

PATTERNS OF VOLUNTARY CONTRIBUTIONS TO SUPERANNUATION:

A longitudinal analysis

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This paper is the first to provide an empirical analysis of long-term trends in voluntary contributions to superannuation in Australia using employer-level administrative data. We assess the role of demographic and socio-economic factors in predicting contribution behaviours. We also examine participation in pre-tax (salary sacrifice) and post-tax savings separately, and explore the interrelationship between both choices. Our results indicate a decline in participation in both pre-tax contributions and post-tax contributions between 2002–03 and 2011–12 due to lower participation among new members. Participation in pre-tax contributions is higher for males and increases with age and income, whereas participation in post-tax contributions reduces with income and is lower for males.

The adequacy of retirement savings remains an important issue for individuals, pension funds and governments. This has been magnified by the ageing demographic and the shift in responsibility for making retirement savings choices from government and employers to individuals. The global financial crisis further highlighted the question of adequacy given its impact on accumulated retirement savings. In Australia, a number of reports suggest that the current compulsory superannuation contributions are not sufficient to provide adequate retirement incomes, or highlight a retirement savings gap (Rice Warner Actuaries 2012; Deloitte Australia 2014), even after including the government's age pension (Burnett et al. 2014). The planned increase to compulsory employer contributions from 9.5 per cent to 12 per cent will mitigate this issue to some degree, however, voluntary savings will remain important.

In the accumulation phase, individuals have two broad levers within superannuation: the investment strategy applied to retirement savings; and additional voluntary savings or contributions. This paper focuses on the latter, specifically providing evidence on historical patterns of participation in voluntary contributions, including pre-tax contributions (or salary sacrifice) and post-tax contributions. With the overall participation rate in voluntary retirement savings in superannuation at around 30 per cent (Feng 2013; Feng and Gerrans 2014), increasing member engagement in retirement saving is an important policy issue.

Superannuation's attraction is fundamentally based on tax incentives which provide us with some expectation in terms of participation patterns. Earnings on superannuation are taxed at a maximum rate of 15 per cent, with pre-tax contributions also taxed at 15 per cent.¹ This is in contrast with a progressive marginal income tax rate schedule. Hence, we expect participation in pre-tax contributions to rise with income and, to the extent that age and gender correlate with income, we may expect increased participation among males and with age. Post-tax contributions also enjoy the concessional earnings tax rate of 15 per cent once inside superannuation. Additional incentives accrue to low-income earners via the co-contributions scheme whereby the government matches those contributions made by individuals below specified income thresholds.² Hence we expect higher participation in post-tax contributions among low-income earners and, again, to the extent that this correlates with gender, we expect higher participation among women. Potentially confounding these expectations are characteristics we do not observe including education, financial literacy, family structures, and debt level.

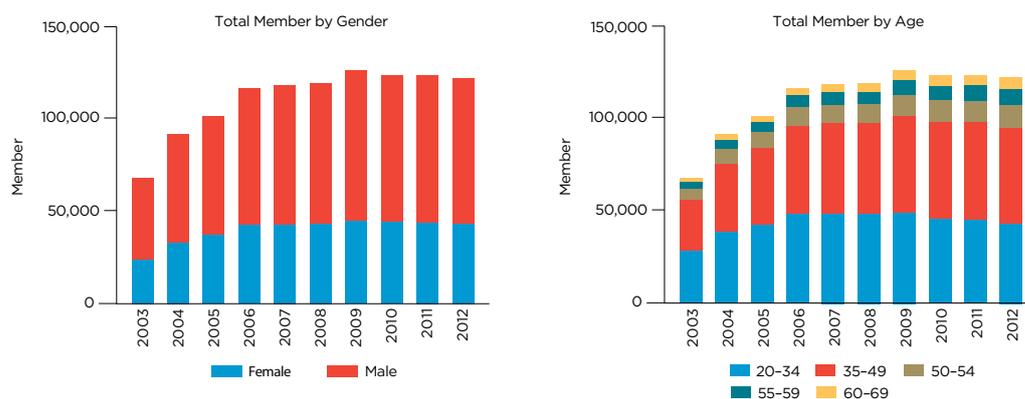
While a relatively rich private retirement savings literature has emerged in the US, existing research in Australia is based on population surveys which potentially suffer from a reporting bias in that they require individuals to correctly classify their voluntary retirement savings by type. No evidence is available as to the accuracy of such classifications but reported knowledge of the superannuation system has been identified as poor (Agnew et al. 2013). Time series information is also limited with existing analysis primarily cross-sectional, thus providing only a snapshot of savings behaviour, without a consideration of trends in retirement savings. Our data allows examination of administrative data which provides this accuracy both in terms of size and timing of contributions. However, the flipside is that we do not see the broader picture of an individual's superannuation and other assets or debt that they hold individually or in concert with a partner. Hence our focus remains on relative trends over the period by gender and age-group.

Overview of Mercer database and sample statistics

To investigate the trend in voluntary contributions, we utilise individual contribution records from the Mercer Super Trust (MST), Corporate Division. The MST database available consists of 187 employer level sub-plans with employers drawn from a wide cross-section of Australian industry. The MST provides a common overall structure with variation/customisation at the sub-plan level reflecting employer choices for their workforce. The database includes transaction records on contributions for 489,621 members across a 10-year period (from 2002–03 to 2011–12).

Due to our focus on voluntary contribution decisions, we restrict the sample to members between the ages of 20 and 69 as at the end of a financial year, with contributions and salary records.³ This selection criteria produces 1,111,992 member-year contribution records for 294,072 members. Figure 1 presents the overall profile of membership and highlights the substantial increase in member numbers in the first few financial years of the MST.

FIGURE 1: Total number of members by gender, age and financial year



Despite the increase in the number of members, the gender ratio varies only marginally. Approximately 63 per cent of the contribution records in each financial year are from male members. The age mixture of the members is also steady. The majority of members are in the early stage of their working career with members in 20–34 years and 35–49 years age brackets each accounting for approximately 40 per cent of all members. Over the sample period, reflecting the ageing membership, the proportion above 50 years old increases by five percentage points. In 2011–12, the proportion aged 50–54, 55–59 and 60–69 accounts for 10 per cent, 7 per cent and 5 per cent of all members, respectively.

The birth years captured in the sample are largely drawn from the 60-year period, 1935–1995. If we divide these into 15-year groupings the 1965–79 cohort (Generation X) is the largest comprising over 46 per cent of total members; twice that of those in the 1980–95 cohort (Generation Y) and 1950–64 (younger baby boomers). Those born between 1935–49 (older boomers and those in the 'silent' generation) account for 4 per cent of members. Generation Y is the fastest growing cohort over the period and is as important as the baby boomer cohort by 2011–12.

The vast majority of members have a DC benefit structure, with a small proportion being members of a sub-plan where they have both a DC and DB benefit. DB-only sub-plan membership declines over the sample to none by 2011–12. Hence the voluntary contribution participation trend will not be analysed separately by sub-plan type.

Consistent with overall population data, a wage gap by gender is evident in each year. Females earned less than male counterparts in all financial years although there are salary increases for both genders. For a further discussion on gender differences in balances please see Feng et al. (2015).

Voluntary contribution participations trends

Background system history impacting contributions

Before reviewing the sample evidence it is helpful to consider the rules applicable and other system-wide changes over the sample period. The Superannuation Guarantee (SG) was first introduced in 1992 at 3 per cent and was gradually increased to 9 per cent by 2002. More recently this has been increased to 9.25 per cent and it is currently 9.5 per cent on a schedule of increments to reach 12 per cent. The current analysis covers the decade from 2002–03 when the SG rate was maintained at 9 per cent. Despite the stability in the SG rate, several policy changes were introduced over the period which directly affected contributions or broader features of the system including taxation and access which are briefly reviewed below.

Since 2003, government co-contributions have provided a matching contribution for post-tax contributions made by low-income earners, replacing the then Low Income Superannuation Rebate. The maximum co-contribution was a 150 per cent match to a maximum \$1,500 between 2004 and 2009, and has been reduced to a 50 per cent match with a maximum of \$500 currently.

Major changes were introduced to limits on contributions and the taxation of benefits in the 2007 Simpler Super reforms. In the accumulation phase, the age-based concessional contribution limits (ABLs) were replaced with a uniform contribution cap with a transitional period allowing older workers (50 and above) to make higher concessional contributions. In addition to simplifying concessional contribution caps, a cap to non-concessional contributions was introduced at \$150,000 to limit excessive retirement savings through superannuation. To compensate for the adjustment, members had the ability to contribute up to \$1 million post-tax (non-concessional) between May 2006 and June 2007 as a transitional measure.

In the decumulation phase, a fundamental change was also introduced. Effective from July 2007, the Reasonable Benefit Limits (RBLs), which prescribed the maximum balance that could be accumulated and receive concessional treatment, was abolished. Significantly, withdrawals from superannuation for those 60 and over became tax free. This 'tax-free' blanket rule was a significant event in raising the attractiveness of superannuation for retirement savings if not broader wealth management.⁴

Additional broader system changes over the period included the introduction of portability rules, effective from July 2004, which allowed members to transfer their accumulated balance to a complying fund. Related changes allowing eligible members to nominate a different superannuation fund from the one nominated by an employer to receive SG contributions commenced in July 2005.⁵

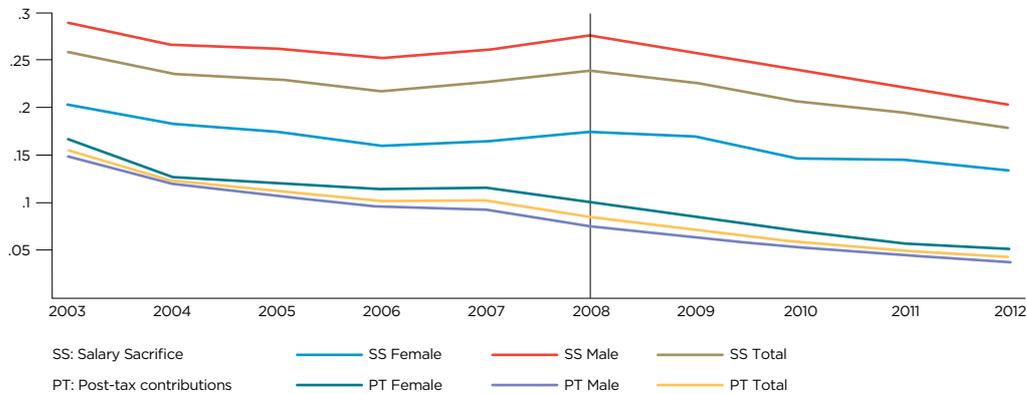
Preliminary aggregate analysis

Figure 2 presents the overall trend of participation in additional contributions over the sample period for financial years ending 2003 through 2012, separated by the type of contributions made. Participation rates for both pre-tax (salary sacrifice) and post-tax contributions were lower in 2011–12 than in 2002–03. Despite a temporary rise in salary sacrifice participation in 2007–08, the general trend for both types of contributions was negative. Over the sample period, the participation rate for salary sacrifice was consistently higher than that of post-tax contributions by approximately 5 percentage points.

The estimated participation rate in salary sacrifice contributions is much higher than that reported in the population surveys analysed in comparable years (such as SEARS 2007, SIH 2005–06 to 2009–10, HILDA wave 10) by Feng (2013). In addition, participation in post-tax contributions in population surveys (SEARS 2007) is much higher than that in salary sacrifice.

There are two broad reasons which may individually, or in combination, contribute to this difference: the different demographic profile of the samples and possible misreporting of the type of superannuation contribution being made in the population survey, with the reported knowledge of the superannuation system being identified as poor (Agnew et al. 2013).

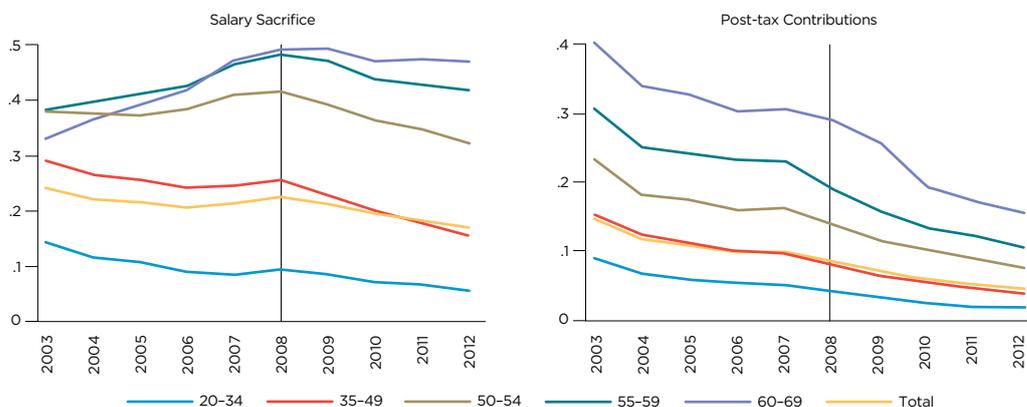
FIGURE 2: Participation rate in voluntary contributions by gender



The gender difference in voluntary contribution decisions is more pronounced than in cross-sectional population surveys. Substantially more males choose to make salary sacrifice arrangements than females. This observation is expected as men earn higher incomes than women and salary sacrifice is more tax advantaged for higher income earners. On the other hand, participation in post-tax contributions, has a higher female rate. However, the gender difference is not as large as that in salary sacrifice arrangements meaning that, in aggregate, the participation rate is higher for males in making voluntary contributions.

The age pattern in voluntary contributions is consistent with population survey observations. As individuals age, the probability of making voluntary contributions increases substantially. This trend is observed in all financial years in our sample and for both salary sacrifice and post-tax contributions (Figure 3).

FIGURE 3: Participation rate in voluntary contributions by age bands

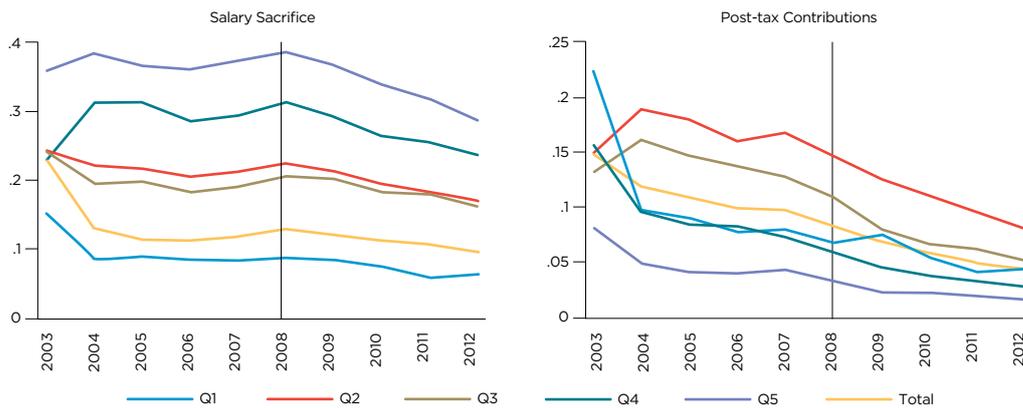


In contrast to the declining participation rates in voluntary contributions in aggregate data, older employees' participation in salary sacrifice only reduces modestly and even increases for the 60 and above age group. However, participation in post-tax contributions reduces quickly for older age groups. Pooling all financial years (results not shown), a hump-shaped participation pattern is observed for salary sacrifice reaching a peak level at age 60 consistent with the life-cycle model of savings. Yet, the post-tax contributions has a strict upward trend.

Given the longitudinal nature of the database, we also examine participation rates by population cohorts. When tracking individuals in the same cohort over the sample period, the declining pattern of voluntary contributions is not as distinct as that observed above. The younger generations have a substantially lower participation rate and the participation rate in salary sacrifice is much more stable in contrast with the increasing trend reported previously for older generations, though the declines after 2008 are evident.

Income is expected to be an important factor in voluntary contribution decisions. Figure 4 provides a breakdown of participation by income quintiles for each financial year (where Q1 is the lowest quintile). A clear positive income-participation relationship is observed for salary sacrifice. The previously noted negative time trend in participation is more distinctive in two higher income quintiles with 2007–08 again a clear demarcation line.

FIGURE 4: Participation rate in voluntary contributions by income quintiles



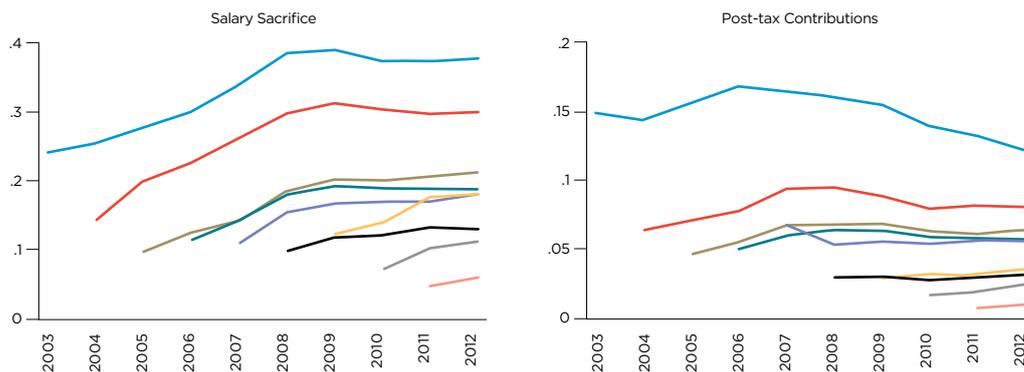
The income-participation relationship is not as unambiguous for post-tax contributions with the highest income quintile having the lowest participation, the second lowest quintile having the highest participation, and the lowest income quintile being in between. The declining time trend is exhibited for all income quintiles. However, a large proportion of members move between income quintiles across years and this may influence the longitudinal pattern of voluntary contributions.

The same patterns are observed in pooled data. While there is a near-linear increase in participation in salary sacrifice as the magnitude of the tax benefit increases, the participation pattern for post-tax contributions highlights the skew towards the lower income earners (peaked around 25th percentile), suggesting that the positive income effect only influences the very low income earners. This may be evidence of the incentives provided by government co-contributions.

The above analysis suggests that popularity in voluntary contributions has been declining over time, which is contrary to the reform effort made in promoting voluntary contributions. Why are participation rates declining? We investigate the question further by breaking down participation in voluntary contributions for each member groups examined in terms of the year they joined the sub-plans (Figure 5).⁶ In contrast to the declining pattern suggested above, disaggregated figures exhibit a pattern consistent with previous literature — that of a positive relationship between the length of membership and probability of participation in voluntary savings. It is the substantially lower participation rate among new members that drives the overall declining trend over the study period. One possible explanation is that members joining their sub-plan display behaviour influenced by a combination of financial market conditions and the government policy environment, i.e., the continued changes to superannuation rules, which reduce stability and confidence to the system.

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FIGURE 5: Participation rate in voluntary contributions by member starting year



Drilling down further, we disaggregated members by the year they entered and exited the sub-plan. The same trend towards lower participation is highlighted as above. The further analysis also unveils another possible reason for decreased participation which is linked to employment type, specifically increased part-time/casual employment. In most cases, the longer a member stays in the same sub-plan, the more likely they are to participate in voluntary contribution. This is uniform for both salary sacrifice and post-tax contributions.

The breakdown in participation again highlights the significant demarcation provided by 2007–08. Prior to this, participation edged up for all cohorts and both types of voluntary contributions. The declining trend in voluntary savings coincides with two major events within the 2007–08 financial year. The first is the Simpler Super reforms, discussed above which, given the removal of tax on withdrawals, were expected to have a positive effect on savings. Offsetting this is the emerging financial stress of the global financial crisis though this was more evident in 2008–09, which also coincides with announcements of reductions in contributions caps.

While this analysis provides some insights into the general decreasing pattern in voluntary contributions, aside from anecdotal evidence, it is unclear why new members consistently have less enthusiasm for voluntary contributions.

Determinants and correlations of voluntary contribution decisions

Regression analyses were also performed to examine the association between demographic and socio-economic factors and the decision to make voluntary contributions. These regression analyses (ranging from pooled logit and bivariate probit models to panel logit models) attempt to identify individual and fund level characteristics that are associated with the decision-making process, the impact of past decisions, and the interaction between the decisions on the two types of contributions.⁷

As reported in previous US literature (Copeland 2010; Dushi et al. 2011; Gough and Niza 2011; Agnew et al. 2013; Feng 2013), we find age to be an important predictor of voluntary contribution decisions. An increase in age indicates a higher likelihood of making additional salary sacrifice contributions but, notably, not post-tax contributions, most likely due to salary sacrifice being more tax attractive than post-tax contributions.

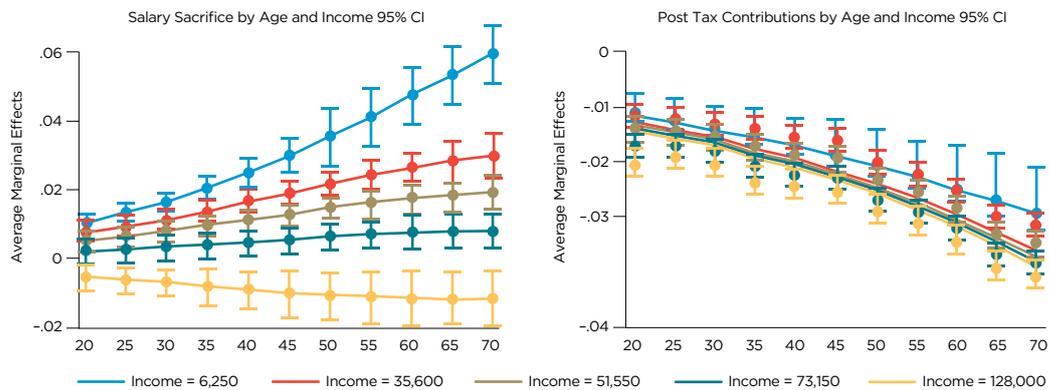
As indicated earlier, gender differences are also significant in the estimations. In terms of salary sacrifice, males are more likely to make such arrangements whereas the opposite is true for post-tax contributions. However, once other member characteristics are controlled for in the regression framework (notably age and income), the previously noted gender difference in participation in post-tax contributions (larger for females) is in fact larger than suggested by the preliminary observations in Figure 2.

As expected, participation decisions are significantly associated with member income. Increased income is associated with a significant and positive increase in salary sacrifice participation which can be attributed to both capacity to make contributions and the increased tax advantage with income given higher marginal tax rates. However, income is significantly negatively related to post-tax contribution decisions as observed in the previous section.

Membership length is significant and positively related to voluntary contribution participation, and has a similar magnitude for both types of decisions. A possible peer influence in the decision making process is also significant as indicated by coefficients of fund level participation in voluntary contributions.

To further investigate the magnitude of correlation between voluntary contribution decisions and demographic and socio-economic factors, Figure 6 plots the average marginal effects (AME) for gender (males) at different age and income levels. Though the overall gender differential is positive for salary sacrifice, it is negative for members in the highest income quintiles and older ages, suggesting that females are slightly more likely to make salary sacrifice when older and are at higher income levels. For both types of voluntary contributions, a growing gender differential can be found over age bands. In addition, the differential is distinctive for members of different income levels when making salary sacrifice decisions. For post-tax contributions, however, only the lowest income quintile members are significantly different.

FIGURE 6: Average marginal effects of gender (males) in pooled logit regression



In summary, using a number of estimation models, we identify a positive participation pattern by age as observed in population surveys. Gender differential in voluntary contributions is more pronounced in this database in contrast to prior surveys which suggest no significant gender differences in voluntary savings (Purcell 2009). While income is positively related to salary sacrifice arrangements, as often found in surveys, the negative relation with participation in post-tax contributions is somewhat surprising but suggests the strong influence of capacity and/or tax incentives. Further, based on longitudinal contribution records, econometric models also identified the importance of the knowledge of previous contribution decisions in facilitating the prediction of current decisions. Participation is sticky.

Conclusion

Our results suggest a positive age pattern in contributions participation consistent with population surveys and behaviour patterns under different institutional settings. A significant gender differential is observed whereby males are more likely to make salary sacrifice arrangements and less likely to make post-tax contributions. This difference becomes more distinctive when members move to older age groups or higher income groups especially for salary sacrifice arrangements. Income, an important factor identified in both theoretical models and empirical literature, is also found to be positively correlated with salary sacrifice arrangements, however, surprisingly, it does not hold for post-tax contribution participation.

The contribution records exhibit a declining trend in participation in voluntary contributions, which is largely due to the substantially lower participation rate among the new members and early leavers in the sub-plans. Separately tracking member cohorts, the results show an increasing trend in voluntary contributions before 2007–08 and a decline afterwards.

Regression analysis highlights the importance of knowledge of prior contribution behaviour underlying the need to use longitudinal datasets, as used here, in the analysis of voluntary contributions. The regression results also indicate that some unobserved characteristics are driving both the decisions of salary sacrifice and post-tax contributions and that salary sacrifice and post-tax contributions are weak substitutes.

The Federal Government has proposed to enshrine the objective of superannuation is ‘to provide income in retirement and supplement or substitute for the Age pension’ in legislation (The Treasury 2016). With research showing that compulsory contributions are short of that required to fully fund retirement, voluntary contributions remain fundamental to the achievement of at least a reasonable supplementation. The relatively low participation rate documented here is one area future policy could target. Given the stated objective being sought by the government, more needs to be done to reverse the declining pattern of participation among new members. Consistent with previous literature, our study shows that members’ saving behaviours are sticky. The time members join a fund/new employer is a key moment in which voluntary contributions behaviours can be targeted and established.

Several caveats remain in our analysis. Our analysis has focused on participation in voluntary superannuation savings. The related analysis, which is beyond the scope of this paper, is how much is contributed, or the rate of contributions. We do know that there is considerable variation in contribution rates among participants which will be addressed in the future work. We also do not observe savings behaviours outside of superannuation, whether in general or specifically for retirement.

While this study facilitates the analysis of trends in voluntary contributions and provides some new understanding of member behaviours in private retirement savings, it also raises a number of questions and highlights areas for future work. In particular, it will be important to further investigate the sizeably lower participation rate among new members and identify the underlying reasons for this, whether they are employer-specific, education-based, market-driven, or policy-influenced.

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Notes

1. Contributions' tax now increases to 30% for those above the \$300,000 threshold (Division 293 tax)
2. For example, in the 2015–16 financial year the Federal Government will provide \$0.50 for every \$1.00 contributed to a maximum contribution of \$500 for those earning \$35,454 or less. The \$500 maximum reduces progressively and is zero for those earning above \$50,454.
3. That is, positive or zero contributions for all types of superannuation contributions and have positive salary for the whole records.
4. The proposed \$1.6 million cap on funds transferred from accumulation to pension phase, announced in the 2016–17 Federal Budget, is a return of sorts to the RBL. We note that those funds in excess of \$1.6 million would remain in the existing concessional tax accumulation phase.
5. Via the *Superannuation Industry (Supervision) Amendment Regulations 2003 (No. 5)* and *Superannuation Legislation Amendment (Choice of Superannuation Funds) Act 2004 (No. 102)*, respectively.
6. When a member leaves their employer, they are transferred to the Personal Division of the trust, though some individuals are retained within their original sub-plan. It is not possible to track salary for the new employment if commenced, and hence the contribution records after termination are excluded.
7. Regression results are not presented due to the page limit. They are available on request from the authors.

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