998). However, evidence from managed funds literature may not apply to superannuation funds due to fundamental differences in the type of investors and the nature of these investments.

Managed fund investors voluntarily choose to invest so they are motivated to acquire information or financial advice to make informed choices. In contrast, superannuation is mandatory for almost all working Australians, including many who have no financial expertise or may not have the time or inclination to actively seek sufficient information or advice to make well-informed choices.[6] While past performance is one of the most salient and relevant pieces of information for choosing investments and is relatively easy for investors to obtain and understand, other considerations may actually be more important for long-term, locked-in superannuation investments, e.g., long term risk, fees, service quality and financial stability of superannuation funds. However, it is likely difficult for the average superannuation investor to properly evaluate all these factors due to lower average financial literacy, the wide array of superannuation funds available for choice, the long-term nature of risk and return trade-offs, and complex and ever-changing regulations (Kingston and Thorp, 2019). Individual investors may be affected more by salient and easy-to-understand metrics such as a fund's recent performance. Investor inertia, especially for naïve investors and younger investors, may also reduce the impact of short-term performance on members' choice because the long-term, locked-in nature of superannuation causes people (especially younger people) to be less engaged in managing this investment. Many people simply stay with the default investment strategy of the default superannuation fund nominated by their employer.[7] Whether the inertia is caused by lack of engagement or deliberate choice due to members' preference for the default option, this behaviour is inconsistent with the “return-chasing” behaviour observed from individual investors of managed funds (Del Guercio and Tkac, 2002; Gharghori et al., 2007).

International and Australian studies attempting to identify return chasing behaviour in retirement savings show mixed results. Cronqvist and Thaler (2004) find that out of a large pool of funds available to Swedish fund members, the one with the highest five-year trailing return attracted the largest market share. Sialm et al. (2012) find that US defined contribution plan participants neither invest more in high performance funds nor significantly pull out of low performance funds. They show that the flow-performance sensitivity documented in the past is driven primarily by the plan trustees' actions in adding and deleting options on the plan menu. Using a dataset covering savings in Sweden's Premium Pension System, Dahlquist and Martinez (2015) find pension investors do not seem to react to past fund performance due to inattention and inertia. Turning to Australian superannuation, Frino et al. (2005) and Clark-Murphy et al. (2009) document return chasing at product and individual member level during the samples periods of 1995–2004 and 1995–2006 respectively. Gharghori et al. (2008) investigated the smart money effect in Australian superannuation funds flow from 1995 to 2006 and conclude that members are not smart, as they tend not to invest in funds that subsequently perform well nor do they invest in funds whose prior performance has been good.

Given the opposing arguments and mixed empirical findings discussed above, whether and how short-term performance affects superannuation investor's fund switching behaviour remains an intriguing empirical question. Therefore, our first hypothesis tests

[2] https://www.globalpensionindex.com/ (accessed 30 April 2020)

[3] To ensure adequate retirement savings for the aging population, the SG levy was gradually increased to 9.5% of an employee's compensation in 2009 from 3% at its inception in 1992. Beginning in July 2021, a gradual increase to 12% is proposed by 2025. Source: http://www.ato.gov.au/rates/key-superannuation-rates-and-thresholds/page=23#Super-guarantee-percentage (accessed 30 April 2020)

[4] Estimate by research firm Rainmaker assuming growth rate of 9% per year.

[5] Since 1 July 2005, with the implementation of the Superannuation Legislation Amendment (Choice of Superannuation Fund) Act 2004 (Commonwealth of Australia, 2005) many Australian employees are able to nominate a fund for their SG contribution, with the exception of those whose superannuation is paid under state awards or state industrial agreements, as well as members of certain public sector funds and defined benefit plans.

[6] The majority of individuals in superannuation do not seek professional financial advice (Gerrans et al., 2018).

[7] See Butt et al. (2018) for an analysis of fund member defaulting behaviour.

whether there is a natural positive relation between short-term performance and superannuation investors' fund switching decisions.

Hypothesis 1. *There is a positive flow-performance relation in superannuation funds.*

The second potential determinant of superannuation members' switching choices is the superannuation funds' marketing effort. Marketing is an important tool to attract investors because investors tend to select funds that are easier or less costly for them to identify (Huang et al., 2007; Jain and Wu, 2000; James and Karceski, 2006; Sirri and Tufano, 1998). Sirri and Tufano (1998) and Huang et al. (2007) argue that fund flow of managed funds should be related to investors' search costs. More visible funds are more likely to capture investors' attention and thus have a higher chance of being researched and selected. Thus, advertising increases fund visibility and reduces investors' search costs, which could have a material impact on consumer fund choices. Using proxies for advertising effort, such as total fee ratios, 12b-1 fees or an advertisement in business periodicals, several papers infer that advertising reduces consumer search costs and facilitates fund flows for mutual funds (Barber et al., 2005; Gallaher et al., 2006a; Huang et al., 2007; Jain and Wu, 2000; Korkeamaki et al., 2007).

Marketing is also potentially an important mechanism for superannuation funds to counteract members' information overload by increasing brand recognition and providing information via marketing. The role of marketing is likely even more important in the superannuation context given that superannuation members are less likely to actively do extensive research of superannuation funds to make switching decisions, relative to mutual fund investors. Langford et al. (2006) compare and contrast superannuation funds with/without choices before the introduction of “choice of fund” legislation in Australia and highlight the substantial search costs faced by retail investors. Repeated messages provided by advertisements are likely to attract investor attention and make their information search/processing decisions easier. Superannuation members are unlikely to be able to study all the information available due to the sheer number of choices and the complex and difficult to understand disclosures. Marketing thus helps a superannuation fund get noticed and selected by investors to be researched further, thus substantially increasing the probability that the fund will eventually be chosen. Marketing can also serve as a signal of the financial capability (and thus financial stability) of the fund, which may also affect superannuation members' choices. Thus, this study examines empirically whether there is a positive relation between marketing and superannuation fund switching choices.

Superannuation funds appear to regard marketing as an important tool for attracting investments. Industry superannuation funds in Australia began their “compare the pair” advertising campaign in 2005 in response to the choice of fund regime.[8] This advertising campaign reached such a level in 2014 that it prompted the Financial Planning (FPA) and the Association of Financial Advisers (AFA) to question whether the industry funds were really acting in the best interests of their members.[9] The Industry Super Australia[10] justifies their marketing spending by saying that advertisements have proven to be an effective way to grow and retain members and to compete with their retail superannuation counterparts. Thus, this study examines empirically whether there is a positive relation between marketing and superannuation fund switching choices. To the extent that a mandatory superannuation system will increase coverage of investors with lower financial literacy, a strong relation between marketing and fund flows for superannuation funds may be expected.

Hypothesis 2. *Marketing is positively associated with superannuation fund flows.*

Methodologically, this study's research design has two major strengths. The first is the use of a new and more precise measure of superannuation members' switching choice: member-initiated fund transfers. In the managed funds setting, every flow represents a decision made by investors. Investment choice is generally measured in the managed fund literature using the fractional net flow specification to approximate fund flows, but net flow is less informative in the superannuation setting because a large portion of new inflows consists of mandated employer contributions under the compulsory Superannuation Guarantee (SG) scheme, and outflows from a superannuation fund consist largely of benefit payments to retirees. These mandated inflows and outflows will overwhelm any effect of active member choice in fund flows. Due to the superannuation contribution and withdrawal rules, only member-initiated fund transfers capture superannuation members' active investment decisions as these transfers exclude mandatory contributions and final payouts. Therefore, we use the Australian Prudential Regulation Authority (APRA)-reported transfer from one superannuation entity to another superannuation entity after adjusting for flows from winding up funds. Mandatory SG contributions are not included in these transfers, so when an employee starts a new job, this will affect the APRA-reported transfer only if they actively choose to transfer funds from an existing superannuation fund to the fund nominated to receive SG payments from their new job. The derived member-initiated transfers provide a more precise reflection of superannuation members' active investment choices. In addition, the partition of the transfers into inward and outward transfers enables us to examine how superannuation funds attract new customers and retain existing customers.

The second methodological strength of this study is the examination of superannuation investment choices at the fund/plan level instead of at the individual product/option level. A potential complication facing any analysis of flows in fund studies is the fact that virtually all products/investment options are affiliated with specific funds/plans. Superannuation members have two levels of choices

[8] A typical scenario in this advertising campaign is that two people sit on a park bench discussing their superannuation. Person A is with a retail superannuation fund while person B is with an industry superannuation fund. Their discussion clearly portrays the industry superannuation fund as the better of the two funds.

[9] See http://www.moneymanagement.com.au/expert-analysis/editorial/industry-super-funds-advertising-onslaught-incomparable

[10] Industry Super Australia (ISA) is an umbrella organisation that manages collective projects on behalf of 15 industry superannuation funds. These projects include research, policy development, government relations and advocacy as well as the ISA joint marketing campaign.

to make. The first is the choice of a superannuation fund to receive contributions. The second choice is the individual investment product or option within a particular fund. While the effect of product/option characteristics on investment net-flows to individual product/option has been recognized by prior research, few studies focus on investment flows into and out of the over-arching superannuation fund. Although superannuation funds are certainly interested in the level of investment flow to each of their individual options, they view those options as a series of products, with the central interest being the aggregate flow to the entire fund (Bhattacharya et al., 2013; Chevalier and Ellison, 1997). From the average investor' perspective, the investment choice starts with superannuation fund brand recognition, which precedes investment option/product selection.[11] Moreover, the relative ease of switching investment options within a superannuation fund (in terms of fees and search costs) suggests that choosing a fund is an important decision before a specific option/product is selected (Massa, 2003). In addition, it is the active choices at fund level, rather than at individual product level, that drive competition and improve the overall efficiency of the superannuation system (Productivity Commission, 2016). Marketing, as the activity of interest for this study, is also conducted at the fund level instead of the individual investment option level. Given the reasons above, we adopt a broader perspective and use the superannuation fund as the unit of analysis for both member choices and their determinants.

Our results show that, opposite to the asymmetric flow-performance relationship commonly observed in managed funds literature, good fund performance does not appear to significantly attract inward transfers, but poor performance is significantly associated with outward transfers among superannuation funds. This suggests the average superannuation investor does not consider higher short-term performance a sufficient reason for switching funds. However, investors appear to monitor their investment because poor fund performance does cue members to switch to another fund. This is contrary to the flow-performance relationship found in managed funds where retail investors flock to recent winners without punishing the losers proportionately. Our result is consistent with "prospect theory" whereby substantial expected benefits/losses are required before inert investors move from their current reference point (Fry et al., 2007). This has interesting implications for superannuation funds in that, instead of trying to out-perform other funds in the short term which does not appear to be an effective strategy in attracting new inflows, it is more important to avoid under-performance which causes outward transfers.

The results also show that marketing does attract new investors into superannuation funds, but this result is driven by retail funds even though industry funds spend more on marketing.[12] In contrast, marketing does not appear to be a useful strategy for industry funds for attracting investors.

We continue our analyses by considering several alternative specifications and conducting a variety of robustness tests. We find that our results are not sensitive to the adoption of a dynamic-panel Generalized Method of Moments (GMM) estimator, the inclusion of instrumental variable and the time periods examined.

The remainder of this study proceeds as follows. Section 2 describes the data and empirical methodologies employed in this study. Results and robustness tests are discussed in Section 3. Section 4 concludes the paper.

2. Data and methodology

2.1. Data source

The first data sources are the Australian Prudential Regulation Authority (APRA) Superannuation Fund Level Profiles and Financial Performance statistical publications, which provide data on investment transfers and other superannuation fund characteristics.[13,14] The sample period spans from 2005 to 2014, when the "choice of fund" policy was in place and before a new APRA reporting regime was adopted in 2015.

Considering the significant consolidation in the superannuation industry over the sample period, there is a need to adjust for successor transfers, based on the information reported in the proprietary SRF 250.0 Superannuation Entity Profile. Section 4 of this form is used to identify the name of the winding up entity, the date of wind up, and the successor entity. Fund flow due to fund

[11] Some investors might filter funds based on the availability of a particular product or style of product. This is more of an issue for some retail funds than industry funds, as most industry funds have a similar (and somewhat limited) range of products/options available. There are a small number of retail funds with an extensive list of products in our sample – these would appeal to those who want self-directed or adviser-directed investing. For these particular investors, fund performance or marketing will not matter. If many investors filter funds based on product level attributes, this will work against this study finding any result using the fund level measures. We address this issue by conducting sensitivity tests that remove funds with the largest numbers of investment options, and stronger results are found.

[12] Superannuation funds in Australia have historically been distinguished by the type of fund sponsor. Retail funds are offered by financial institutions and are generally available for anyone to join. Industry funds were originally established to provide for the retirement of workers from a particular industry. Membership in industry funds may be restricted, though after the 2005 "choice of fund" legislation, many industry funds have become "Public-Offer" funds, available to a wider number of investors. Many industry funds are run on a not-for-profit basis. Superannuation funds can also be sponsored by corporate or government employers. Our data includes all types of funds, but separate analysis is only available for retail and industry funds due to the small numbers of other fund types.

[13] APRA supervises regulated superannuation funds, Approved Deposit Funds and Pooled Superannuation Trusts, all of which are regulated under the *Superannuation Industry (Supervision) Act 1993*. Self-Managed Superannuation Funds (SMSF) are supervised by the Australian Taxation Office. Member-nominated outflows can be directed to a SMSF, which is not reportable to APRA.

[14] Some items in the public publications are masked for privacy reasons. The full dataset is offered by the APRA to perform the analysis in this study.

Table 1.A
Sample selection process.

Sample selection criteria/Superannuation fund type	Corporate	Industry	Public Sector	Retail	Retail-ERF	Total
Initial sample (fund years)	1386	597	220	1815	148	4166
Delete non-public offer funds	1301	239	176	325	10	2051
Delete defined benefit funds	6	0	0	49	0	55
Delete funds with year-end other than 30 June	10	0	0	107	0	117
Delete funds with missing net transfer	0	0	0	0	0	0
Delete funds with negative or missing inward transfer	0	0	0	11	0	11
Delete funds with negative or missing outward transfer	0	0	0	0	0	0
Delete funds with missing return	3	0	0	19	0	22
Delete funds with 0 or missing TNA	2	1	0	41	3	47
Delete funds with negative or missing MktExp	0	2	0	5	0	7
Delete funds with non-positive or missing InvOpt	0	0	0	0	0	0
Delete funds with non-positive or missing Above50	9	1	0	41	3	54
Final sample (fund years)	55	354	44	1217	132	1802

This table reports the sample selection process. TNA represents the total net assets under management. MktExp denotes the marketing expense. The number of investment options is denoted as InvOpt. Above50 is the proportion of members above the age of 50. Return is the APRA-reported fund return. The flow measures (net transfer, inward transfer and outward transfer) are APRA-reported transfers among superannuation entities.

merger/consolidation is not initiated by individual members. Therefore, the outward transfer from a fund wind up is deleted. Inward transfer of a successor fund from winding up funds, using the outflow of those funds leaving the industry in the year in which they wound up is also removed. If these data are not available, we use assets of those superannuation funds in the year prior to wind up.

2.2. Sample selection process

The sample selection process is reported in Table 1.A. The initial sample comprises 4166 superannuation fund years for the period from 2005 to 2014. Corporate, industry and retail funds together account for almost 95% of the total observations. The sample selection process begins with the elimination of non-public offer funds, as they are not free for all investors to join. This step results in the exclusion of 94% of corporate funds, 40% of industry funds, and 80% of public sector funds from the sample. The majority of retail funds are public-offer funds, as only 335 of 1963 retail funds are non-public offer funds. Exclusively defined benefit (DB) plans are deleted, since DB members are not responsible for managing their own investments and DB funds are not as portable as defined contribution (DC) plans. A number of superannuation funds with a year-end other than 30 June are removed in order to provide a consistent basis for comparison. Observations with missing or erroneous values (e.g. negative inward transfer) are deleted. The final sample comprises 1802 fund years for the period from 2005 to 2014. Over half (67.5%) of these funds are retail superannuation funds. The second largest type is industry superannuation funds, which accounts for 19.6% of the sample. The composition of the final sample by fund is reported in Table 1.B.

2.3. Regression model specification

Determinants of superannuation investment transfers are examined using the following regression model.

$$ChoiceMeasure_{i,t} = a + b_1 MktExp_{i,t} + b_2 Perf_{i,t-1} + b_3 LnTNA_{i,t-1} + b_4 InvOpt_{i,t} + b_5 Above50_{i,t} + \varepsilon_{i,t} \quad (1)$$

where *ChoiceMeasure* is one of the three fund flow measures (net transfer, inward transfer and outward transfer of APRA-reported fund transfers among superannuation funds, scaled by total net assets under management; *MktExp*, the marketing expense ratio, is marketing expense divided by total net assets; we use APRA-reported fund return, which is calculated as a fund's net earnings after tax

Table 1.B
Sample selection process.

Year/Superannuation fund type	Corporate	Industry	Public Sector	Retail	Retail-ERF	Total
2005	20	29	1	161	12	223
2006	12	38	3	138	12	203
2007	6	36	3	142	14	201
2008	5	37	4	129	15	190
2009	2	38	5	131	15	191
2010	4	36	5	117	15	177
2011	2	36	6	106	15	165
2012	1	37	6	100	14	158
2013	1	34	5	98	12	150
2014	2	33	6	95	8	144

This table reports the final sample by the number of funds, year and fund type, as fund is our unit of analysis.

divided by the cash flow-adjusted total net assets under management. Following Sirri and Tufano (1998), each year, fractional performance ranks $Perf_{t-1}$ ranging from zero to one are assigned to superannuation funds according to their percentile return relative to other funds in the prior year. Fund size reflects economies of scale and scope.

The natural logarithm of total net assets (*LnTNA*) is adopted as the proxy for size to represent brand recognition and resources controlled by the fund; *InvOpt* is the number of investment options/funds within the fund. A greater variety of investment options is expected to attract a broader set of members who have different performance targets and risk appetites; *Above50* represents proportion of members above the age of 50. Anecdotal evidence indicates that investors approaching retirement age are more aware of and more engaged in their superannuation arrangements. They are more likely to make active switching choices, and thus, they are more likely to affect fund flows. Fund type and year fixed effects are controlled for in the regression. Standard errors are clustered at fund level.

2.4. Dependent variable: Member-initiated fund transfer and alternative member choice measures

Not having access to exact fund flows, previous managed fund studies approximate net flows by using fund total net assets and fund returns (Chevalier and Ellison, 1997; Del Guercio and Tkac, 2002; Sirri and Tufano, 1998).The application of this measure to the superannuation setting is problematic because of its failure to isolate SG mandated contributions and payments of member benefits (which lead to a high autocorrelation in flows), both of which are not member-initiated investment decisions.

We thus use APRA-reported investment transfers, which are transfers between APRA-regulated superannuation entities. Hence, it is worth noting that the inward transfer does not include amounts that are new to the superannuation system, e.g., the mandatory contributions under the SG. Similarly, the outward transfer excludes benefit payments. Due to the restrictions applied in the sample selection process, our investment transfer measures do not capture transfers among Defined Benefit funds, no-choice funds or non-APRA funds. For example, transfers to and from SMSFs are beyond the scope of our study, as SMSFs are regulated by and reportable to the Australian Taxation Office (ATO). When a fund winds up, its transfers are not member initiated. Therefore, balances transferred from funds that are winding up to their successor fund are excluded from our transfer measures. If these data are not available, the closing transfer is estimated by the balance in the closed superannuation fund in the year prior to wind up. Thus, our dataset excludes flows nominated by employers or trustees.

To complement the main member's choice measure, alternative measures, including employee non-concessional contributions, the proportion of assets in the default investment option and the number of new members are also used. Detailed explanations of these measures are provided in Section 3.5.

2.5. Fund performance and marketing expense

Since the unit of analysis in this study is the superannuation fund rather than the individual investment option, returns are measured at the fund level as the combined earnings of superannuation assets net of all fees and charges. *The Superannuation Industry (Supervision) Act 1993* requires that superannuation trustees must “formulate, and give effort to, an investment strategy that has regard to the whole of the circumstances of the entity and in the best interest of its members”. APRA claims that its rate of return is a useful measure to assess a superannuation trustee's ability to deliver on the fund's investment strategy for the benefit of all members over time (APRA, 2013). Fund level returns for the past 1, 5 and 10 years are reported annually on the APRA website. In addition, the APRA-reported return is widely used by superannuation disclosure documents (such as PDSs) as well as superannuation comparison agents such as SuperGuide, Canstar and SuperRatings for overall ranking of best-performing funds. While this measure is widely available, it will not be the only return measure used by investors when selecting superannuation funds.[15] To the extent that there is wide variation in returns between the available options in a fund, this will work against our finding significant results based on fund level returns. To mitigate against potential concerns relating to reverse causality, Sirri and Tufano (1998) approach of using the investment returns over the preceding year is used for regression analysis.

Marketing decisions originate at the fund level, so we use the superannuation fund as the unit of observation for marketing activities. A close examination of the expense items in SRF300 reveals that marketing expenses are reported under “other operating expenses” (SRF330 item 10.2: Advertising and Marketing expenses), which is used as a proxy for marketing efforts in this study. As fund advertising has no persistent effect on fund flows (Gallaher et al., 2006b), we use current rather than lagged marketing expenses in the main analysis.

3. Results

3.1. Summary statistics

As prior research mostly focused on individual options, this section first presents descriptive statistics to provide a better understanding of the superannuation funds in our sample. Table 2 provides the descriptive statistics of the sample by year. Over time,

[15] Our sample period is entirely before the introduction of MySuper and during this time default investment options of different funds varied widely in terms of their benchmark asset allocation. Participants enrolled in these options faced significantly different wealth outcomes at retirement (Basu and Drew, 2010).

Table 2
Summary statistics for full sample.

Panel A: Summary statistics

Variables	N	Mean	S.D.	Min	0.25	Mdn	0.75	Max
Return (%)	1802	5.13	9.07	−16.46	−0.32	8.22	12.05	19.09
MktExp (%)	1802	0.19	0.37	0.00	0.00	0.05	0.2	2.29
InvOpt	1802	120.97	395.70	1	3	10	38	5403
Above50 (%)	1802	38.75	25.24	0.00	18.76	29.77	57.78	100
Net transfer (%)	1802	3.23	31.08	−41.56	−7.09	−1.68	2.29	227.57
Inward transfer (%)	1802	12.62	31.66	0.00	1.31	3.71	9.9	247.25
Outward transfer (%)	1802	9.64	9.84	0.00	4.14	7.41	11.52	68.19

Panel B: Means by year

Year	N	TNA ($m)	Return (%)	$MktExp ($m)	InvOpt	Above50 (%)	Net transfer ($m)	Inward transfer ($m)	Outward transfer ($m)
2005	223	883.77	9.88	1.12	51.74	37.23	50.01	133.75	82.94
2006	203	1394.64	11.95	1.77	61.66	36.78	78.68	223.62	141.37
2007	201	1883.08	13.03	2.46	67.12	37.18	47.77	218.82	183.21
2008	190	2601.77	−7.97	2.55	99.19	36.05	27.79	246.07	204.43
2009	191	2668.43	−10.21	2.27	104.46	38.90	23.55	189.60	165.84
2010	177	2502.60	7.44	1.80	115.37	39.00	45.39	230.53	168.15
2011	165	3172.61	6.64	1.96	147.82	39.79	36.43	229.33	194.48
2012	158	3770.27	−0.39	1.92	150.31	41.05	6.25	223.41	232.96
2013	150	3957.86	11.58	2.52	161.87	43.23	10.93	271.09	250.89
2014	144	5210.54	9.44	2.77	271.97	44.48	23.12	314.27	307.18

This table reports summary statistics and means for the full sample from 2005 to 2014. N is sample size in fund years. At the end of each year, the cross-sectional mean value of the following superannuation fund characteristics are calculated: total net asset under management (TNA), marketing expense in dollars ($MktExp), investment options (InvOpt), APRA-reported fund return (Return) and the proportion of members above the age of 50 (Above50). The transfer measures (net transfer, inward transfer and outward transfer) are APRA-reported transfers among superannuation entities.

the number of superannuation funds has decreased from 223 to 114, which reflects the trend of consolidation in the superannuation industry. This consolidation together with new contributions has resulted in substantial increase in fund size (measured by *TNA*). Fund returns (*Return*) coincide with economic cycles (with negative returns in 2008, 2009 and 2012). Marketing cost is a proxy for superannuation funds' visibility to the public. The average amount of marketing costs (*$MktExp*) increased following the adoption of the "choice of fund" policy in 2005 until 2008, and it fell in 2009 and 2010 before it started to increase again in 2011. The patterns shown may be consistent with "belt-tightening" in the aftermath of the Global Financial Crisis. The average number of investment options per fund (*InvOpt*) has increased substantially from 51.74 in 2005 to more than 200 in 2014, which suggests an increasing level of product proliferation. Net transfer is not zero due to restrictions applied in the sample selection process. In general, the inward transfer is about 6–16% of assets under management.

Panels A and B in Table 3 provide yearly summary statistics for retail and industry superannuation funds, respectively. The consolidation of funds in the full sample seems to be driven by retail superannuation funds, whereas the number of industry funds in the sample has increased during the same period because more of them have become public-offer funds.[16] The proportion of retail funds has decreased from 72% of the sample in 2005 to 65% in 2014. In contrast, industry funds have gained dominance during the same period from 13% to 22%. The average size of industry funds is larger than that of their retail counterparts. The performance of industry funds is better in all years except 2009. Industry funds spent more money on marketing than retail funds in terms of both the absolute dollar amount of expenses and the expense ratio (divided by total net assets). Many more investment options are offered in retail funds. Retail funds provide about 300 options on average, while industry funds provide approximately 13 options. The percentage of both inward and outward transfers is greater for retail funds.

3.2. Effect of performance

While the term "chasing performance" has no standard definition, it is loosely used to indicate that investors infer managerial skill from past returns and reply on past performance heuristics. While such performance-chasing behaviour generally holds at the individual product level for mutual funds, much less is known about fund performance in the superannuation context at the aggregate fund level.

Table 4 reports multivariate regression results regarding the determinants of fund flows for the overall sample and two sub-subsamples of retail and industry funds. The first column shows a positive and statistically significant relation between fund

[16] A quick analysis reveals that despite the significant consolidation in the industry (the number of superannuation funds decreased by 91% from 3720 in June 2001 to 336 funds in June 2012), the level of industry concentration measured by the Herfindahl-Hirschman Index (HHI) is as low as 2.7%. No single superannuation fund has a dominant market share of more than 4%. The largest five funds by assets in 2012 comprised 16% of the market share of the superannuation industry. By comparison, the four major banks comprised about 79% of banking industry assets in June 2012. Hence, there are still a large number of funds competing for members' business.

Table 3
Means for the subsamples.

Year	N	TNA	Return	$MktExp	InvOpt	Above50	Net transfer	Inward transfer	Outward transfer
		($m)	(%)	($m)		(%)	($m)	($m)	($m)
Panel A: Retail funds									
2005	161	892.38	10.01	0.93	68.93	42.68	57.42	158.03	99.50
2006	138	1406.54	12.05	1.59	86.59	43.77	80.30	252.15	179.10
2007	142	1686.67	12.94	2.05	91.95	44.06	50.28	249.52	216.46
2008	129	2526.93	−8.68	2.23	142.38	42.67	31.32	298.77	247.05
2009	131	2439.80	−9.84	1.77	148.69	46.31	16.52	216.62	199.79
2010	117	2265.16	7.60	1.12	170.50	46.60	64.92	290.51	205.95
2011	106	2944.85	6.42	1.55	225.73	47.93	27.53	262.05	236.99
2012	100	3299.44	−0.85	1.33	232.61	49.76	9.43	263.77	279.31
2013	98	3255.88	11.50	1.53	242.85	52.36	22.30	305.18	268.70
2014	95	4305.58	8.81	1.43	405.58	53.21	57.99	343.14	316.33
Panel B: Industry funds									
2005	29	1625.14	11.76	2.93	12.69	23.81	53.13	122.97	69.84
2006	38	1855.14	13.67	3.26	13.21	23.08	121.98	246.39	79.07
2007	36	2971.31	15.16	5.08	10.33	22.01	61.04	190.86	129.82
2008	37	3474.97	−6.81	4.99	11.24	23.72	29.53	175.64	146.12
2009	38	3899.94	−12.02	4.46	10.82	23.75	51.30	167.84	116.54
2010	36	3815.54	7.80	4.76	11.08	23.66	0.60	144.53	124.21
2011	36	4536.78	8.03	3.85	10.61	25.24	51.41	199.47	148.06
2012	37	5448.09	0.41	3.58	10.78	27.04	7.09	192.46	185.37
2013	34	6149.54	13.46	5.29	11.65	26.05	2.06	259.40	257.34
2014	33	7959.79	11.71	5.46	16.24	26.13	57.12	310.07	347.33

This table reports means for the retail/industry superannuation funds in the sample from 2005 to 2014. N is sample size in fund years. At the end of each year, the cross-sectional mean value of the following superannuation fund characteristics are calculated: total net asset under management (TNA), APRA-reported fund return (Return), marketing expense ($MktExp), investment options (InvOpt), and the proportion of members above the age of 50 (Above50). The transfer measures (net transfer, inward transfer and outward transfer) are APRA-reported transfers among superannuation entities.

Table 4
Determinants of member switching choices.

Sample	All funds	All funds	All funds	Retail funds	Retail funds	Retail funds	Industry funds	Industry funds	Industry funds
Choice measure	Net transfer	Inward transfer	Outward transfer	Net transfer	Inward transfer	Outward transfer	Net transfer	Inward transfer	Outward transfer
$Perf_{t-1}$	0.057***	0.024	−0.032***	0.062**	0.029	−0.030*	0.032	0.024	−0.010*
	(0.009)	(0.262)	(0.006)	(0.034)	(0.327)	(0.056)	(0.164)	(0.360)	(0.061)
MktExp	16.876***	18.912***	1.358	21.930***	23.984***	1.226	−1.977	−2.587	−1.513
	(0.002)	(0.000)	(0.150)	(0.001)	(0.000)	(0.283)	(0.672)	(0.616)	(0.333)
$LnTNA_{t-1}$	−0.002	0.002	0.004	−0.003	0.003	0.006	0.002	−0.004	−0.006***
	(0.763)	(0.694)	(0.206)	(0.693)	(0.667)	(0.100)	(0.877)	(0.709)	(0.000)
LnInvOpt	0.010*	0.004	−0.006	0.009	0.002	−0.007	0.032	0.034	0.002
	(0.054)	(0.407)	(0.129)	(0.134)	(0.715)	(0.115)	(0.131)	(0.130)	(0.508)
Above50	0.062	0.097**	0.044*	0.049	0.089**	0.050*	0.205*	0.150	−0.064***
	(0.146)	(0.020)	(0.088)	(0.286)	(0.044)	(0.082)	(0.093)	(0.243)	(0.000)
Constant	−0.204***	−0.110***	0.094***	−0.114***	−0.031	0.081***	−0.043	0.061	0.112***
	(0.000)	(0.001)	(0.005)	(0.004)	(0.439)	(0.000)	(0.439)	(0.310)	(0.000)
Observations	1332	1332	1332	897	897	897	267	267	267
Adjusted R^2	0.094	0.123	0.141	0.126	0.148	0.055	0.081	0.058	0.416
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund type controlled	Yes	Yes	Yes	No	No	No	No	No	No

This table examines the determinants of superannuation fund investment flows. The flow measures (net transfer, inward transfer and outward transfer) are APRA-reported transfers among superannuation entities. All the flow measures are scaled by superannuation fund size. Each year, fractional performance ranks ($Perf_{t-1}$) ranging from zero to one are assigned to superannuation funds according to their return in the prior year. Marketing Expense (MktExp) is $MktExp scaled by TNA. $LnTNA_{t-1}$ is the lagged natural logarithm of net assets under management. LnInvOpt is the natural logarithm of the number of investment options offered by a superannuation fund. The proportion of members above the age of 50 is denoted as Above50. Year fixed effects and fund type are controlled for. Standard errors are clustered at fund level. Robust *p*-values are reported in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% level, respectively.

performance rank (*Perf*) and net transfers, suggesting there is also a positive flow-performance relation at the fund level in the superannuation industry. The untabulated results for effect sizes reveal that 0.8% of the variance unexplained by other factors is explained by past relative performance. A similar result is found for the retail funds. These results provide some support for hypothesis 1 which predicts a positive flow-performance relation in superannuation funds. However, after partitioning net transfer into inward and outward transfers, no statistically significant relation is found between prior year performance and inward transfer. In contrast, a statistically significant negative association is found between prior year performance and outward transfers for the overall sample and both sub-samples. The coefficient and significance on fund performance rank (*Perf*) is attenuated for industry funds relative to retail funds. This implies industry fund members are less responsive to information and more passive overall compared to their retail fund counterparts. These findings are different from prior literature on managed funds and indicate that while superannuation investors do not chase after positive short-term performance, they do leave funds that have poor performance. These results appear consistent with the long-term nature of superannuation investment where factors other than positive short-term performance are also very important. Dahlquist and Martinez (2015) infer that pension investors face a greater risk of being caught in poorly performing funds because of their inattention to past performance. However, the results in the study show that some superannuation members appear to monitor fund performance and transfer their investment from poorly performing funds. That is, poor performance instead of superior performance triggers movements in superannuation investment. The differences in the results relative to the managed funds literature highlights the importance of studying superannuation investment flows separately as evidence from managed funds studies cannot be generalized to the superannuation context.

3.3. Effect of marketing on fund flows

The second potential determinant of fund flows examined is marketing effort. Table 4 shows a strong positive relation between marketing expense (*MktExp*) and net transfer for the overall sample, which suggests that investors pay attention to advertisements when switching funds. Most superannuation investors have no formal financial training, and there are hundreds of funds to choose from, far more than any investor can carefully consider. The significant positive relation between marketing and net transfer supports hypothesis 2 which proposes that marketing helps attract investors' attention and makes these funds easier and less costly for investors to identify. Analysis of the effect size suggests that 2.8% of the variance unexplained by effects other than *MktExp* is explained by the marketing effect.

Next, when net transfers are divided into inward transfers and outward transfers, the results for the overall sample show that marketing expenses increase inward transfers but do not have a significant impact on outward transfers. As information costs for new investors are higher than those for existing members who should already have some knowledge of the fund, it is logical that enhanced awareness produced by marketing efforts attracts more inward transfers (i.e., new investors) but does not affect existing members to a similar degree.

The analysis above shows that funds with high marketing expenses attract more inward investment transfers. To explore whether this relation applies equally to different types of funds, we re-run the tests for retail and industry funds separately, as these two types of funds account for the majority of the sample funds. Similar results are found for the retail fund sub-sample. In contrast, the relation between marketing and fund flow is not statistically significant for industry superannuation funds although these funds spend more on marketing than retail funds (see Table 3). One plausible reason may be that many retail funds are marketed through advice networks.[17] And some superannuation investors may perceive industry funds as funds they cannot choose if they do not belong to that particular industry. In summary, retail funds appear to be responsible for the statistically significant positive relation between marketing and inward transfers for the overall sample. No significant effects are found for industry funds. These results suggest that the higher amount of marketing expenditure incurred by industry funds does not appear to encourage eligible members to transfer their other superannuation accounts into the industry fund. And it does not appear that the higher marketing expense keeps members leaving the industry from transferring their balance to a new fund any less than the average outward transfer rate in the entire sample.

3.4. Control variables

Turning to other control variables, size (*LnTNA*) is often used as a proxy for economies of scale in raising a fund's visibility. No statistically significant relation is found between fund size and transfers, except for the negative relation between industry fund size and their outward transfers, indicating that industry fund investors are less likely to leave the fund if the fund is larger in size. Next, inconsistent with the expectation that superannuation funds can employ category proliferation to limit competition and increase market coverage, the number of products offered (*LnInvOpt*) only has a marginally significant positive impact on the net transfer for all funds (column 1 of Table 4). The results also show that members above the age of 50 (*Above50*) are generally more active in terms of both inward and outward transfers (for the overall sample and retail sub-sample). This result is in line with the evidence Butt et al. (2018) and Dobrescu et al. (2017) that older members are more likely to make active choices as account balances increase and as retirement approaches. In contrast, a statistically significant negative relation between *Above50* and outward transfer is evident for industry funds, indicating that the propensity to move funds out (outward transfers) is lower for industry fund members who are over

[17] We are unable to establish the causality due to the unavailability of financial advisor data. Yet we expect much of the financial advisors' recommendation at product level, rather than fund level.

Table 5
Determinants of member choice – alternative measures.

Sample	All funds	All funds	All funds	All funds
Choice measure	PerCon	EmplCon	DefAsset	TotNew
Perf $_{t-1}$	−0.000	6.609	0.009	0.021*
	(0.975)	(0.291)	(0.789)	(0.091)
MktExp	2.304***	714.754	−11.868***	8.437***
	(0.003)	(0.299)	(0.003)	(0.002)
LnTNA$_{t-1}$	0.003**	−1.626	−0.012	0.000
	(0.032)	(0.288)	(0.146)	(0.929)
LnInvOpt	0.000	0.327	−0.091***	0.011***
	(0.981)	(0.345)	(0.000)	(0.003)
Above50	0.042***	−5.888	−0.027	−0.107***
	(0.001)	(0.287)	(0.733)	(0.000)
Constant	−0.041***	8.155	0.795***	0.182***
	(0.000)	(0.295)	(0.000)	(0.003)
Observations	1332	1332	1331	1320
Adjusted R^2	0.236	0.059	0.450	0.136
Year fixed effects	Yes	Yes	Yes	Yes
Fund type controlled	Yes	Yes	Yes	Yes

This table examines the determinants of superannuation fund choices by using alternative choice measures. PerCon represents the scaled personal member contributions. EmplCon represents employer contributions, which is also scalded by TNA. DefAsset is the proportion of fund asset in the default option. TotNew is the number of new members for each year. Each year, fractional performance ranks ($Perf_{t-1}$) ranging from zero to one are assigned to superannuation funds according to their return in the prior year. Marketing Expense (MktExp) is $MktExp scaled by TNA. $LnTNA_{t-1}$ is the lagged natural logarithm of net assets under management. LnInvOpt is the natural logarithm of the number of investment options offered by a superannuation fund. The proportion of members above the age of 50 is denoted as Above50. Year fixed effect and fund type are controlled for. Standard errors are clustered at fund level. Robust p-values are reported in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% level, respectively.

50 years of age. A possible explanation for this is that members above 50 years old are less likely to change job or move industry, and they are less exposed to the switching fund scenarios.

3.5. Alternative choice measures

Next, supplementary regression analysis is carried out using alternative proxies for investor choice, including personal contributions, proportion of default assets and the number of new members. *PerCon* is the asset-scaled personal member contributions. Members' non-concessional contributions are after-tax contributions and include contributions from both new and existing members. *EmplCon* represents employer contributions, which is also scaled by total net assets. *DefAsset* is the proportion of fund assets in the default option. The proportion of default assets can be used to examine the level of active choices made within the fund to determine the proportion of members who opt for a passive (i.e., just using the default option) or active investment style. And *TotNew* is the number of new members for each year. The number of new members represents the number of personal and employer-sponsored members who joined the superannuation fund during the financial year.

This analysis is used to complement the main analysis as these measures are not pure investor choice measures that capture active switching decisions. For example, both personal contributions and the percentage of default assets fail to disentangle the effect caused by existing and new members. The percentage of investment in the default option reflects the defaulting behaviour at an individual fund level. The number of new members includes people who are automatically enrolled by their employers. However, these alternative measures may still provide interesting supplementary evidence regarding the level of investor engagement. The results are presented in Table 5.

Table 5 reveals no statistically significant relation between performance and any investor choice measures, except a marginally significant positive relation between performance and the number of new members (*TotNew*). This finding suggests that better performance is associated with more new members. The results for marketing expenses show that marketing is statistically significantly associated with higher personal contributions (*PerCon*), a lower percentage of investment in default assets (*DefAsset*), and a larger number of new members (*TotNew*). These results are interesting and together suggest that marketing is effective in attracting investors who are more likely to make active decisions (hence they have a lower likelihood of choosing default investment options). The findings have two potential implications: more active investors are less likely to choose the default option, and marketing may also encourage existing members to make active switching choices within a fund.

Next, employer contribution (*EmplCon*) is not statistically significantly associated with any of the independent variables, which can be explained by the fact that employer contribution is determined by employee's level of wages and salaries and because this measure does not represent a choice made by investors. These results also support the use of our member-initiated fund transfer as the traditional net flow approximation is not an appropriate choice measure for superannuation funds because the measure includes employer contributions. When the sample is split into retail and industry sub-samples in Table 6, the results are similar to the main results shown in Table 5. For example, the effects of marketing observed for the overall sample is evident in retail funds but not

Table 6
Determinants of member choice – alternative measures by fund type.

Sample	Retail funds	Retail funds	Retail funds	Retail funds	Industry funds	Industry funds	Industry funds	Industry funds
Choice measure	PerCon	EmplCon	DefAsset	TotNew	PerCon	EmplCon	DefAsset	TotNew
Perf	−0.003	8.132	−0.006	0.025	−0.005	−0.010	0.044	0.005
	(0.782)	(0.283)	(0.896)	(0.124)	(0.449)	(0.190)	(0.269)	(0.704)
MktExp/TNA	3.139***	915.095	−15.692***	12.495***	−1.031	−2.539	−24.665	−1.674
	(0.000)	(0.293)	(0.001)	(0.000)	(0.403)	(0.245)	(0.208)	(0.716)
LnTNA	0.004**	−2.155	−0.021**	0.002	0.001	−0.000	0.036	−0.002
	(0.036)	(0.281)	(0.035)	(0.517)	(0.396)	(0.833)	(0.102)	(0.710)
LnInvOpt	−0.000	0.501	−0.088***	0.010**	−0.003	0.001	−0.128***	0.021**
	(0.961)	(0.327)	(0.000)	(0.014)	(0.436)	(0.730)	(0.009)	(0.038)
Above50	0.036***	−6.509	0.027	−0.109***	0.085***	−0.188***	−0.393***	−0.110**
	(0.008)	(0.287)	(0.749)	(0.000)	(0.001)	(0.000)	(0.010)	(0.026)
Constant	−0.020**	12.111	0.825***	0.078***	0.013	0.186***	0.999***	0.108***
	(0.023)	(0.279)	(0.000)	(0.004)	(0.178)	(0.000)	(0.000)	(0.004)
Observations	897	897	896	894	267	267	267	259
Adjusted R^2	0.216	0.078	0.323	0.166	0.467	0.593	0.198	0.136
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This table examines the determinants of superannuation fund choices by using the alternative choice measures for Retail and Industry Fund subsamples. PerCon represents the scaled personal member contributions. EmplCon represents the employer contributions, which is also scalded by TNA. DefAsset is the proportion of fund asset in the default option. TotNew is the number of new members that join the fund each year. Each year, fractional performance ranks ($Perf_{t-1}$) ranging from zero to one are assigned to superannuation fund funds according to their return in the prior year. Marketing Expense (MktExp) is $MktExp scaled by TNA. $LnTNA_{t-1}$ is the lagged natural logarithm of net assets under management. LnInvOpt is the natural logarithm of the number of investment options offered by a superannuation fund. The proportion of members above the age of 50 is denoted as Above50. Year fixed effect is controlled for. Standard errors are clustered at fund level. Robust p-values are reported in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% level, respectively.

industry funds.

3.6. Additional analysis and robustness tests

3.6.1. Change of job

Admittedly, investors who switch funds may do so because they change jobs. While the change of employer cannot be controlled for because of lack of data at individual fund level, a job change actually provides a chance for investors to make an active choice regarding whether to switch. In other words, our APRA-reported transfers include transfers from job changes only when the member decides to consolidate the existing superannuation balance into the new employer's default superannuation fund. In such a case, the investor has made an active investment choice.

To be specific, investors may switch which fund receives their employer contributions when they change jobs, but this does not necessarily mean that they transfer existing balances (Fear and Pace, 2008). As an indicator of the low level of balance transfers upon changing jobs, Fear and Pace (2008) note that after the introduction of the Choice of Fund policy in 2005 the number of unintended multiple accounts continued to grow. In fact, the Productivity Commission (Productivity Commission, 2018) noted that by 2018 a third of existing superannuation accounts were unintended multiple accounts. Our APRA-reported transfers include only transfers of existing balances from one fund to another, not changes in the fund to which future contributions from the new employer are made. When an individual changes jobs they could a) leave their existing account alone and switch new contributions to the new employer's default fund; b) elect to have their new contributions directed to an existing superannuation account; or c) transfer their existing account to either the new employer's default fund or another fund. Our data will pick up only the third alternative, which implies that the member has made an active choice to move their superannuation balance. However, a job change might well prompt members to think about where their superannuation is invested, prompting active transfers. To control for this possibility, we have included a measure of job stability in an alternative specification of our model.

As our main identification comes from cross sectional variance, we previously include year fixed effect in our main regression model to capture unobservable time-variant factors, e.g., change in employment, that affect fund switches. While fund-level member employment change data is unavailable, we have re-estimated the model to control for the job turnover at aggregate level. We measure job turnover as the percentage of employed persons who have been employed less than a year. The quarterly data is available from 2001 to 2020 from Australian Bureau of Statistics.[18] As our data is annual, we use the May observation each year. We exclude year fixed effects to avoid multicollinearity due to this inclusion of a cross-sectionally invariant variable.

The results in Table 7 show that after controlling for general employment turnover, our main marketing and performance results are still consistent: poor performance cues members to switch funds; marketing is useful for retail funds to attract inward transfers. *Empl* is the job turnover measure, which is positively associated with both inward and outward transfers. This is in line with the

[18] https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6291.0.55.003Feb%202020?OpenDocument (Accessed on 17 July 2020).

Table 7
Determinants of member switching choices – job turnover.

Sample	All funds	All funds	All funds	Retail funds	Retail funds	Retail funds	Industry funds	Industry funds	Industry funds
Choice measure	Net transfer	Inward transfer	Outward transfer	Net transfer	Inward transfer	Outward transfer	Net transfer	Inward transfer	Outward transfer
$Perf_{t-1}$	0.036***	0.004	−0.032***	0.031	0.002	−0.032**	0.020	0.010	−0.011***
	(0.005)	(0.727)	(0.000)	(0.145)	(0.327)	(0.023)	(0.249)	(0.610)	(0.004)
MktExp	6.257***	7.472***	1.027	12.364***	15.148***	2.574	4.221	3.567	−1.191
	(0.005)	(0.001)	(0.274)	(0.001)	(0.000)	(0.166)	(0.181)	(0.271)	(0.187)
$LnTNA_{t-1}$	−0.000	−0.000	−0.000	−0.003	0.001	0.004	0.001	−0.005	−0.006***
	(0.905)	(0.904)	(0.940)	(0.601)	(0.807)	(0.256)	(0.869)	(0.496)	(0.000)
LnInvOpt	0.012***	0.010***	−0.002	0.012**	0.008*	−0.004	0.022**	0.025**	0.002
	(0.003)	(0.006)	(0.545)	(0.018)	(0.099)	(0.278)	(0.048)	(0.044)	(0.365)
Above50	0.048*	0.060**	0.017	0.0063*	0.088***	0.030	0.171	0.114	−0.061***
	(0.068)	(0.018)	(0.397)	(0.076)	(0.010)	(0.242)	(0.111)	(0.303)	(0.000)
Empl	−2.739	4.184**	7.394***	−2.90	5.268	8.830***	7.594***	7.792***	0.453
	(0.247)	(0.048)	(0.000)	(0.473)	(0.151)	(0.000)	(0.005)	(0.004)	(0.359)
Constant	−0.064	−0.107**	−0.052	−0.041	−0.107	−0.079	−0.263***	−0.166**	0.096***
	(0.251)	(0.030)	(0.149)	(0.665)	(0.214)	(0.142)	(0.000)	(0.015)	(0.000)
Observations	1332	1332	1332	897	897	897	267	267	267
Adjusted R^2	0.077	0.124	0.110	0.091	0.148	0.041	0.106	0.068	0.404
Fund type controlled	Yes	Yes	Yes	No	No	No	No	No	No

This table examines the determinants of superannuation fund investment flows by incorporating the effect of job turnover. The flow measures (net transfer, inward transfer and outward transfer) are APRA-reported transfers among superannuation entities. All the flow measures are scaled by superannuation fund size. Each year, fractional performance ranks ($Perf_{t-1}$) ranging from zero to one are assigned to superannuation funds according to their return in the prior year. Marketing Expense (MktExp) is \$MktExp scaled by TNA. $LnTNA_{t-1}$ is the lagged natural logarithm of net assets under management. LnInvOpt is the natural logarithm of the number of investment options offered by a superannuation fund. The proportion of members above the age of 50 is denoted as Above50. Empl is the job turnover measure, which is the percentage of employed persons who have been employed less than a year from Australian Bureau of Statistics. Year fixed effects are controlled for. Standard errors are clustered at fund level. Robust *p*-values are reported in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% level, respectively.

argument that change of job prompts active choices. Compared the main result in Table 4, the inclusion of *Empl* in Table 7 attenuates the magnitude of the coefficients on both *Perf* and *MktExp*, although their statistical significance remains. This seems consistent with the interpretation that some of the investment transfers are related to employment changes when members transfer their superannuation balance to the new employer's default fund. A closer examination by type of funds reveals that job turnover is positively associated with outward transfers from retail funds and inward transfers into industry funds.

3.6.2. Generalized method of moments analysis

To supplement the main fixed effect tests, this section modifies the unexpected fund flow measure by using the methodology in Warther (1995) to provide a Generalized Method of Moments (GMM) analysis. Fund flow is known to be highly auto-correlated. Therefore, a portion of the fund flow is predictable. Warther (1995) uses Box-Jenkins diagnostics to identify the time-series properties of fund flows and uses time-series models to estimate the unexpected component of the flows. Warther (1995) uses time-series analysis at the aggregate fund flow level, whereas data in this study are panel data with a relatively short time period. To derive the unexpected flow, lagged dependent variables need to be included in the model. This leads to the application of the system GMM procedure of Arellano and Bond (1991) in the dynamic panel data. We regress the standard fractional flow measure and add lagged dependent variables (lagged flows) as long as the lagged values are significant. Further lagged flows are used as level and difference instruments.[19] It turns out that the level instrument is lagged by 2 years and that the difference instrument is lagged by 3 years. The resulting equation is assessed by the Sargan test, and the Sargan *p*-value suggests the over-identifying moment conditions are valid. In addition, the Arellano-Bond test is run to ensure that the residuals are not autocorrelated. Both order 1 and order 2 test statistics indicate that there is no serial correlation in the idiosyncratic errors. The residual value in the model is then used as the unexpected flow for the current period. The marketing results reported in Table 8 are qualitatively the same as those in earlier analysis.

3.6.3. Endogeneity issue

A potential endogeneity issue regarding the use of current marketing expense may arise. Specifically, if marketing attracts more investors, fund flows will translate into larger fund size. And larger funds are often regarded as having more resources available to engage in marketing. The growing number of investors also represents an increasing demand for more information. Empirical models that fail to account for this endogeneity will likely generate biased estimates. To further address this concern, we instrument for our original marketing efforts measure using the lagged marketing expense (previous year's marketing expense).

As noted by Gallaher et al. (2006a), fund advertising only has transitory effect on fund flows. As a result, the historical marketing

[19] The Xtdpd command in Stata is used to estimate the system GMM. Xtdpd enables separate specifications for each instrument.

Table 8
Determinants of member choice – using unexpected flow.

Sample	All funds	Retail funds	Industry funds
Choice measure	Unexpected flow	Unexpected flow	Unexpected flow
Perf $_{t-1}$	0.005	0.001	0.016
	(0.504)	(0.901)	(0.253)
MktExp	4.544***	5.899***	−0.894
	(0.004)	(0.002)	(0.522)
LnTNA $_{t-1}$	−0.004*	−0.005*	−0.006
	(0.051)	(0.073)	(0.286)
LnInvOpt	0.004**	0.004*	0.017
	(0.032)	(0.065)	(0.110)
Above50	−0.005	−0.010	0.050
	(0.743)	(0.498)	(0.251)
Constant	−0.038***	−0.001	−0.065***
	(0.005)	(0.927)	(0.001)
Observations	1332	897	267
Adjusted R^2	0.693	0.641	0.833
Year fixed effects	Yes	Yes	Yes
Fund type controlled	Yes	No	No

This table examines the determinants of superannuation fund choices by using the alternative choice measures. Unexpected flow is the derived residual of a dynamic panel data regression for fractional net flow. Each year, fractional performance ranks ($Perf_{t-1}$) ranging from zero to one are assigned to superannuation funds according to their return in the prior year. Marketing Expense (MktExp) is scaled by TNA. $LnTNA_{t-1}$ is the lagged natural logarithm of net assets under management. LnInvOpt is the natural logarithm of the number of investment options offered by a superannuation fund. The proportion of members above the age of 50 is denoted as Above50. Year fixed effect is controlled for. Standard errors are clustered at fund level. Robust p-values are reported in parentheses. ***, **, and * denote significance at the 1%, 5% and 10% level, respectively.

campaign is less likely to be associated with future investor preference. Consequently, we believe that the use of lagged marketing expense should have a positive relationship with current year's marketing expense (given some level of persistency in fund's marketing policy) but little relationship with error term of current investor switching choices. In unreported results, the coefficient on the instrument is positive and highly significant for the net/inward transfer for the overall/retail funds. Because we continue to find support for H2 after using instrumental variable approach, we believe that our primary results are not sensitive to endogeneity concerns.

3.6.4. Initial adoption period of "choice of fund" and global financial crisis (GFC) periods

As previously mentioned, "choice of fund" policy was adopted for fiscal years beginning 1 July 2005. In order to alleviate concerns that our findings are being influenced by adaptive or unusual behaviour that may have occurred in the initial years after "choice of fund" was adopted, we limit our analysis to fiscal years 2005–2007. In untabulated analyses, we find that while *MktExp* and in our re-estimations of equation remain positive and significant, especially in the inward transfers to retail funds. The coefficient for *Perf* is marginally significant for outward transfers.

In addition, we also limit our sample period to 2010 and forward, to mitigate concerns that our findings may be influenced by the financial crisis of 2008–2009. Exposure to equity markets impacts the majority of Australian superannuation fund members, because their defined contribution accounts have an average 50% allocation to equity (APRA, 2010). Based on a sample of members drawn from five superannuation funds, Gerrans (2012) find the level of investment strategy change activity increases during the GFC. This suggests choice may be more likely when the market is more volatile and "panic switching" may drive our results. In untabulated tests, we find similar results in the post-financial crisis period to our study of the full time period. Overall, these robustness checks provide confidence that our results are not dependent upon the time period analysed.

3.6.5. Other sensitivity tests

The performance measure used in this study is not risk-adjusted. While it is difficult to calculate fund level investment risk accurately, a gross over-benchmark risk-adjusted return is calculated as gross value added divided by fund volatility following (Liu and Ooi, 2019), which controls for both risk and asset allocation differences. The results still support our finding in the main analysis. Robustness checks are also performed by including non-public offer funds, as they account for more than half of those in the initial sample. To ensure that scaling by assets is not driving the results, further testing is also conducted based on dollar amount of fund transfers and marketing expense to avoid potential spurious correlation due to common divisors on both side of the regression (Powell et al., 2009) and the possibility of that observed effects may be spuriously related to fund size rather than member behaviour. Another sensitivity test is to run the test with dummy control variables for banks and insurers that offer financial products other than superannuation, since they tend to have higher levels of visibility than other entities that offer superannuation products only. We continue to document consistent results.

4. Conclusion

The introduction of "choice of fund" in superannuation has been masked by investor inertia. It is not feasible nor optimal for all the superannuation members to be engaged all the time, but some engagement should be encouraged and facilitated to address heterogeneous investment needs and to promote effective competition (Productivity Commission, 2018). While much of the prior literature focuses on the investment choices at the individual product or investment option level, very little empirical evidence is available on investors' choices at the superannuation fund level. This study contributes to prior literature by providing evidence on the effect of fund performance and marketing effort on investors' switching choice of superannuation funds in Australia. This study also contributes to the literature by adopting a more precise measure of active investor choice, i.e., the choice to transfer accumulated savings to another superannuation fund.

In contrast to the bulk of prior evidence in managed funds suggesting individual investors chase recent returns without withdrawing from bad performers, our results show that individual investors in superannuation appear to be insensitive to higher returns, but they are more likely to switch funds if their fund performs poorly. The results are consistent with "prospect theory" in that investors are more likely to stick to the status quo unless they experience enough conflict (perhaps feeling aggrieved by returns earned) to incite change. This suggests that superannuation members (or their intermediaries) appear to be monitoring their superannuation funds for poor performance. The finding that superannuation investors do not chase after superior short-term performance also implies these investors understand that short-term performance is not the most important feature to consider for such a long-term investment. The implication for superannuation funds is that the short-term overall fund performance may not be an attribute that attracts new investors. However, poor performers need to improve returns in order to avoid outward transfers and retain members. Our results also show that there is a strong positive association between retail fund's inward transfers and its levels of marketing expenditures. Marketing appears to be able to attract superannuation investors who make a change in their reference point into retail superannuation funds. In contrast, marketing does not appear to be a useful strategy for industry funds to attract new investments or retain members. This result should be of interest to policymakers and regulators in disciplining and monitoring superannuation funds' marketing campaigns, as uninformed members who engage may incentivise retail superannuation funds to compete on dimensions not relevant to member outcomes — such as potentially aggressive marketing tactics.

Acknowledgement

We appreciate the comments of Robert Faff, Peter Clarkson, Susan Thorp, Jacquelyn Humphrey, Irene Tutticci and Wen He, as well as seminar participants at the Australian Prudential Regulation Authority; the Centre for International Finance and Regulation; the 8th International Accounting and Finance Doctoral Symposium; the 27th Asian-Pacific Conference on International Accounting, and the 7th Conference on Financial Markets and Corporate Governance. We also thank the Australian Prudential Regulation Authority for providing us with proprietary superannuation data. Peng is grateful to the Australian Prudential Regulation Authority and the Reserve Bank of Australia for financial support.

References

APRA, 2010. Annual Superanuation Bulletin June 2010.
APRA, 2013. Annual Superanuation Bulletin June 2012.
Arellano, M., Bond, S., 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. Rev. Econ. Stud. 58 (2), 277–297.
Barber, B.M., Odean, T., Zheng, L., 2005. Out of sight, out of mind: The effects of expenses on mutual fund flows. J. Bus. 78 (6), 2095–2120.
Basu, A.K., Drew, M.E., 2010. The appropriateness of default investment options in defined contribution plans: Australian evidence. Pac. Basin Financ. J. 18 (3), 290–305.
Bateman, H., Deetlefs, J., Dobrescu, L.I., Newell, B.R., Ortmann, A., Thorp, S., 2014. Just interested or getting involved? An analysis of superannuation attitudes and actions. Econ. Rec. 90 (289), 160–178.
Bhattacharya, U., Lee, J.H., Pool, V.K., 2013. Conflicting family values in mutual fund families. J. Financ. 68 (1), 173–200.
Brown, J.R., Weisbenner, S.J., 2014. Why do individuals choose defined contribution plans? Evidence from participants in a large public plan. J. Public Econ. 116, 35–46.
Butt, A., Donald, M.S., Foster, F.D., Thorp, S., Warren, G.J., 2018. One size fits all? Tailoring retirement plan defaults. J. Econ. Behav. Organ. 145, 546–566.
Chetty, R., Friedman, J.N., Leth-Petersen, S., Nielsen, T.H., Olsen, T., 2014. Active vs. passive decisions and crowd-out in retirement savings accounts: Evidence from Denmark. Q. J. Econ. 129 (3), 1141–1219.
Chevalier, J., Ellison, G., 1997. Risk taking by mutual funds as a response to incentives. J. Polit. Econ. 105 (6), 1167–1200.
Clark-Murphy, M., Gerrans, P., Speelman, C., 2009. Return chasing as a driver in individual retirement savings investment choices: Evidence from Australia. J. Fam. Econ. Iss. 30 (1), 4–19.
Cronqvist, H., Thaler, R.H., 2004. Design choices in privatized social-security systems: Learning from the Swedish experience. Am. Econ. Rev. 94 (2), 424–428.
Dahlquist, M., Martinez, J.V., 2015. Investor inattention: A hidden cost of choice in pension plans? Eur. Financ. Manag. 21 (1), 1–19.
Deetlefs, A.J., Bateman, H., Dobrescu, L.I., Newell, B.R., Ortmann, A., Thorp, S., 2019. Engagement with retirement savings: It is a matter of trust. J. Consum. Aff. 53 (3), 917–945.
Del Guercio, D., Tkac, P.A., 2002. The determinants of the flow of funds of managed portfolios: Mutual funds vs. pension funds. J. Financ. Quant. Anal. 37 (4), 523–557.
Disney, R., 2000. Declining public pensions in an era of demographic ageing: Will private provision fill the gap? Eur. Econ. Rev. 44 (4–6), 957–973.
Dobrescu, L.I., Fan, X., Bateman, H., Newell, B.R., Ortmann, A., Thorp, S., 2017. Retirement savings: A tale of decisions and defaults. Econ. J. 128 (610), 1047–1094.
Fear, J., Pace, G., 2008. Choosing Not to Choose: Making Superannuation Work by Default. Australia Institute.
Frino, A., Heaney, R., Service, D, 2005. Do past performance and past cash flows explain current cash flows into retail superannuation funds in Australia? Aust. J. Manag. 30 (2), 229–244.
Fry, T., Heaney, R., McKeown, W., 2007. Will investors change their superannuation fund given the choice? Account. Finan. 47 (2), 267–283.
Gallaher, S., Kaniel, R., Starks, L., 2006a. Madison Avenue meets Wall Street: Mutual fund families, competition and advertising. In: Competition and Advertising

(January 2006).
Gallaher, S., Kaniel, R., Starks, L.T., 2006b. Madison Avenue meets Wall Street: Mutual fund families, competition and advertising. Available at SSRN. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=879775.
Gan, S., Heaney, R., Gerrans, P., 2015. Individual investor portfolio performance in retirement savings accounts. Aust. J. Manag. 40 (4), 652–671.
Gerrans, P., 2012. Retirement savings investment choices in response to the global financial crisis: Australian evidence. Aust. J. Manag. 37 (3), 415–439.
Gerrans, P., Yap, G., 2014. Retirement savings investment choices: Sophisticated or naive? Pac. Basin Financ. J. 30, 233–250.
Gerrans, P., Clark-Murphy, M., Speelman, C., 2010. Asset allocation and age effects in retirement savings choices. Account. Finan. 50 (2), 301–319.
Gerrans, P., Moulang, C., Feng, J., Strydom, M., 2018. Individual and peer effects in retirement savings investment choices. Pac. Basin Financ. J. 47, 150–165.
Gharghori, P., Mudumba, S., Veeraraghavan, M., 2007. How smart is money? An investigation into investor behaviour in the Australian managed fund industry. Pac. Basin Financ. J. 15 (5), 494–513.
Gharghori, P., Sujoto, C., Veeraraghavan, M., 2008. Are Australian investors smart? Aust. J. Manag. 32 (3), 525–544.
Goetzmann, W.N., Peles, N., 1997. Cognitive dissonance and mutual fund investors. J. Financ. Res. 20, 145–158.
Gruber, M.J., 1996. Another puzzle: The growth in actively managed mutual funds. J. Financ. 51 (3), 783–810.
Holzmann, R., 2014. Global pension systems. In: International Handbook on Ageing and Public Policy.
Huang, J., Wei, K.D., Yan, H., 2007. Participation costs and the sensitivity of fund flows to past performance. J. Financ. 62 (3), 1273–1311.
Jain, P.C., Wu, J.S., 2000. Truth in mutual fund advertising: Evidence on future performance and fund flows. J. Financ. 55 (2), 937–958.
James, C., Karceski, J., 2006. Investor monitoring and differences in mutual fund performance. J. Bank. Financ. 30 (10), 2787–2808.
Kingston, G., Thorp, S., 2019. Superannuation in Australia: A survey of the literature. Econ. Rec. 95 (308), 141–160.
Korkeamaki, T., Puttonen, V., Smythe, T., 2007. Advertising and mutual fund asset flows. Int. J. Bank Mark. 25 (7), 434–451.
Langford, B.R., Faff, R.W., Marisetty, V.B., 2006. On the choice of superannuation funds in Australia. J. Financ. Serv. Res. 29 (3), 255–279.
Liu, K., Ooi, E., 2019. When boards use related parties: Outsourcing and superannuation fund performance. Account. Finan. 59, 715–746.
Lusardi, A., Mitchell, O.S., 2007. Baby boomer retirement security: The roles of planning, financial literacy, and housing wealth. J. Monet. Econ. 54 (1), 205–224.
Lusardi, A., Mitchell, O.S., 2014. The economic importance of financial literacy: Theory and evidence. J. Econ. Lit. 52 (1), 5–44.
Lynch, A.W., Musto, D.K., 2003. How investors interpret past fund returns. J. Financ. 58 (5), 2033–2058.
Massa, M., 2003. How do family strategies affect fund performance? When performance-maximization is not the only game in town. J. Financ. Econ. 67 (2), 249–304.
Mitchell, O.S., Mottola, G.R., Utkus, S.P., Yamaguchi, T., 2006. The inattentive participant: Portfolio trading behavior in 401 (k) plans. In: Michigan Retirement Research Center Research Paper No. WP. 115.
Perotti, E., Schwienbacher, A., 2009. The political origin of pension funding. J. Financ. Intermed. 18 (3), 384–404.
Powell, J., Shi, J., Smith, T., Whaley, R., 2009. Common divisors, payout persistence, and return predictability. Int. Rev. Financ. 9 (4), 335–357.
Productivity Commission, 2016. How to Assess the Competitiveness and Efficiency of the Superannuation System. Commonwealth of Australia, Canberra.
Productivity Commission, 2018. Superannuation: Assessing Efficiency and Competitiveness. Commonwealth of Australia, Canberra.
Sialm, C., Starks, L., Zhang, H., 2012. Defined Contribution Pension Plans: Sticky or Discerning Money? University of Texas at Austin and Nanyang Technological University.
Sirri, E.R., Tufano, P., 1998. Costly search and mutual fund flows. J. Financ. 53 (5), 1589–1622.
Warther, V.A., 1995. Aggregate mutual fund flows and security returns. J. Financ. Econ. 39 (2), 209–235.
Whiteford, P., Whitehouse, E., 2006. Pension challenges and pension reforms in OECD countries. Oxf. Rev. Econ. Policy 22 (1), 78–94.