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Superannuation Guarantee Policy Modelling

Cbus Super

23 March 2018

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1. Executive Summary

1.1 Overview

Rice Warner has been commissioned by Cbus to model the potential impact of aligning payment of the Superannuation Guarantee with payment of wages. Our modelling examines both hypothetical impacts at an individual level, as well as the aggregate impact on the superannuation industry.

1.2 Methodology

- Individual modelling on the policy was performed using the Rice Warner retirement engine – PHOEBE.

- Aggregate modelling to investigate industry wide effects was performed using the ISA Rice Warner Retirement Outcomes Model.

1.3 Conclusions

Based on modelling of three scenarios, namely higher frequency of compounding for SG payments, collecting unpaid super and improved ATO compliance activity, we can draw several conclusions about the impact of the policy at both an individual and an aggregate basis.

- On an individual basis:

  - increasing the frequency of SG payments from quarterly to fortnightly will result in an estimated increase in balance at retirement of $3,400 (in today's dollars) and an increase in total income in retirement of $3,800 for an individual earning $60,000 p.a.

  - the increased collection of unpaid super on changing jobs could result in an uplift of $6,700 in retirement balance and an increase of $7,500 in retirement income for an individual earning $60,000 p.a.

  - Increased employer compliance could result in an uplift of $16,700 in retirement balance and an increase of $18,700 in total retirement income for an individual earning $60,000 p.a.

- On an aggregate basis:

  - increasing the frequency of SG payments from quarterly to fortnightly will result in an increase in industry assets of $2.9 billion in 2057.

  - the increased collection of unpaid super on changing jobs could result in an estimated increase of $7.8 billion in total funds under management by 2057.

  - Increased employer compliance (whether forced by the ATO or voluntary) could result in an estimated $47.3 billion increase in total industry funds under management by 2057.

  - The combination of all of these scenarios is an estimated $58.0 billion increase in total industry funds under management by 2057.

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This report was prepared and peer reviewed for Cbus Super by the following consultants.

Prepared by	Peer Reviewed by

Martin Stevenson
Consultant

Steve Freeborn
Head of Client Relationships

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2. Background

2.1 Introduction

This report examines the impact of aligning the frequency of Superannuation Guarantee (SG) payment with the payment of wages. The modelling illustrates the potential impact on individuals through several cameos as well as the potential aggregate impact on the whole superannuation system.

Aligning the payment of SG with wages is intended to reinforce the payment as deferred wages. Aligning the payment of SG with wages will also overcome the current problem that accrued entitlements may not be accounted for until quarterly payments are due. Employers experiencing cash flow difficulties will therefore be less likely to fall behind. When combined with improved reporting of SG payments to individuals, superannuation funds and the ATO, the payment of SG with wages should allow better visibility of super contribution to members.

The Rice Warner retirement engine *PHOEBE*, was used to perform cameo modelling on individuals to show the impact on:

- superannuation balance at retirement

- income in retirement

- total SG contributions

The ISA Rice Warner Retirement Outcomes Model was used to perform aggregate modelling on the system with regards to:

- funds under management

- investment returns

- employer contributions

2.2 Methodology – Individual modelling

The Rice Warner retirement engine, *PHOEBE*, is a detailed model that can project an individual's superannuation account balance through the accumulation phase and then drawdowns and income in the retirement phase. It makes consideration of the Aged Pension, life expectancy, salary inflation and taxation law, as well as fees and insurance premiums.

Scenarios were constructed for individual cameos to be run through the retirement engine. The first scenario, Business As Usual (BAU), acted as a benchmark against which varying cameos could be compared. Cameos were adjusted to model the impact of the change in policy to align SG payment with wages. Three different impacts were considered:

- increased compounding of investment returns on SG payments (from quarterly to fortnightly) assuming the member is paid fortnightly.

- a member who might have missed an SG payment under the current system where they change jobs and adopt the new employer's default

- increased compliance with SG payments because of easier oversight by the member and the ATO with no lag between earning SG and payment to the fund, this scenario was modelled by the payment of SG for an additional one year that may have been lost if an employer went bankrupt.

2.3   Methodology – Aggregate modelling

Aggregate Modelling was performed using the ISA Rice Warner Retirement Outcomes Model. This is a comprehensive group model of the Australian population which is capable of projecting superannuation, private wealth, and housing as well as Age Pension and tax expenditures forward for 80 years split by age, income-wealth deciles, gender and industry sector workforce status. It separately projects accounts for each member.

The model is complex and detailed descriptions of the assumptions can be found in Appendix A (Projections Assumptions).

The three variations considered in the cameo modelling were also modelled in the aggregate case, with different assumptions employed to estimate the impact at a national level.

2.3.1   *ATO Superannuation Gap Data*

The aggregate modelling made use of a 2017 report from the ATO to inform assumptions about the SG gap and SG non-compliance[1]. The report estimated that:

- Relative to the SG payments that should have been paid by employers in the 2014-15 financial year, the gap in SG payments was 6% of the payments received, or $3.3 billion.

- On average, 20,000 reports of unpaid super are received annually, largely from employees and former employees of small businesses.

The results of the ATO report that were used to inform our assumptions are outlined in Table 1 and 2[2].

Table 1.   Super Guarantee gap (dollar value), 2009-10 to 2014-15

Item	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
($m)						
Theoretical SG	39,629	42,924	46,344	48,378	51,711	54,013
Impact of black economy	572	622	665	690	731	768
Actual SG paid (including ATO compliance)	(38,671)	(41,548)	(44,231)	(46,706)	(49,962)	(51,928)
ATO Compliance Activities	477	525	565	583	542	414
Gross gap	**2,007**	**2,523**	**3,342**	**2,945**	**3,023**	**3,267**

Table 2.   Super Guarantee gap (%), 2009-10 to 2014-15

(%)					
2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
5.0%	5.8%	7.1%	6.0%	5.8%	6.0%

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[1] https://www.ato.gov.au/About-ATO/Research-and-statistics/In-detail/Tax-gap/Superannuation-guarantee-gap/

[2] Industry Super Australia (ISA) have estimated the gross gap the at $5.6 billion in 2013-14. ISA's estimate is produced using a 'bottom-up' approach with the 2013-14 2 per cent tax file.

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3. Impact on individuals

3.1 Cameos

The following cameos were selected to model the benefits of the proposed policy:

- **BAU:** A cameo modelling SG payments paid quarterly (the current legislated standard), to which other cameos can be compared.

- Higher frequency of compounding for SG payments (from quarterly to fortnightly) as a result of the change in policy.

- The impact of excluding one quarter's contributions when switching employers for an individual (in addition to higher frequency of compounding).

- The impact of SG non-compliance and missing out on an entire year of SG payments.

- Variations included changing the cameos for the following incomes:

    - $30,000 p.a.

    - $60,000 p.a. (approximate median income)

    - $100,000 p.a.

3.2 General assumptions

To perform cameo modelling, the following assumptions were made:

- SG payments are made in arrears (whether quarterly or fortnightly)

- The individual will miss out on 1 year of SG payments at age 30 in the non-compliance base case[3].

- Projections are performed for a 25-year-old male, with a life expectancy of 81 years of age (Australian Government Actuary Life Table 2010-12), retiring at age 65.

- Fees in the accumulation phase are $78 p.a. and 1.01% of account balance whilst fees in the retirement phase are $104 p.a. and 0.74% of account balance as per the current fees disclosed in the Cbus PDS dated 30/09/2017.

- No contributions other than employer SG contributions were made to the individual's superannuation account over their lifetime

- Income in retirement was optimised to provide the maximum retirement income possible until life expectancy i.e. at age 81.

- The government age pension and Low Income Superannuation Tax Offset (LISTO) have all been considered in the projection where the member is eligible.

- Investment returns are assumed to be 6% p.a. before fees and after tax, throughout the accumulation and retirement phase

3.3 Impact on Individual's balance at and income in retirement

Legislation states that SG payments must be made at least quarterly. Quarterly due dates are specified by the Australian Taxation Office as 28 days after the end of the quarter. By increasing payment

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[3] This is a technical assumption designed to illustrate the potential impact of missing out on superannuation payments. ISA and Cbus research estimates the average amount of SG forgone may be equivalent to around 4 months of SG payments.

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frequencies to fortnightly or monthly to align with the payment of salaries, individuals will benefit from the increased compounding of investment returns.

Graph 1 demonstrates the effect on balance of switching from quarterly SG payments to fortnightly SG payments, as well SG non-compliance for a 25-year-old Male earning $30,000 p.a., $60,000 p.a. and $100,000 p.a.

Graph 1.   Change in Superannuation Balance at retirement (today's dollars) for Male aged 25 by income
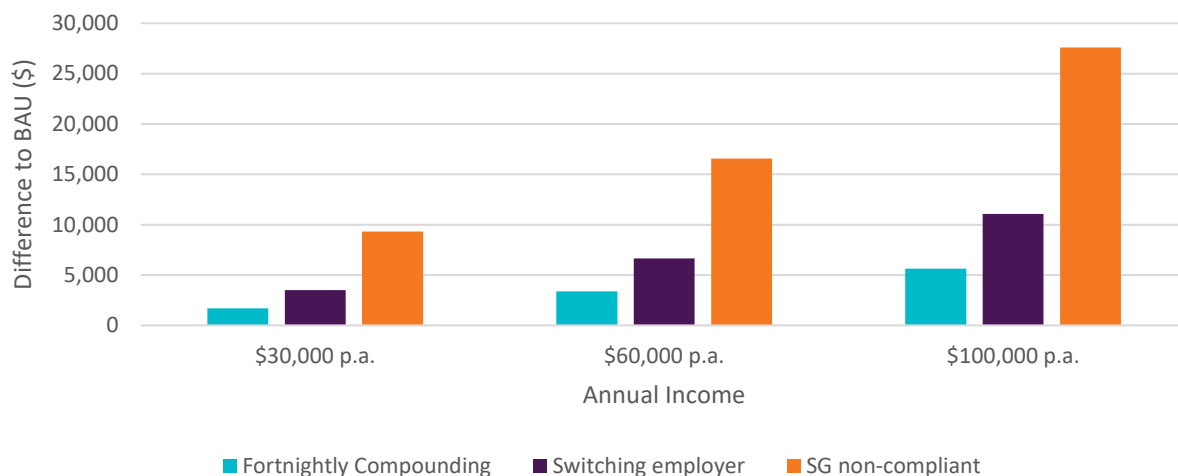
- The light blue bars demonstrate the difference in superannuation balance at retirement as a result of switching from quarterly compounding of SG to fortnightly compounding of SG. This individual could expect to have the following uplift in retirement balance:

    - $1,700 uplift on a $30,000 p.a. salary

    - $3,400 uplift on a $60,000 p.a. salary

    - $5,600 uplift on a $100,000 p.a. salary

- The purple bars demonstrate the difference in superannuation balance at retirement due to an individual switching employer, and missing out on a quarter of SG payments as a result, in addition to increased SG payment frequency. This individual could expect to have the following uplift in retirement balance:

    - $3,500 uplift on a $30,000 p.a. salary

    - $6,600 uplift on a $60,000 p.a. salary

    - $11,100 uplift on a $100,000 p.a. salary

- The orange bars demonstrate the difference in superannuation balance at retirement due to an individual missing out on an entire year of SG payments (assuming employer non-compliance), in addition to increased SG payment frequency. If employers were forced to be compliant, this individual could expect to have the following uplift in retirement balance:

    - $9,300 uplift on a $30,000 p.a. salary

    - $16,600 uplift on a $60,000 p.a. salary

    - $27,600 uplift on a $100,000 p.a. salary

The above scenarios can also be modelled to show the impact of the proposed policies on total retirement income (including the Age Pension) for a 25-year-old Male earning $30,000 p.a., $60,000 p.a. and $100,000 p.a. Results are shown in Graph 2 as a net present value i.e. in today's dollars.

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Graph 2. **Change in present value of income at retirement for 25 yo Male earning $30,000, $60,000 p.a and $100,000 p.a.**
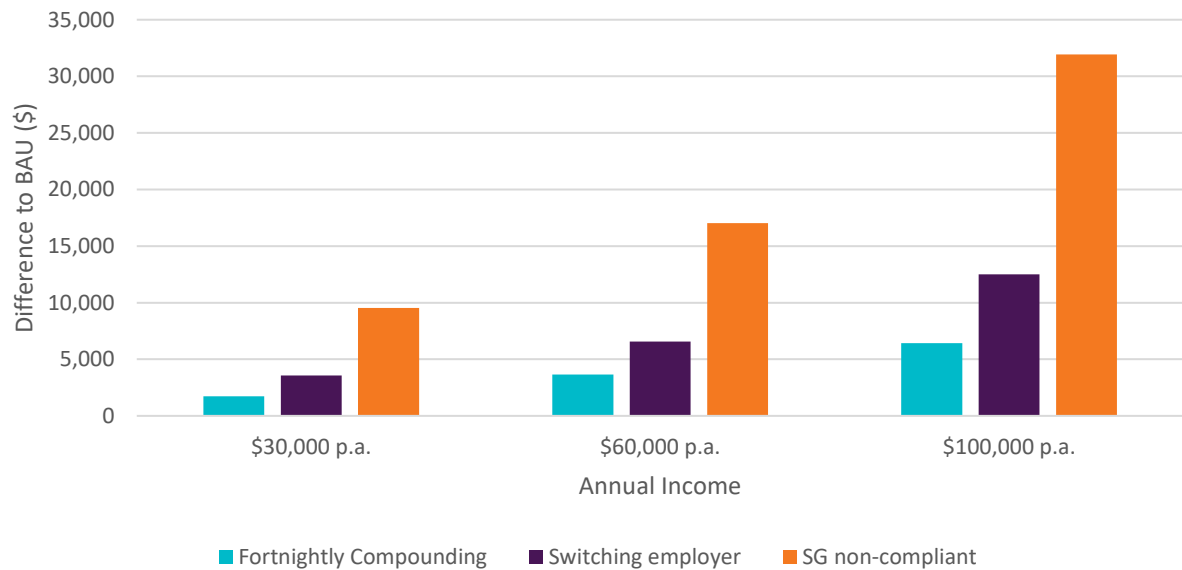
- The light blue bars demonstrate the difference in total retirement income at age 65 as a result of switching from quarterly compounding of SG to fortnightly compounding of SG. An individual can expect to have the following uplift in retirement income:
    - $1,700 uplift on a $30,000 p.a. salary
    - $3,600 uplift on a $60,000 p.a. salary
    - $6,400 uplift on a $100,000 p.a. salary

- The purple bars demonstrate the difference in total retirement income at age 65 due to an individual switching employer, and missing out on a quarter of SG payments as a result, in addition to increased SG payment frequency. An individual can expect to have the following uplift in retirement income:
    - $3,600 uplift on a $30,000 p.a. salary
    - $6,600 uplift on a $60,000 p.a. salary
    - $12,500 uplift on a $100,000 p.a. salary

- The orange bars demonstrate the difference in total retirement income at age 65 due to an individual missing out on an entire year of SG payments (assuming employer non-compliance), in addition to increased SG payment frequency. If employers were forced to be compliant, an individual can expect to have the following uplift in retirement balance:
    - $9,500 uplift on a $30,000 p.a. salary
    - $17,000 uplift on a $60,000 p.a. salary
    - $31,900 uplift on a $100,000 p.a. salary

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4. Aggregate impacts

4.1 Scenarios

The following scenarios have been modelled:

1. Business as usual (BAU). This is our baseline scenario. SG payments are made quarterly and in arrears in this scenario. The BAU model makes an implicit allowance for SG non-compliance, through tracking of APRA statistics.

2. Increased frequency of compounding. The frequency of SG payments and interest on these payments was changed to fortnightly.

3. Impact of missing a quarter of SG payments, when switching employers.

    a. The number of individuals transferring out due to changing jobs or choice of funds was taken.

    b. This was scaled down to remove accounts that are lost on transfer.

    c. A factor calculated based on ATO research into the Superannuation Guarantee gap was applied to this value to derive an estimate of the number of individuals missing out on SG payments when transferring.

    d. This was multiplied by the average size of employer contributions to get the total impact on the industry.

4.2 Assumptions

The most important assumptions for the modelling presented in this report are as follows. Further information on our BAU assumptions are given in Appendix A.

4.2.1 *Employer and member contributions*

The projected rate of contributions received in each segment during the first projection year was set to match the underlying trend of level of contributions published in the current APRA and ATO statistics, allowing for growth in the working population, changes in the Superannuation Guarantee (SG) rate and wage inflation.

For the Retail segment, these trend contributions were allocated to the Employer Master Trusts and Personal Superannuation segments according to the assumed relative levels of salary and contribution rates between those segments.

Within each segment, the age/gender distribution of contributions was derived from the contributions data sourced directly from a number of funds.

Contribution levels were then projected into the future by assuming that salaries for active members will grow in line with general wage inflation in each demographic cell, as members age they will also move up into higher income bands to reflect promotional increases.

The estimated total trend contributions in each segment (excluding co-contributions) are set out in Table 3.

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Projections also allow for the increase in SG as currently legislated. Table 4 contains the current schedule for increases in the SG rate.

It is expected that the eventual cumulative SG increase of 2.5% will result in an increase of less than 2.5% in the current total employer contribution rate. The total employer contribution rate comprises SG contributions, additional contributions from some large employers and salary sacrifice contributions made by individuals with flexible salary packages. It is noted that:

- Members already making contributions in addition to the SG (i.e. salary sacrifice contributions) may substitute their additional contributions for the increased SG. For example, a member already contributing 15% of their salary may reduce their additional contributions to offset the increase in the SG contributions. However, it is noted that members will not necessarily substitute 100% of the increase.

- Members contributing at the concessional contributions threshold will substitute 100% of the increased SG for salary sacrifice contributions.

Based on our knowledge of income distributions and member contributions, it has been estimated that the 2.5% cumulative increase in the SG rate will result in a 2.2% increase in the average total employer contribution rate.

Table 3.   Assumed total trend contributions

Market segment	2017		2016	
	Employer	Member	Employer	Member
	($m)			
Corporate Funds	2,161	435	2,174	463
Industry Funds	35,008	6,115	33,207	6,185
Public Sector Funds	24,684	4,018	30,505	4,812
Self-Managed Superannuation Funds	7,458	19,318	8,025	38,074
Employer Master Trusts	12,186	7,824	13,013	8,785
Personal Superannuation	9,876	6,352	10,297	3,762
Commercial Retirement Products	-	-	-	-
Eligible Rollover Funds	-	-	-	-
Total	**91,373**	**44,062**	**97,221**	**62,081**

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Table 4.   Details of SG contributions

Year starting 1 July	Scheduled SG rate	Cumulative increase in SG rate
	(%)	
2017 to 2020	9.50	-
2021	10.00	0.50
2022	10.50	1.00
2023	11.00	1.50
2024	11.50	2.00
2025 onwards	12.00	2.50

Table 5.   Turnover rate at selected ages

Age	Labour force turnover rate (%)
15	16
20	12
25	9
30	7
35	6
40	5
45	4
50	3
55	2
60	1
65	1

4.2.2   *Economic assumptions*

Table 6.   Average annual investment earnings assumptions

Asset class	Assumed annual investment return (%)
Australian Shares (gross of imputation credits)	7.6
International Shares	7.2
Listed Property	6.9
Direct Property	6.3
Australian Fixed Interest	2.8
International Fixed Interest	2.6
Cash	3.2
Unlisted Equities	6.9
Infrastructure	9.4

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Given the current low interest rate environment, we have assumed that returns for fixed interest and cash investments will rise by 1% after 10 years.

The assumed rates of investment returns shown are before the deduction of any fees and taxes, including imputation credits.

The long-term inflation rate has been assumed at the higher end of the RBA's target, that is 3% p.a. It is reasonable to assume that wages will be 1% p.a. higher than price inflation over long periods.

We have also cross-referenced our inflation assumptions against the RBA's *Labour Cost Statistics and the ABS's Consumer Price Index Statistics (Catalogue 6401.0)*. The results of our analysis of these publications (between June 2006 and June 2016) are set out in Table 8.

Recent history suggests that a differential of 1% p.a. between wage inflation and general price inflation continues to be reasonable.

Table 7.   Inflation assumptions

Type of inflation	Annual growth rate (%)
Wage/salary inflation	4.0
General price inflation	3.0

Table 8.   Historical inflation statistics (2006-2016)

Type of inflation	Annual growth rate (%)
Wage/Salary	3.7
General Price	2.4
Difference	**1.3**

4.2.3   *Population assumptions*

The projected population at each age is based on a projection of the Australian population undertaken by the Australian Bureau of Statistics (ABS). We have built on these projections, estimating the number of emigrants and immigrants in each year from statistics published by the *Australian Government Department of Immigration and Citizenship*:

▪ **New labour -** New entrants into the superannuation market have been derived by applying participation rates from labour force projections[4] published by the Australian Government Productivity Commission. In each projection year, we have increased the number of active members so that the number of members in each demographic cell is at least equal to the number of persons in the employed labour force in that demographic cell.

Assumptions have been made about the market share of the various sectors for new business, which vary by age. The age distribution of the share of new business has been estimated based on the profile of entrants and exits from each sector in Rice Warner's *Super Insights* database.

The assumed market share of new labour at a selection of ages is shown in Table 10.

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[4] Productivity Commission Research Report: *Economic Implications of an Ageing Australia,* April 2005.

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- **Labour force turnover -** The assumption of an overall turnover of membership rate of 6% per annum has been continued. It is also assumed that 60% of people changing employment will remain with their current fund (or keep two accounts when they join their new employer's fund).

  It is assumed that those members changing employment and setting up a new account will have similar market share as per the *new labour* assumptions above.

  It has also been assumed that 20% of these members will not consolidate their superannuation accounts and these will become lost accounts. It is expected the proportion of members failing to consolidate will fall to 10% over the projection period.

- **Transfers between funds**: A number of assumptions about transfers between the different Industry segments have been made. These assumptions are summarised in the following report sections. In particular, assumptions have been made about:

  - Transfers from Corporate Funds to Employer Master Trusts and Industry Funds

  - Transfers from Public Sector Funds to Industry

  - Transfers to Self-Managed Superannuation Funds.

## 4.3   Impact of more frequent SG payments

Graph 3 demonstrates the projected impact on total superannuation assets. The projected difference in assets that can be expected when compared to BAU is plotted. Our modelling suggests that aggregate assets under management in the superannuation industry can be expected to be $2.9 billion higher in 40 years as a result of aligning the frequency SG payments with wages.

Graph 3.   Impact of more frequent SG payments on total industry assets (today's dollars)
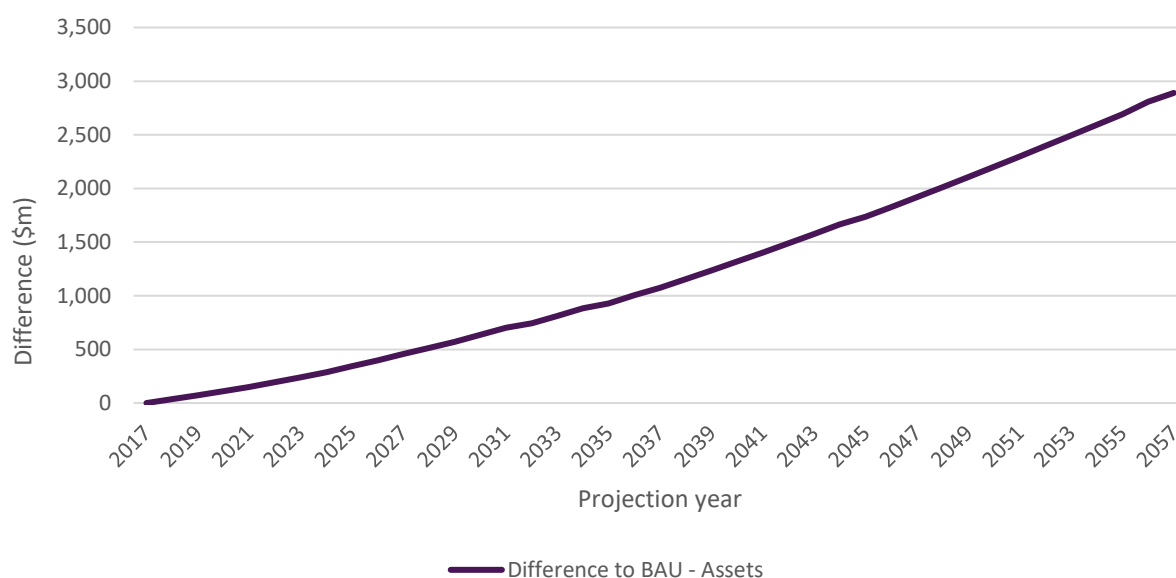
Graph 4 shows the projected increase in investment returns each year, due to higher frequency of SG payments. By making SG payments fortnightly, total investment earnings in the first projection year could be $41 million higher and total investment earnings in 2057 could be $298 million higher (in today's dollars) than they would have been with quarterly SG payments.

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Graph 4. **Impact of more frequent SG payments on total industry investment returns (today's dollars)**
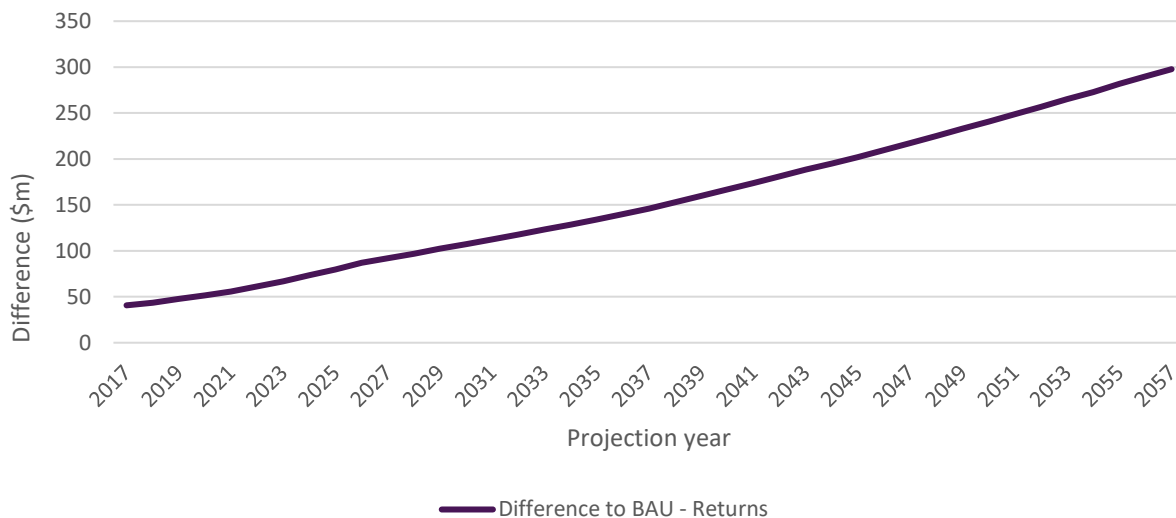

4.4 Impact of missed superannuation payments

Under the current system, some employers have missed SG payments for members who are changing employers and moving into a new default fund.

In modelling the impact of missed SG payments, we have assumed a conservative estimate of 20,000 individuals will miss a quarterly SG payment on changing employer each year, equivalent to 3% of individuals who change funds. This is out of a potential total estimate of 690,700 individuals who change funds upon changing employers each year. We have assumed that these missed SG payments are lost and not returned to members.

Aggregate modelling of total industry assets shows that collecting these missed payments could result in an estimated $7.8 billion in additional funds under management in 40 years (in today's dollars). Graph 5 projects this increase in assets for each year to 2057.

Graph 5. **Impact on total industry assets if SG payments are not missed on switching employer and fund (today's dollars)**

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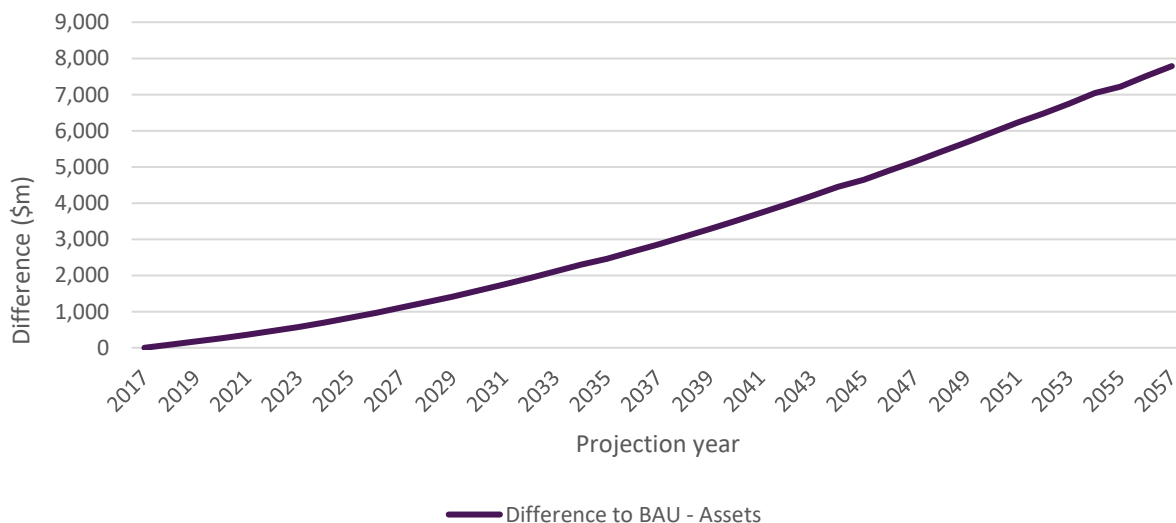
4.5   Impact of compliance

Graph 6 shows the projected effect of improved compliance activities on total funds under management in the industry. We have assumed that any SG gap due to the black economy is unrecoverable and that compliance activity would be improved by 25%. This results in an approximate uplift in contributions of $936 million in the first year.

As a result, we estimate that improved compliance as a result of aligning the payment of SG with wages could result in an additional $47.3 billion in assets by 2057 and higher total contributions of approximately $58.5 billion over the 40-year period.

Graph 6.   Impact on total industry assets due to improved ATO compliance activities (today's dollars)
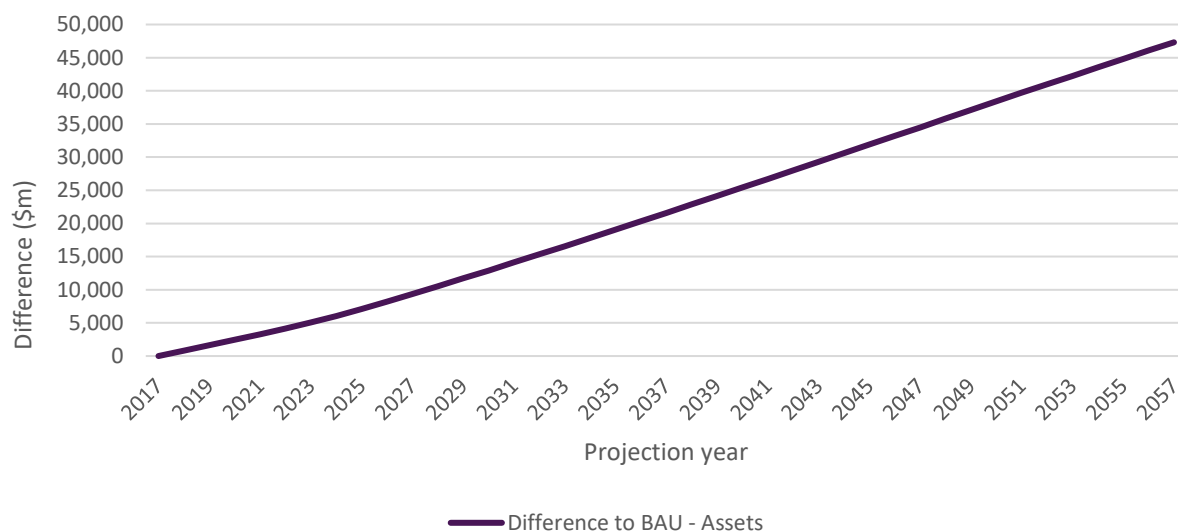
4.6   Combined impact

The combined impact of the policy, is shown in Graph 7. By 2057, total industry assets can be expected to be approximately $58.0 billion higher than without the policy.

Graph 7.   Impact on total industry assets due to increased compounding of returns, no unpaid super and improved compliance (today's dollars)

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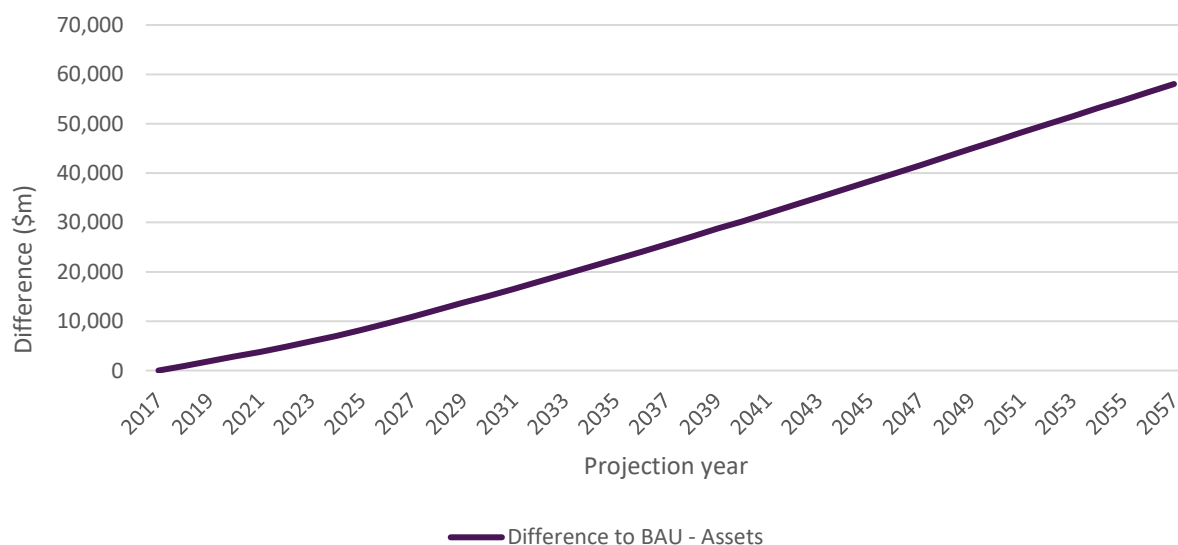
Graph 8 demonstrates the overall impact of the policy change on government tax revenue. The increased frequency of compounding means that investment returns are higher. Combined with increased employer contributions, this results in increased earnings tax and contributions tax for the government.

In the first projection year, tax revenue can be expected to be $163 million higher. This increases to $567 million by 2057.

Graph 8. **Impact on superannuation tax revenue (from tax on investment earnings and tax on contributions - today's dollars)**
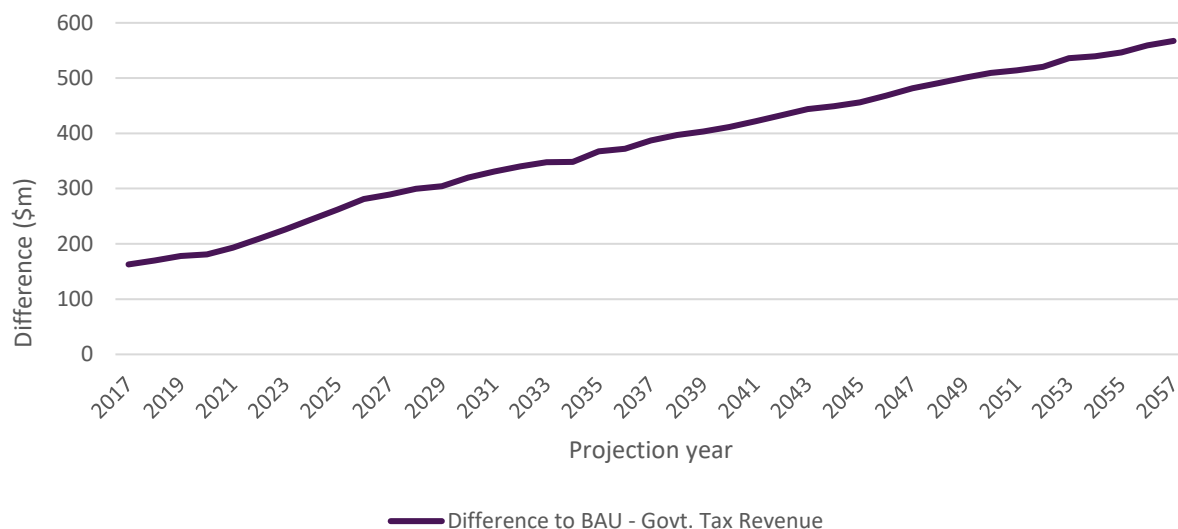
Graph 9 shows the combined impact of the proposed policy change on average member balances at retirement. To model this, the superannuation market was projected for 40 years. Average balances for 25-year-olds in the first projection year were then compared to average balances for 65-year-olds in the 40th projection year. On average, members could be expected to have retirement balances that are $2,900 higher at retirement. This predominantly reflects the average effect of additional compounding as most employers comply with their SG requirements.

Graph 9. **Impact on average member balances at retirement due to proposed policy (today's dollars)**

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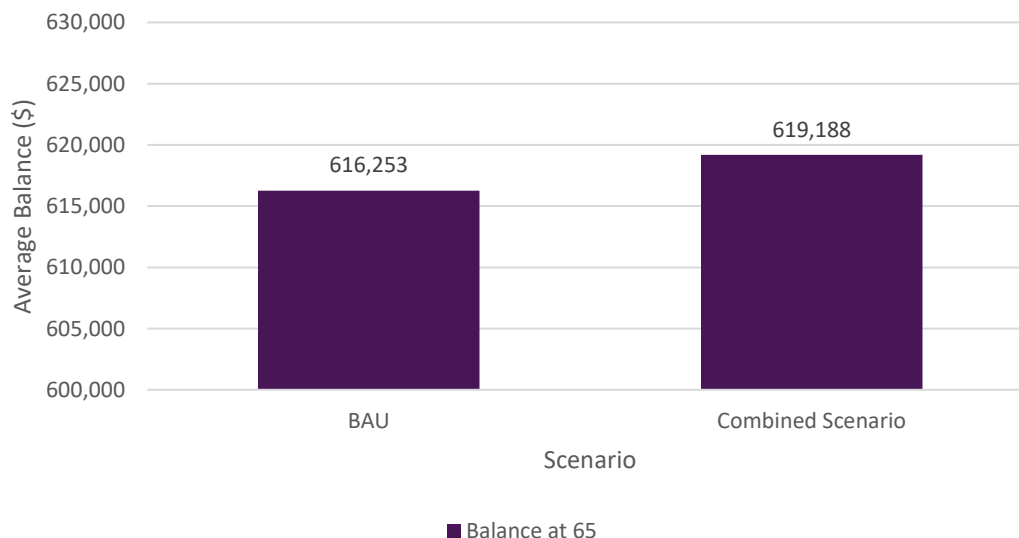
4.7 Effect on CBUS membership

Of all the sectors in the economy, the construction industry suffers the greatest SG losses to the cash economy and the second greatest SG losses due to companies becoming insolvent.[5] The lost SG payments in 2015 in the construction industry totalled $375 million, equating to 44% of total SG losses due to the cash economy and insolvency.

We estimate that CBUS members represent approximately 90% of superannuation assets in the construction industry and therefore are affected most by the $375 million shortfall in SG payments. CBUS's share of total industry SG losses could be as high as 39%, assuming the construction industry trend for non-compliance vs. other industries is the same as their share of SG losses from the cash economy and insolvency.

Applying these factors to the aggregate industry modelling has been used to provide an estimate for the effects of SG non-compliance on the construction industry and the CBUS membership. This is shown in Table 9.

Table 9. **Effect of SG non-compliance on superannuation assets by 2057 - CBUS membership and construction industry (today's dollars)**

($m)				
Impact	**CBUS**	**Construction industry (ex CBUS)***	**Other**	**Superannuation market**
Non-compliance (including cash economy and insolvency)	22,499	2,839	32,702	58,040

*Construction industry consists of all traditional construction superannuation fund members (CBUS and BUSSQ) as well as some non-traditional construction superannuation fund members (Energy Super, Equip Super, First Super, Mine Wealth and Wellbeing).

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[5] https://www.cbussuper.com.au/content/dam/cbus/files/news/media-releases/Superannuation-Guarantee-non-compliance-report.pdf

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Appendix A   Projections Assumptions

A.1   Demographic assumptions

The foundation of the Rice Warner projection model is a demographic projection of the superannuation system. The starting point of this demographic projection is an analysis of superannuation accounts as at 30 June 2017. This starting point has been developed, as follows:

- *APRA Data,* indicates 28.4 million member accounts as at 30 June 2016. The APRA report gives the breakdown of member accounts by the five main market segments:
  - Corporate Funds
  - Industry Funds
  - Public Sector Funds
  - Small Funds
  - Retail Funds.

- Estimated the number of accounts as at 30 June 2017 from the trend in *APRA Data*.

- Adjusted the number of Commercial Fund members to reflect members of Retirement Savings Accounts and holders of annuities which are not included in the APRA statistics.

- Allocated the Commercial Fund members to the sub-sectors of the commercial market identified in this report:
  - Employer Master Trusts
  - Personal Superannuation
  - Commercial Retirement Products
  - Eligible Rollover Funds.

- Within each industry sector, assumptions have been made about the number of *active*, *inactive* and *retired* members respectively, as well as the number of *primary* accounts. It is assumed that the number of *active* members would be approximately equal to the size of the employed labour force[6].

- Further allocated the number of members within each sector to each age/gender cell. This was done by referencing to membership profiles sourced from a number of Industry Funds, Public Sector Funds and Master Trust providers.

- Finally, the profile of *active* members has been rebalanced to approximate the demographic profile of the labour force as published by the ABS.

Following this, members were broken down into income quantiles based on the *Survey of Income and Housing* microdata 2013 to 2014. The measure used in the quantiling structure was a combination of income and deemed income from financial and other business assets. The deeming rate used was the same as the current deeming rate on the Age Pension income test.

The demographic profile of each market segment as at 30 June 2017 has been projected into the future by making assumptions about the future demographic changes as follows:

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[6] Note there will always be a number of inactive accounts held by Australians working abroad and those currently out of the workforce within Australia.

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- **New labour -** New entrants into the superannuation market have been derived by applying participation rates from labour force projections[7] published by the Australian Government Productivity Commission. In each projection year, we have increased the number of active members so that the number of members in each demographic cell is at least equal to the number of persons in the employed labour force in that demographic cell.

  Assumptions have been made about the market share of the various sectors for new business, which vary by age. The age distribution of the share of new business has been estimated based on the profile of entrants and exits from each sector in Rice Warner's *Super Insights* database.

  The assumed market share of new labour at a selection of ages is shown in Table 10.

- **Labour force turnover -** The assumption of an overall turnover of membership rate of 6% per annum has been continued. It is also assumed that 60% of people changing employment will remain with their current fund (or keep two accounts when they join their new employer's fund).

  It is assumed that those members changing employment and setting up a new account will have similar market share as per the *new labour* assumptions above.

  It has also been assumed that 20% of these members will not consolidate their superannuation accounts and these will become lost accounts. It is expected the proportion of members failing to consolidate will fall to 10% over the projection period.

- **Deaths** - The number of deaths in each demographic cell has been determined by applying the mortality rates derived in the *Population Model*, which are the mortality assumptions in a projection of the Australian Population published by the ABS. The projection assumes a degree of improvement in mortality over time. We have also allowed for rates of permanent disablement.

- **Retirements -** Assumptions have been made about the rate of retirement at each age over time using participation rates from the Productivity Commission. For each market segment, further assumptions about the proportion of benefits taken in each form (lump sum, pension within the fund, Commercial Pension Product, Industry Pension Product) have been made. By applying these assumptions, we have derived the number of retirement lump sums, pensions and rollovers (to Commercial and Industry Pension Products) in each demographic cell. Our assumed retirement scale takes into account the increasing Preservation Age and the future increase in the eligibility age for Age Pensions.

- **Transfers between active and inactive accounts -** The assumed transfer rate of member accounts between the active (contributing) and inactive states is such that the number of active accounts remains in line with the projected size of the employed labour force as determined in the Population Model.

- **Transfers between funds -** A number of assumptions about transfers between the different market segments have been made. These assumptions are summarised in the following report sections. In particular, assumptions have been made about:

  - Transfers from Corporate Funds to Employer Master Trusts and Industry Funds

  - Transfers from Public Sector Funds to Industry

  - Transfers to Self-Managed Superannuation.

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[7] Productivity Commission Research Report: *Economic Implications of an Ageing Australia,* April 2005.

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Table 10. **Share of new labour assumptions at selected ages**

Market segment	Share of new labour					
	(%)					
	15	25	35	45	55	65
Corporate Funds	0.0	5.0	5.0	5.0	5.0	5.0
Industry Funds	75.0	49.5	35.9	35.9	35.9	36.2
Public Sector Funds	3.5	10.3	10.3	10.3	10.3	10.3
Self-Managed Superannuation Funds	0.0	0.0	1.0	1.0	0.5	0.2
Employer Master Trusts	5.9	14.8	26.2	26.2	25.7	25.7
Personal Superannuation	15.6	20.4	21.6	21.6	22.6	22.6
Eligible Rollover Funds	0.0	0.0	0.0	0.0	0.0	0.0

Note: The share of new labour assumptions is in line with the long term share of new business assumptions in the FY16 projection.

Table 11. **Turnover rate at selected ages**

Age	Labour force turnover rate (%)
15	16
20	12
25	9
30	7
35	6
40	5
45	4
50	3
55	2
60	1
65	1

The assumed labour force turnover rates are unchanged from the previous report.

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A.2 Fees

The assumptions about the level of fees charged in the initial projection year are derived from an analysis of fund fees based on Rice Warner's most recent Superannuation Fee Analysis Report. These fees are given in Table 12.

Table 12.   Superannuation fees – first year

Fund type	Market segment	Fees	
		$ p.a.	% of assets
Wholesale	Corporate Funds	71	0.63
	Employer Master Trusts	78	0.93
	Industry Funds	73	0.62
	Public Sector Funds	64	0.65
Retail	Personal Superannuation	83	1.70
	Post Retirement Products	47	1.33
	Retirement Saving Accounts	-	0.80
	Eligible Rollover Funds	-	2.14
Small Funds	Self-Managed Superannuation Funds (per account)	900	0.33

Asset based fees are on a pre-RG 97 basis given that RG 97 was implemented by the industry post 30 June 2017. We expect that the implementation of RG 97 would have no impact on the projections as RG 97 standards will not have any impact on the net of fee return for superannuation investment options. Except for potential second order effects if it influences a change in asset allocation.

Generally, fees are expected to reduce as a percentage of assets from these levels in all market segments over the projection period, for a number of reasons including:

▪ Growth in assets, which will lead to investment fees reducing as a percentage of Funds Under Management (FUM).

▪ Consolidation of accounts which will lead to elimination of many fees on multiple accounts and reduced fees (as a percentage of assets) on the main account.

▪ Consolidation of superannuation funds, which will lead to elimination of many smaller higher-cost funds.

▪ Transfers of Corporate Funds into other arrangements, which usually results in savings of fund costs.

▪ Improvements in technology which should drive down the cost of managing superannuation.

▪ Reductions in distribution costs as the delivery of financial advice is delivered more cost-effectively to a wider group of members.

We have assumed that dollar based fees will generally increase with CPI (3%). Asset based fees for most sectors are projected to fall linearly to 50 bps for each segment within 10 years. The exceptions are Employer Master Trust, Post-Retirement Products, SMSFs, RSAs and ERFs.

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A.3   Insurance premiums

The projected insurance premiums were based on an analysis of average premiums by sector from Rice Warner's *Group Insurance Comparator* and take up rates of insurance from Rice Warner's *Super Insights Report*. SMSF premium rates are based on available covers from retail superannuation policies.

Total insurance premiums have been benchmarked against the total insurance premiums for 2016 published in APRA's *Annual Superannuation Fund Bulletin.*

The value of insurance claims has not been estimated, as superannuation funds are generally fully insured and these benefits will generally be paid into the fund and then paid out as a benefit. Some TPD benefits are paid as pensions; however, this does not have a material effect on the projections and has been disregarded.

A.4   Employer and member contributions

The projected rate of contributions received in each segment during the first projection year was set to match the underlying trend of level of contributions published in the current APRA and ATO statistics, allowing for growth in the working population, changes in the Superannuation Guarantee (SG) rate and wage inflation.

For the Retail segment, these trend contributions were allocated to the Employer Master Trusts and Personal Superannuation segments according to the assumed relative levels of salary and contribution rates between those segments.

Within each segment, the age/gender distribution of contributions was derived from the contributions data sourced directly from a number of funds.

Contribution levels were then projected into the future by assuming that salaries for active members will grow in line with general wage inflation in each demographic cell, as members age they will also move up into higher income bands to reflect promotional increases.

The estimated total trend contributions in each segment (excluding co-contributions) are set out in Table 13.

Projections also allow for the increase in SG as currently legislated. Table 14 contains the current schedule for increases in the SG rate.

It is expected that the eventual cumulative SG increase of 2.5% will result in an increase of less than 2.5% in the current total employer contribution rate. The total employer contribution rate comprises SG contributions, additional contributions from some large employers and salary sacrifice contributions made by individuals with flexible salary packages. It is noted that:

- Members already making contributions in addition to the SG (i.e. salary sacrifice contributions) may substitute their additional contributions for the increased SG. For example, a member already contributing 15% of their salary may reduce their additional contributions to offset the increase in the SG contributions. However, it is noted that members will not necessarily substitute 100% of the increase.

- Members contributing at the concessional contributions threshold will substitute 100% of the increased SG for salary sacrifice contributions.

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Based on our knowledge of income distributions and member contributions, it has been estimated that the 2.5% cumulative increase in the SG rate will result in a 2.2% increase in the average total employer contribution rate.

Table 13.   Assumed total trend contributions

Market segment	2017		2016	
	Employer	Member	Employer	Member
	($m)			
Corporate Funds	2,161	435	2,174	463
Industry Funds	35,008	6,115	33,207	6,185
Public Sector Funds	24,684	4,018	30,505	4,812
Self-Managed Superannuation Funds	7,458	19,318	8,025	38,074
Employer Master Trusts	12,186	7,824	13,013	8,785
Personal Superannuation	9,876	6,352	10,297	3,762
Commercial Retirement Products	-	-	-	-
Eligible Rollover Funds	-	-	-	-
Total	91,373	44,062	97,221	62,081

Table 14.   Details of SG contributions

Year starting 1 July	Scheduled SG rate	Cumulative increase in SG rate
	(%)	
2017 to 2020	9.50	-
2021	10.00	0.50
2022	10.50	1.00
2023	11.00	1.50
2024	11.50	2.00
2025 onwards	12.00	2.50

A.5   Economic assumptions

These are some of the most critical assumptions in the model. Each year we review our assumptions taking into account the assumptions used by Treasury, asset consultants, various institutions and superannuation funds.

Rice Warner has formally surveyed leading asset consultants (and a few fund managers) to refine our investment earnings assumptions over the 15-year projection period. Interestingly, almost all these experts treat the long term as 10 years. Consequently, there is no variation between the expected return over (say) 10 years or 20 years.

The assumed gross annual earnings for the 15-year period to 30 June 2032 are shown in Table 15.

Given the current low interest rate environment, we have assumed that returns for fixed interest and cash investments will rise by 1% after 10 years.

The assumed rates of investment returns shown are before the deduction of any fees and taxes, including imputation credits.

The long-term inflation rate has been assumed at the higher end of the RBA's target, that is 3% p.a. It is reasonable to assume that wages will be 1% p.a. higher than price inflation over long periods.

We have also cross-referenced our inflation assumptions against *the ABS's Consumer Price Index Statistics (Catalogue 6401.0)* and *the ABS's Average Weekly Earnings Statistics (Catalogue 6402.0)*. The results of our analysis of these publications (between June 2007 and June 2017 for *Catalogue 6401.0 and between May 2007 and May 2017 for Catalogue 6402.0*) are set out in Table 17.

Recent history suggests that a differential of 1% p.a. between wage inflation and general price inflation continues to be reasonable.

Table 15.   **Average annual investment earnings assumptions**

Asset class	Assumed annual investment return
	(%)
Australian Shares (gross of imputation credits)	7.6
International Shares	7.2
Listed Property	6.9
Direct Property	6.3
Australian Fixed Interest	2.8[#]
International Fixed Interest	2.6[#]
Cash	3.2

[#]*1% upward adjustment is applied to the investment return after 10 years.*

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Table 16.   Inflation assumptions

Type of inflation	Annual growth rate
	(%)
Wage/salary inflation	4.0
General price inflation	3.0

Table 17.   Historical inflation statistics

Type of inflation	Annual growth rate
	(%)
Wage/salary inflation	3.7
General price inflation	2.4
Difference	**1.3**

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A.6 Consolidation of accounts

Intra-fund consolidation commenced on 1 July 2013, requiring funds to consolidate multiple member accounts existing within the same fund. We make the following assumptions regarding the internal consolidation rates in each sector.

The assumed long term intra-fund consolidation rates are detailed in Table 18.

Table 18.   Intra-fund consolidation

Market segment	Consolidation rate (%)			
	2017	**2022**	**2027**	**2032**
Corporate Funds	2.8	4.8	6.8	0.0
Industry Funds	2.5	4.2	6.0	7.5
Public Sector Funds	2.8	4.8	6.8	8.0
Employer Master Trusts	7.0	12.0	17.0	20.0
Personal Superannuation	1.4	2.4	3.4	4.5
Eligible Rollover Funds	0.0	0.0	0.0	0.0