The Consequences of Wage Suppression for Australia's Superannuation System

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Summary

Wages and salaries in Australia's labour market are exhibiting their weakest growth in the history of the relevant statistics. Hourly wages are growing at less than 2 percent per year, and real wages (adjusted for consumer price inflation) are stagnant or falling. The unprecedented stagnation of wages reflects many factors, including chronic weakness in labour demand and the erosion of traditional wage-setting institutions (such as minimum wages and collective bargaining). But it also reflects, for millions of Australian workers, the aggressive efforts by employers (both private- and public-sector) to deliberately suppress wages below normal levels. These wage-suppression strategies take many forms: from the imposition of temporary wage freezes, to the unilateral termination of enterprise agreements, to the outright theft of wages through below-minimum payments. These pro-active measures to suppress labour incomes, breaking the normal link between labour incomes and labour productivity (which continues to grow at over 1 percent per year[1]), impose great harm on affected workers, their families, government budgets, and Australia's macroeconomic performance.

There is another important consequence of these wage suppression strategies that is often not sufficiently understood by workers, employers, policy-makers and regulators: their flow-through impact on Australia's retirement income system. When workers' wages are unduly suppressed, then the normal flow of employer contributions into their superannuation accounts is also constrained. They will have smaller superannuation balances when they retire, and will consequently experience a lasting reduction in post-retirement incomes. Moreover, governments will share a significant portion of the resulting damage: they will collect less in taxes on superannuation contributions and investment income, and will pay out more in means-tested Age Pension benefits (since workers' superannuation incomes will be smaller). These significant, lasting consequences from wage-suppression strategies should be documented and considered. They provide a powerful motive for all stakeholders to challenge employers' wage-cutting initiatives. They also should be of direct concern to superannuation trustees and administrators – since the capacity of the superannuation

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[1] A recent Department of Finance research paper on productivity trends confirms that labour productivity continues to grow at typical historical rates – advancing at an annual average rate of 1.8 percent over the last five years alone. See Simon Campbell and Harry Withers, "Australian Productivity Trends and the Effect of Structural Change, " August 28 2017, http://treasury.gov.au/ PublicationsAndMedia/Publications/2017/ Australian-productivity-trends-and-the-effect-of-structural-change.

system to provide decent, secure retirement incomes for its members is being undermined by this growing pattern of wage suppression.

This report presents results from several quantitative simulations of the impact of wage suppression on superannuation entitlements of affected workers, their long-run retirement incomes, and corresponding fiscal effects on government. The report considers several specific scenarios, corresponding to different instances of pro-active wage suppression strategies that have been experienced by Australian workers in recent years. It traces through the impact of those policies on workers' wages, superannuation accumulations, and retirement incomes. The simulations also describe the spill-over impacts on government (arising from reduced taxes collected on superannuation contributions and investment income, and increased Age Pension payouts). The simulations confirm that:

- Wage suppression undermines superannuation accumulations by automatically reducing employer contributions. Moreover, the damage is compounded over time due to the subsequent loss of investment income.
- Even temporary wage restraint measures (like temporary wage freezes) have lasting negative impacts on superannuation balances, by altering the trajectory of a worker's wages for the rest of their career.
- The most dramatic instances of wage suppression – the termination of enterprise agreements by employers, and resulting large wage reductions as workers are placed back on minimum award conditions – can reduce the superannuation balance of a retiring worker by as much as $270,000.
- More modest wage suppressing policies (such as temporary nominal wage freezes, producing real wage reductions that are then sustained through a worker's remaining years of service) reduce retirement superannuation balances by $30,000 or more.
- Government bears a share of the resulting losses, through both reduced tax collections before affected workers retire, and increased Age Pension payouts after they retire. In the worst-case scenarios, governments can experience fiscal losses of over $50,000 per worker (in real 2017 dollar terms).
- Millions of Australians have been confronted with one or more of these forms of wage suppression from their employers, so the aggregate impacts across the economy are enormous. Based on plausible estimates of the number of workers confronted with each form of wage suppression, the aggregate loss of superannuation balances on retirement (if the pattern of wage suppression is maintained) could ultimately exceed $100 billion (in real 2017 dollars) by the time affected workers retire, and the aggregate fiscal cost to government could reach $37 billion (in real 2017 dollars).

The breakdown of normal wage determination processes and the traditional relationship between real wages and productivity, and the increasingly aggressive efforts by employers (emboldened by both weak labour market conditions and the tacit approval of regulators) to reduce wages, are undermining the economic and fiscal pillars of Australia's retirement income system. The full damage will only become visible when workers whose wages are presently being suppressed, try to retire on superannuation accumulations that are inadequate and smaller than they expected. Government (and hence all Australians) will then be stuck with a good portion of the bill.

The relationship between wage suppression and retirement incomes is another reason, among others, for policy-makers to consider how to rebuild the institutions and regulations that support wage growth. This issue also has major implications for the governance of superannuation funds, whose "sole purpose" (according to relevant legislation) is to enhance the retirement benefits of fund members. Those retirement benefits are being threatened by the implications of wage suppression for the superannuation system, and fund trustees and administrators should consider these implications. Fulfilling their responsibility to maximise the post-retirement benefits of fund members would seem to imply that superannuation funds and their directors have a responsibility to oppose aggressive and even illegal wage suppression strategies, using whatever levers and influences are at their disposal.

I. Introduction: Wage Suppression and Australia's Superannuation System

Australia's superannuation system is a central and valuable component of national social policy. It establishes an entitlement for most paid employees in the labour market to receive regular statutory contributions, paid by their employers into retirement funds which generate investment income and accumulate over a worker's career. Those funds are then drawn down after retirement to provide pension income for retired workers. The near-universal coverage of the program and its ready portability (since workers retain their accumulated funds when they change jobs) are key advantages of the system. Some of the disadvantages include lack of certainty regarding the level of retirement incomes, the sensitivity of fund performance to unstable financial markets, and the uneven performance of funds (especially commercial for-profit funds[2]) with respect to investment returns and expenses.

A key design feature of the superannuation system is that workers' accumulation of funds – and hence their income after retirement – depend automatically on the level of their earnings while working. Employer contributions are usually specified as a fixed percentage of qualifying earnings. The growth or contraction of those earnings, therefore, will be reflected in larger or smaller superannuation balances over time, and corresponding changes in the level of post-retirement incomes which can be paid out from those funds. Moreover, since accumulated superannuation balances (and the income streams they ultimately support) are highly dependent on the accumulation of compound investment returns during the pre-retirement years, changes in earnings are amplified by the application of compounding to any changes in pre-retirement earnings.

This relationship between labour incomes and the performance of the superannuation system seems obvious, but its implications are not always appreciated. Workers confronting a circumstance or event which may change their current earnings (for better or for worse) will be naturally focused on the implications for their current

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[2] According to the Australian Prudential Regulation Authority, retail funds have generated an average annualized rate of return of just 3.6 percent over the past ten years (after expenses), compared to 5.4 percent for industry super funds. See APRA, "Annual Superannuation Bulletin," February 2017, Table 9, http://www.apra.gov.au/Super/Publications/Documents/2017ASBEXCEL201606%20-%20PDF.pdf.

household budgets and purchasing power. They may be less cognisant of the longer-run implications of changes in current incomes for their superannuation savings – and, hence, for their lifelong post-retirement incomes.

Other stakeholders, including employers, financial planners, and governments, may similarly be insufficiently attuned to the implications of changes in current income trends for long-run retirement security. For example, economic analysts are increasingly worried about the impact of Australia's very weak wage performance on macroeconomic indicators.[3] Some experts (even including the Governor of the Reserve Bank of Australia[4]) have indicated that an acceleration of wage growth will be essential to sustained recovery of purchasing power, consumer spending, household financial stability, and fiscal repair. Yet few of these analysts have highlighted the longer-run consequences of wage stagnation for the retirement system. Similarly, numerous proposals have been advanced to strengthen Australia's superannuation system, including better tracking and protection of workers' super balances, and new limits on superannuation tax concessions for very high-income savers. Conspicuously absent from these discussions has been appropriate recognition of the significant threat to the effectiveness of the superannuation system arising from the stagnation or suppression of Australian wages.

This impact of wage trends on Australia's superannuation system is especially important given recent negative trends in wage growth. Overall wage inflation in Australia has fallen to historic lows in recent years, in response to weak labour demand conditions, widespread unemployment and underemployment, and the erosion of institutions which traditionally supported wage levels (such as collective bargaining, minimum wages, and the Modern Awards system). At present, average hourly wages (as measured by the ABS wage-price index) are growing at under 2 percent per year – even slower than the rate of inflation (see Figure 1). By other measures, wage growth is even weaker: for example, average weekly earnings have increased by just 1.6 percent in the past year.[5] Compounding the problem has been the growth of part-time, irregular and temporary work, such that falling average hours of work have undermined total earnings on top of the impact of weak growth in hourly wages.

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[3] See, for example, Jacob Greber, "Wage Growth is Economy's Achilles Heel, Warns Moody's," *Australian Financial Review*, August 23 2017, http://www.afr.com/news/economy/wage-growth-is-economys-achilles-heel-warns-moodys-20170823-gy2kvd.

[4] See Jackson Tiles, "RBA boss tells workers to demand more money," *The New Daily*, June 19 2017, http://thenewdaily.com.au/money/work/2017/06/19/workers-ask-pay-rises-rba/.

[5] Author's calculations from ABS Catalogue 6302.0.

Figure 1

Deceleration of Wage Growth, Australia, 1997-2017
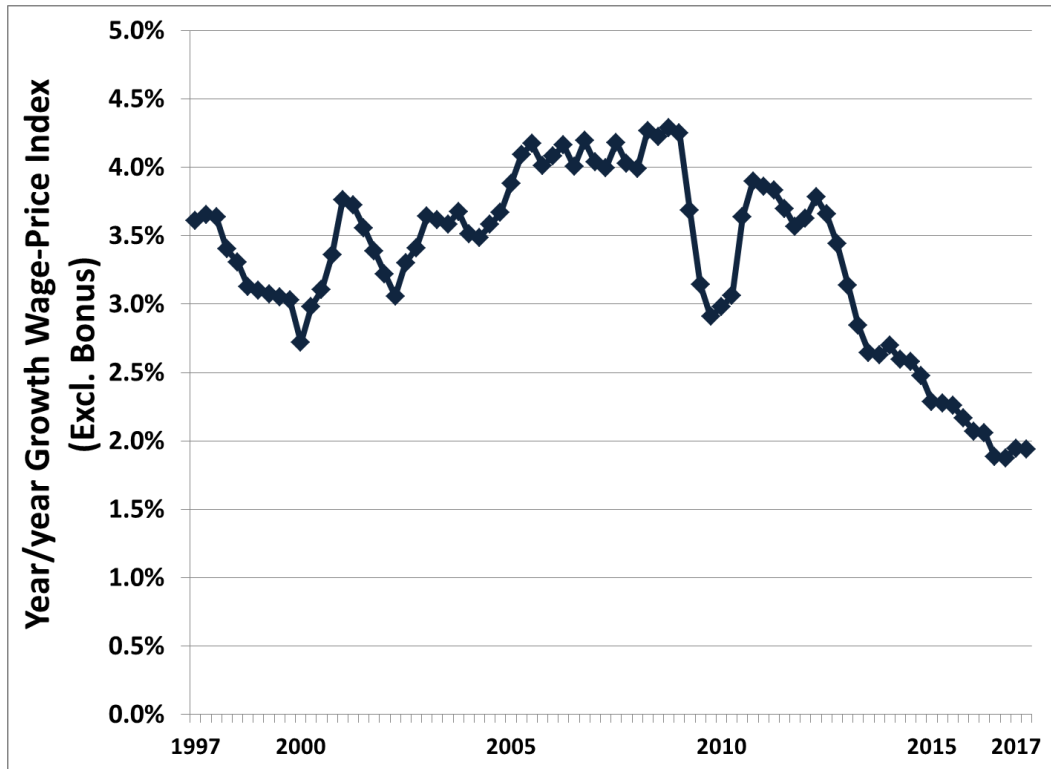

Source: ABS Catalogue 6345.0.

Punctuating these worrisome macroeconomic wage trends have been repeated examples of employers taking aggressive, extraordinary actions to suppress wages paid to their employees. Employers have been emboldened by chronically weak labour market conditions (and a corresponding willingness of workers to "tolerate" poor wage offers), the competitive leeway afforded to them by globalisation and deregulation, and an accommodating attitude on the part of regulators,[6] to undertake increasingly aggressive measures to suppress wages. In extreme cases, these actions are illegal (such as the widespread wage theft which has been documented in retail and fast food franchises); in all cases, they impose significant economic damage on the workers whose incomes have been cut, and their families.

The immediate impacts of these wage suppression strategies on workers and their families are obvious, and have been rightly discussed and debated. Their longer-run impact on the ultimate superannuation entitlements of affected workers, and hence

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[6] Australia's labour market regulators have not, in most cases, prevented these actions (such as the failure of regulators to effectively enforce minimum wage laws); in some cases, regulators have actively facilitated wage suppression (by endorsing the unilateral termination of enterprise agreements, or weakening wage-supporting regulations such as penalty rates).

on their post-retirement incomes, have not been as fully recognised nor analysed. This report will highlight the longer-run implications of wage suppression on the performance of Australia's superannuation system. It will document the potentially enormous impacts of wage suppression today, on workers' retirement incomes far into the future. It is not just that wages (and hence current superannuation contributions) are unduly reduced. The problem is amplified by the corresponding loss of investment income on those (reduced) superannuation balances over workers' remaining careers. In essence, they experience compound losses on the initial reduction of superannuation contributions. Figure 2, for example, illustrates the case of a one-time $10,000 reduction in superannuation balance (against an initial balance of $100,000); invested at a 6 percent annual return, this one-time reduction in contributions translates into a much larger loss ($57,000) by the end of a 30-year accumulation period. But wage suppression strategies (even temporary ones) do not reduce super balance just once; they generally result in ongoing reductions in superannuation contributions (experienced year after year), unless the worker can somehow "catch up" to their previous wage trajectory. The damage to workers' super balances at the end of their careers is increased several-fold.

Figure 2
Compound Losses on One-Time Loss in Superannuation Balance
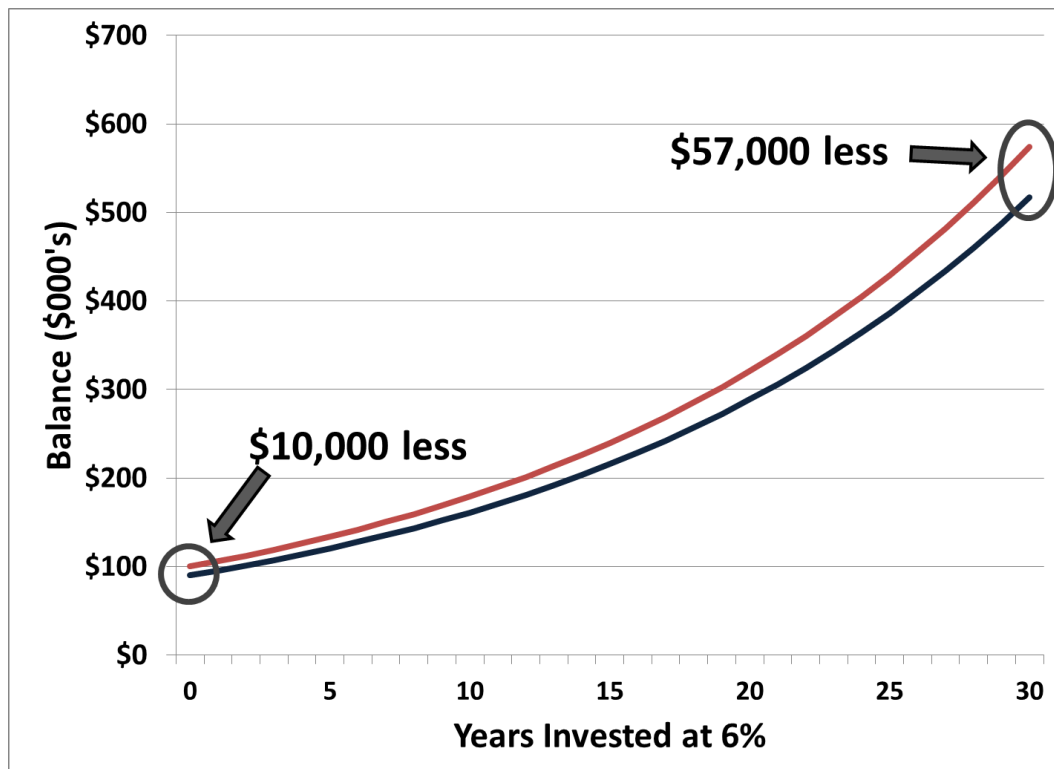
Moreover, the impacts of wage suppression on superannuation are not experienced solely by the affected workers and their families. Government also experiences significant fiscal damage resulting from the interaction between wage suppression and the superannuation system, through two distinct channels: lower tax revenues collected from superannuation contributions and investment income, and higher payouts of Age Pension benefits. This makes it painfully ironic that government has generally turned a blind eye to aggressive wage suppression – and in many cases has aided and abetted it. Government itself (and hence all Australians) will incur significant and growing fiscal costs if employers continue to be successful in their efforts to suppress wage determination below normal patterns.

One final implication of the interaction between wage determination and superannuation is worthy of particular note. The trustees of Australian superannuation funds are guided by a clear mandate, specified in legislation, to act in ways that maximise the well-being in retirement of the members of their respective funds. More specifically, the "sole purpose test," a core provision of the *Superannuation Industry (Supervision) Act 1993* (Section 62), requires superannuation funds to be governed with a focus on "the provision of benefits for each member of the fund" upon their retirement.[7]

In this context, superannuation funds have a clear interest in the restoration of normal wage determination practices in Australia, and preventing the aggressive efforts by many employers to suppress or even steal workers' wages – since those actions (as will be documented in this report) are substantively undermining the retirement benefits which superannuation funds are able to deliver to their members. It is not just that lower wages mean superannuation funds collect fewer contributions, and hence grow more slowly. More fundamentally, the suppression of normal wage growth also clearly undermines the retirement security and quality of life of superannuation fund members. Fulfilling their responsibility to maximise the post-retirement benefits that they can deliver to fund members, therefore, would seem to entail the superannuation system playing an active role in opposing aggressive and even illegal wage suppression strategies, using whatever levers and influences are at its disposal.

The rest of this report is organised as follows. The next section discusses the construction of a benchmark simulation model, which describes the superannuation accumulation of typical male and female Australian workers, and the resulting post-retirement incomes which could be paid out from their savings. Section III then considers in detail how that pattern of accumulation and post-retirement drawdown is

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[7] Commonwealth Consolidated Acts, http://www.austlii.edu.au/au/legis/cth/consol_act/ sia1993473/s62.html.

affected by wage suppression strategies. It simulates the effect on retirement superannuation balances, annual retirement income streams, and lifetime superannuation incomes arising from real-world cases of wage suppression (recently experienced in Australia). It also indicates the fiscal impacts on government of those wage suppression strategies. The simulations in Section III describe the impacts of wage suppression on the superannuation experience of prototypical individual workers; in Section IV, we then estimate the potential economy-wide impacts on superannuation funds under management, and the overall fiscal situation of government (based on estimates of the potential incidence of various forms of wage suppression). Finally, the Conclusion highlights policy implications for government, for labour regulators, and for the superannuation industry. Two Appendices provide detailed documentation regarding modeling methodology and input assumptions, and the results of several sensitivity tests conducted to confirm the robustness of the findings.

II. Benchmark Superannuation Accumulation and Pension Simulations

To consider the long-run impact of employer wage suppression strategies on the ultimate superannuation entitlements and post-retirement incomes of Australian workers, we begin by constructing a "base case" description of the superannuation experience of typical Australian workers under "normal" wage conditions. This benchmark describes a representative career path of individual male and female workers, and their financial situation after retirement. (The analysis is conducted separately for women and men because of important gender differences in the determinants of superannuation benefits.[8]) The base case tracks the accumulating superannuation balance of that individual worker as they complete their working lives – with that accumulation determined by wage growth, their employers' superannuation contributions, and representative investment returns. Upon retirement, they convert their accumulated superannuation balance into a regular stream of post-retirement income (under the terms of the account-based system), designed to be perfectly exhausted at the end of their expected lifespan.[9]

This benchmark simulation can also describe the fiscal impacts on government of the worker's superannuation and retirement experience. This includes taxes collected (at concessionary rates) on both contributions to the superannuation fund and investment income (up to the point of retirement, at which time investment income under the account-based system becomes tax-free). We also consider the fiscal effects of the payment of Age Pension to the worker after retirement. This is germane to the analysis, because changes in income arising from superannuation payments will alter a worker's Age Pension payouts, given the means-tested nature of the Age Pension, and

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[8] For a useful summary of the disadvantages faced by women in accumulating superannuation entitlements, seer David Hetherington and Warwick Smith, *Not So Super For Women: Superannuation and Women's Retirement Outcomes*, Per Capita, July 2017, https://percapita.org.au/research/not-so-super/.

[9] Of course, one drawback of this approach is the risk that an individual's superannuation account may be exhausted before they die. A possible response to that risk is to purchase a guaranteed life annuity from the individual's superannuation account, but that is relatively rare in Australia so we have chosen the more typical approach of an account-based pension.

these flow-through effects onto government should also be considered when analysing the effects of wage suppression on Australia's pension system.

Appendix A lists the parameters and assumption used by the simulation model in detail. We conduct the analysis in real terms, utilising assumptions regarding wage growth and investment returns that are adjusted for the effects of expected inflation. Certain of our results, however, can be restated in nominal (ie. current dollar) terms, by adding back in the effects of inflation (which we assume to equal 2.5 percent per year, the midpoint of the Reserve Bank of Australia's target band, over the long run).

Table 1 presents the main outcomes of the benchmark simulation; details regarding the structure and input assumptions of the model are provided in Appendix A. A male

Table 1 Benchmark Superannuation Accumulation Simulation		
	Gender	
	Male	**Female**
Initial Age	40	40
Opening Super Balance	$50,000	$30,000
Starting Salary	$84,859	$71,167
Annual Real Wage Growth	0.50%	0.50%
Contribution Rate	9.5-12%	9.5-12%
Rate of Return[1]	3.00%	3.00%
Retirement Age	67	67
Super Balance on Retirement ($2017) (nominal)	$455,234 $886,704	$357,632 $696,597
Annual Account-Based Pension ($2017)	$26,878	$19,423
Age When Super Runs Out	90	93
Lifetime Super Pension Paid ($2017)	$618,198	$504,989
Taxes Collected ($2017)	$71,512	$57,817
Age Pension Paid Out ($2017)	$482,912	$567,469
Net Fiscal Flow ($2017)	-$411,400	-$509,652
Source: Author's calculations as described in text. *After inflation (2.5%) and administration costs (0.5%).*		

worker, presently age 40, earning an amount equivalent to the average earnings (excluding overtime and bonuses) for full-time workers,[10] will accumulate (under representative assumptions regarding investment returns and fund expenses) a superannuation balance upon retirement (at age 67) of $455,234. We assume the worker, at the beginning of our simulation, already held a superannuation balance equal to the median level for that gender and age group. We also assume that real wages grow by 0.5 percent per year, broadly consistent with average experience over the past decade in Australia.[11] For women, expected superannuation balances upon retirement are much lower – because they earn less, and started with a smaller opening balance. The superannuation balance on retirement of our typical female worker is estimated at $357,632.

Both of those figures are expressed in real 2017-dollar terms, after stripping out the impact of ongoing expected inflation. However, they can be converted into nominal current-dollar terms (that is, the amount of actual money in their accounts in the year they retire) by re-applying the cumulative consumer price inflation which would be experienced over the intervening period of superannuation accumulation.[12] By this measure the benchmark male worker's superannuation balance on retirement (27 years from now) would equal some $777,032 (expressed in current nominal dollars for 2044, the year they are projected to retire), and the female's would equal $610,438.

From those accumulated superannuation balances, the workers are able to generate a stream of income to support themselves in retirement. Of course, there are many options through which retired workers can draw down their superannuation savings, including lump-sum payouts, the purchase of lifetime annuities, and others. A representative and common approach is to convert the superannuation fund into an account-balance pension; this method is simple, and advantageous for tax reasons (since an account-balance fund is not charged tax on investment income that continues to be generated within the fund after retirement). It also allows us to calculate a representative steady income stream that could be supported by the worker's superannuation savings until their expected death.[13]

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[10] Note that in some scenarios, the assumed starting wage (before wage suppression) is adjusted to reflect the specific circumstances of the scenario; this is the case in Scenarios C, D, and E below, in which the assumed starting wage is set in relation to an existing modern award minimum.

[11] Author's calculations from ABS Catalogues 6345.0 and 6401.0.

[12] The simulation assumes long-run inflation matches the midpoint of the Reserve Bank of Australia's target band.

[13] There are many different options for retired workers to convert their superannuation balances into income, including lump-sum withdrawals, annuity purchases, and others. Our assumption of a stable account-balance pension is merely intended to provide a representative example of the potential of a given superannuation balance to support a certain stream of post-retirement income.

Using this approach, the benchmark simulation projects sustainable annual real superannuation income (in real 2017 dollar terms) of $26,878 for a male worker, and $19,423 for the female worker.[14] Over their expected post-retirement lifespans, this produces a cumulative superannuation income stream (in real 2017-dollar terms) of $618,198 for the male worker, and $504,989 for the female worker.[15]

The baseline fiscal position of government can also be defined on the basis of this initial simulation. The government collects taxes on superannuation contributions and investment income until the worker retires.[16] The government also pays out Age Pension, which is partly reduced in line with the worker's deemed superannuation income.[17] For the male worker, we estimate pre-retirement tax collections of $71,512, followed by Age Pension payouts cumulating to $482,912, for a net fiscal payout of $411,400 (all measured in real 2017 dollars). For the female worker, $57,817 in taxes are collected pre-retirement, with $567,469 in Age Pension benefits paid out, for a net fiscal payout of $509,652. This analysis only considers the inflows and outflows to and from government directly related to the retirement income system; it does not include the (larger) fiscal flows associated with other taxes and programs (such as the income taxes which the worker pays on their pre-retirement income).[18]

It is against these benchmarks of superannuation performance that the impact of wage suppression strategies on the retirement income system can be measured. We now report the results of a series of counterfactual simulations to illustrate how wage suppression translates into amplified and long-lasting consequences for the post-retirement incomes of affected workers – and substantial fiscal losses for government.

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[14] The female worker's annual superannuation income stream is lower than the male worker's both because the balance on retirement was smaller, and because they are expected to live longer (and hence a given balance translates into a smaller sustainable income stream).

[15] The funds pay out more over the retired worker's remaining life than they had at the time of retirement, because of investment income generated in the intervening years.

[16] No taxes are collected on investment income after retirement on the assumption that the worker converts their superannuation fund to an account-based pension, in which case investment income is tax-free.

[17] The simulation's specific assumptions regarding maximum Age Pension benefits and the thresholds governing both the income test and the assets test are described in Appendix A.

[18] Revenues obtained from those other flows, including income tax and GST, obviously help to "pay for" the large net fiscal outflow associated with the Age Pension.

III. Wage Suppression Scenarios

Now the base case accumulation model has been established, the impacts of wage suppression measures on the long-run superannuation entitlements received by affected workers (both male and female) can be simulated by varying the wage assumptions which are taken as input by the model in each case considered. Our analysis considers seven broad categories of wage suppression situations, each of which has been encountered recently in real-world employment relations in Australia. The modeled scenarios include the following, listed in order of increasing proportional severity:

A. *Imposing a temporary nominal wage freeze (2 years)*. Some employers have refused to increase wages at all for a certain period of time. Given the model's assumed inflation trajectory, this translates into a 2.5 percent real wage reduction for each year of a 0-percent nominal wage change. This form of wage suppression has been encountered in numerous private- and public-sector situations. For example, base wages in several resource, manufacturing, and transportation firms (including Rio Tinto, Qantas, BlueScope Steel, and Coates Hire) have been frozen in recent years.[19] The Commonwealth government and several state governments have also imposed multi-year wage freezes on staff in several departments (in some cases achieved through delays in renewing existing enterprise agreements).[20] This simulation assumes 0-percent wage changes for two years (generating a phased-in 5 percent reduction in real wages), after which we assume the resumption of normal

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[19] See Cecilia Jamasmie, "Rio Tinto Freezes All Pay for 2016 as Commodities Rout Bites," *Mining.com*, January 14 2016, http://www.mining.com/rio-tinto-freezes-all-pay-for-2016-as-commodities-rout-bites/; Nick Toscano, "Thousands of Qantas Workers Accept 18-month Pay Freeze," *Sydney Morning Herald*, October 14 2016, http://www.smh.com.au/business/workplace-relations/thousands-of-qantas-workers-accept-18month-pay-freeze-20161013-gs1kvp.html; Tim Binstead, "BlueScope workers vote yes to wage freeze, 500 job cuts," *Sydney Morning Herald*, October 8 2015, http://www.smh.com.au/business/mining-and-resources/bluescope-workers-vote-yes-to-wage-freeze-500-job-cuts-20151008-gk3zaj.html; and Nick Toscano, "Coates workers fold after threat to wages," *Sydney Morning Herald*, May 24 2017, http://www.smh.com.au/ business/workplace-relations/coates-workers-fold-after-threat-to-wages-20170523-gwb6t7.html.

[20] See Juian Bankowski, "Public Servants Appeal Direct to Turnbull to End Dispute Before APS-wide Strikes," *Government News*, March 10 2016, http://governmentnews.com.au/2016/03/public-servants-appeal-direct-to-turnbull-to-end-dispute-before-aps-wide-strikes/; Graham Power and Eliza Laschun, "Judges, MPs, Public Servants to be Hit with Four-Year Pay Freeze," *ABC Online*, May 12 2017, http://www.abc.net.au/news/2017-05-12/pay-freeze-mooted-for-wa-mps-judges-public-servants/8520046.

wage growth (in line with the benchmark assumption of 0.5 percent real wage growth per year).

B. _Imposing an indefinite real wage freeze._ Some employers have implemented wage policies which cap nominal wage increases at the expected rate of inflation on an ongoing basis. This is equivalent to a freeze in real wages; in some cases these policies are imposed indefinitely. For example, in the case of the state government in NSW, an ongoing cap on annual wage increases (in place now for six years) has been calibrated to equal the mid-point (2.5 percent) of the target band for inflation adopted by the Reserve Bank of Australia.[21] A similar, even harsher policy has been in effect in Tasmania for six years (with broader public sector wage gains capped at 2 percent per year). In South Australia's case, the wage cap equals 1.5 percent, with no specific duration. Recent public sector wage adjustments (at universities, health care providers, and others) also limit increases to the expected rate of inflation (around 2 percent) for several years at a time. If these wage caps are kept in place indefinitely, they are equivalent to imposing a _perpetual_ freeze on real wages.[22] Of course, even without any official "policy," current overall wage trends in Australia's private sector are consistent with this same scenario. For example, according to most recent ABS data, hourly wages in Australia's private sector have increased by 1.8 percent in the past 12 months – slightly slower than the rate of consumer price inflation.[23] If this trend is maintained, then the entire private sector workforce, on average, is also being subjected to an ongoing real wage freeze.

C. _Reducing effective wage payments to $500 per month below the award minimum._ Some employers have attempted to use misleading or confusing provisions in enterprise agreements (in some cases negotiated without the participation or support of the relevant union) to suppress wage costs below what would otherwise prevail under the minimum terms of the relevant Modern Award. This result can be achieved through the manipulation of penalty rate, shift loading, overtime, split-shift, and allowance provisions. While such agreements should be prohibited in theory by the need for all EBAs to pass the "better-off overall test" (BOOT) under the terms of the _Fair Work Act_, in practice this test has not been applied sufficiently consistently nor effectively to prevent such abuses. The strategy usually involves stripping away various

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[21] See NSW Treasury, "NSW Public Sector Wages Policy 2011," Treasury Circular, Sydney, 2014.

[22] On the assumption that the long-run average actual inflation rate does indeed equal the RBA's target.

[23] Author's calculations from ABS Catalogues 6345.0 and 6401.0.

penalties, premiums, and allowances (some of which would be subject to superannuation contributions) to which workers would be entitled under their relevant Award, partly offset by a nominal increase in base hourly wages. In one reported case,[24] effective incomes at aircraft services provider Aerocare were argued to fall as much as $1100 per month below what would have been paid under the terms of the relevant Award (a portion of which would reflect a loss of superannuation-qualifying income, and a portion of which would correspond to a loss of allowances which would not affect superannuation contributions). We simulate a case where superannuation-qualifying income was reduced by $500 per month below the relevant Award. The benchmark against which the superannuation impacts of this scenario are estimated is a full-time worker earning an effective hourly wage of $25 per hour (reflecting a typical Award minimum rate adjusted for relevant penalties and loading).

D. *A loss of income for part-time retail workers from coming reductions in penalty rates for Sunday work*. The Fair Work Commission has mandated significant reductions in the penalty rates paid out for workers covered under Modern Awards in several major retail and hospitality sectors. For example, for general retail workers the penalty rate paid for work on Sunday will be reduced by half: from 200 percent of the base rate, to 150 percent.[25] Even for workers who are employed under the terms of enterprise bargaining agreements or individual contracts, this major change in the base level of compensation for Sunday work will eventually spill over into reduced weekend incomes (since both collective and individual contracts must pass the BOOT, and hence lower penalty rates reduce the need for higher weekend wages under those agreements as well). We consider the case of a part-time entry-level retail worker who works 16 hours per week, including 8 on Sundays; their total earnings will thus fall by 17

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[24] See Naaman Zhou, "Airport Workers Lose $1,100 a Month Under New Wage Deal, says Union," *The Guardian*, July 14 2017, https://www.theguardian.com/australia-news/2017/jul/14/airport-workers-lose-1100-a-month-under-new-wage-deal-says-union. This EBA was recently terminated by the Fair Work Commission on grounds that covered workers were worse off than under the terms of minimum awards; see "Split Shifts, Penalty Rates to Blame for Agreement's BOOT Failure," *Workplace Express*, Sept. 1 2017, https://www.workplaceexpress.com.au/nl06_news_selected.php?act=2&stream=2 &selkey=56013&hlc=2&hlw=, and James Thomas, "Fair Work Commission Rejects Aerocare Worker Agreement, Union Calls Out 'Poverty-Line Wages', *ABC Online*, August 31 2017, http://www.abc.net.au/ news/2017-08-31/fair-work-commission-rejects-aerocare-worker-agreement/8861148.

[25] The Fair Work Commission has determined that this reduction will be phased in over three years; see Fair Work Commission, "Penalty Rates Transitional Arrangements Decision," June 5 2017, https://www.fwc.gov.au/documents/sites/awardsmodernfouryr/2017fwcfb3001.pdf.

percent (to 20 hours total pay from 24) as a result of the reduction in penalty rates. This simulation assumes a base rate for the entry retail worker of $20.08, as specified in the General Retail Award.

E. *Wage theft from fast-food workers paid cash-in-hand by a franchisor*. Several scandals in recent years have documented the systematic underpayment of workers in major retail and fast food chains.[26] A typical situation involves a franchisor paying vulnerable workers (often foreign students or other migrant workers) a cash payment for hours worked that is far below the statutory minimum for that kind of work; the workers are discouraged from redressing this illegal practice because of lack of information, fear of losing their job, or even fear of being forced to leave Australia. We simulate the case of fast-food workers paid $14 per hour cash-in-hand, instead of the statutory minimum wage rate for that sector (under the Fast Food Industry Award) of $20.08 plus evening penalties (assuming the employee works 20 hours per week, half of them in evenings). Of course, given the illegality of these below-minimum wage payments, it is also quite likely that the workers are not being paid their superannuation contributions either – in which case the impact on retirement incomes is even worse.

F. *A unilateral reduction in superannuation contribution rates*. Many workers in Australia have negotiated superannuation contributions from their employers that exceed the 9.5 percent minimum rate currently specified under the Superannuation Guarantee legislation. However, those superior superannuation provisions now face concerted opposition from employers, who in some cases have succeeded in rolling back superannuation entitlements to the statutory minimums. Consider a recent controversy in Western Australia, where work associated with a BHP Billiton mining operation was shifted from one sub-contractor to another; it was reported that under the new contractor, superannuation contributions would be paid on a much smaller proportion of the workers' total income, resulting in an effective 55 percent cut

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[26] See, for example, Anna Patty, "7-Eleven Compensation Bill Climbs over $110 Million," *Sydney Morning Herald*, June 13 2017, http://www.smh.com.au/business/workplace-relations/7eleven-compensation-bill-climbs-over-110-million-20170612-gwpdfx.html; Nick Toscano, "Thousands of Caltex Workers Find Out They're Being Ripped Off," *Sydney Morning Herald*, November 25 2016, http://www.smh.com.au/business/workplace-relations/thousands-of-workers-find-out-theyre-being-ripped-off-20161125-gsxnp7.html, and Mario Christodoulo, "Investors Savage Domino's Pizza as Union call for 'Wage Theft' Royal Commission into Wage Fraud," *Sydney Morning Herald*, February 15 2017, http://www.smh.com.au/business/retail/investors-savage-dominos-pizza-as-union-call-for-wage-theft-royal-commission-into-wage-fraud-20170215-gudnm5.html.

in contributions.[27] Another example is provided by the decision of Murdoch University (with approval from the Fair Work Commission) to unilaterally terminate its existing enterprise agreement (which provided for superannuation contributions of 17 percent from the employer), potentially falling back to the statutory minimum 9.5 percent contribution rate.[28] We simulate this wage suppression strategy by an assumed reduction in contribution rates from 14.5 percent of base incomes to 9.5 percent.[29]

G. *The unilateral elimination of an EBA and reversion to award wage rates*. Several employers have received approval from the Fair Work Commission to terminate existing enterprise agreements altogether, following a stalemate in negotiations, financial problems experienced by the employer, or other justifications. A decision by the Commission in 2015 to permit the termination of enterprise agreements at the Aurizon rail operations in Queensland in 2015, during collective bargaining with its unions, set a far-reaching precedent which other employers have been aggressively imitating ever since.[30] This especially dramatic form of wage suppression can lead to substantial reductions in incomes – and then to cumulating effects on the superannuation savings of affected workers. Consider the recent case of Griffin Coal in Western Australia, where the dissolution of an enterprise agreement resulted in workers facing the prospect of a 43 percent wage reduction.[31] Other recent examples of this practice include Murdoch University in Western Australia (whereby wages could be cut by up to 39 percent),[32] Unilever and its Streets ice cream

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[27] See Peter Milne, "Rio Tinto workers may face slashed superannuation contributions," *The West Australian*, July 5 2017, https://thewest.com.au/business/mining/rio-tinto-workers-may-face-slashed-superannuation-contributions-ng-b88527263z.

[28] This is on top of the negative impact on superannuation which will be experienced through the reduction in wages also resulting from the termination of the EBA.

[29] This simulation measures the benchmark simulation described in Part II of the paper, against a scenario in which the superannuation contribution rate was held at 14.5 percent throughout the worker's remaining career.

[30] For a legal analysis of the Aurizon precedent, see Jack de Flamingh, "In Perpetuity No More: FWC Full Bench Terminates Aurizon Enterprise Agreements During Bargaining," Corrs Chambers Westgarth Lawyers, April 24 2015, http://www.corrs.com.au/publications/corrs-in-brief/in-perpetuity-no-more-fwc-full-bench-terminates-aurizon-enterprise-agreements-during-bargaining/.

[31] See Rebecca Carmody, "Griffin Coal Win Leaves Collie Mine Workers Facing 43 per cent Pay Cut," *ABC Online*, June 12 2016, http://www.abc.net.au/news/2016-06-12/wa-mine-workers-face-43-per-cent-pay-cut/7503584.

[32] See Hannah Barry, "Murdoch University Wins Right to Tear Up 'Out-of-Touch' Staff Agreement," August 30 2017, *WA Today*, http://www.watoday.com.au/wa-news/murdoch-university-wins-right-to-tear-up-outoftouch-staff-agreement-20170829-gy6qt2.html.

operation in western Sydney (with a wage cut of up to 46 percent),[33] and Gladstone Regional Council in Queensland (cutting wages by over one-third).[34] Even where workers continue to be covered under a replacement EBA, wages may fall dramatically: for example, in the case of offshore gas workers for UGL in Victoria, wages will fall by up to 30 percent under the terms of a new EBA imposed by a new contractor.[35] We provide two different simulations of the effects on superannuation accumulation and ultimate pension incomes of a decline in wages resulting from the termination of an enterprise agreement. The first case (Scenario G.1) reduces the assumed income for a male worker from the average weekly earnings level of the benchmark scenario, to the minimum level paid to a skilled worker under a representative industrial award rate.[36] This scenario represents a reduction in income of 39 percent (in line with the wage cuts that would entail under the previous real-world examples). For the female worker, we simulate an equal proportional 39% wage reduction relative to average weekly earnings for women.[37] Our second case of EBA termination (Scenario G.2) utilises an example from the airline services industry. The scenario assumes that initial wages of $1537.70 per week (equal to the average weekly earnings in that sector) are reduced to the level of a Tradesperson under the Modern Award for Airline Operations Ground Staff.[38] This corresponds to a 44 percent wage reduction; the simulation models the same wage reduction for women.[39]

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[33] See Ewin Hannan, "Streets Ice Cream Move to Cut Wages is Industrial Blackmail: ACTU," *The Australian*, August 22 2017, http://www.theaustralian.com.au/national-affairs/industrial-relations/streets-ice-cream-move-to-cut-wages-is-industrial-blackmail-actu/news-story/e79e0b8a7115bcddf86e142e893ed8e1.

[34] See Tegan Annett, "Union, Council Battle Brews Over $10p/hr Labour Hire Pay Cut," *Gladstone Observer*, August 24 2017, https://www.gladstoneobserver.com.au/news/councils-hypocrisy-called-out-union-demands-10phr-/3215849/.

[35] See Nicole Asher, "Unions Launch Protest at Esso's Longford Gas Plant in Gippsland", *ABC Online*, http://www.abc.net.au/news/2017-06-22/unions-launch-blockade-at-esso-longford-gas-plant-gippsland/8641744.

[36] For this award rate we utilise a Level II Advanced Engineering Tradesperson in the "Manufacturing and Associated Industries and Occupations Award," MA000010, who presently earn $24.91per hour; see Fair Work Commission, https://www.fwc.gov.au/documents/documents/modern_awards/award/ma000010/ default.htm.

[37] Since the female worker's assumed earnings in the base case simulation are lower than the male worker's, an equal proportional wage reduction takes the new wage to a lower level: just under $21 per hour. This would be broadly equivalent to a Level I Engineering Tradesperson.

[38] See Fair Work Commission, https://www.fwc.gov.au/documents/documents/modern_awards/award/ma000048/default.htm.

[39] Gender-specific earnings data at the sectoral level are not available, hence in this scenario the same wage levels (both before and after the cut) are assumed for males and females.

The results of these counterfactual simulations of varying wage suppression strategies are summarised in Tables 2 through 9, each one corresponding to one of the wage suppression scenarios defined above. As before, the simulations are conducted separately for men and women.[40] And as above, the results can be expressed in either real ($2017) or nominal (current-dollar) terms. We also measure the effects of wage suppression as a percentage of the benchmark levels of superannuation retirement balances and post-retirement incomes.

Note that in each of the scenarios, the loss in income resulting from the wage suppression policy is assumed to be sustained until the worker's eventual retirement. In other words, they are not able to "catch up" to the wage trajectory they would have experienced in the absence of the wage suppressing incident. In reality, some workers may be able to regain previously-expected wage levels (hence rebuilding superannuation contributions), perhaps by moving to a new job, or finding themselves able to negotiate (individually or collectively) extra wage increases in future years to make up for the earlier loss of wages. However, given persistently weak labour market conditions and the erosion of collective bargaining and other wage-supporting institutions, this "catch up" cannot be taken for granted.

The counterfactual simulations confirm that measures taken by employers to suppress current wages have major and lasting effects on affected workers' superannuation savings and post-retirement incomes. The scenarios are presented in order of increasing relative impact. In Scenario A, for example (Table 2), merely freezing a worker's nominal wage for two years (after which normal real wage growth is reestablished) suppresses a worker's superannuation balance on retirement by $37,458 (in nominal terms) for men, and by $31,415 for women. That represents a 4.2 percent reduction in superannuation balance for men, and a 4.5 percent reduction for women. Naturally, the annual income streams arising from those balances are suppressed accordingly. So even a measure as seemingly innocuous as a temporary wage freeze translates into an amplified cumulative impact on superannuation

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[40] Different results of the simulations across the genders reflect different life expectancies, different starting superannuation balances, and in most cases different starting wage rates. In Scenarios C, D, and E, initial wages were assumed equal across genders because they were measured against a base case in which workers are paid according to a gender-neutral minimum Award). In Scenario G.2, the starting and finishing wages are also equal due to a lack of gender-specific earnings data.

Table 2
Wage Suppression Scenario A:
Two-Year Nominal Wage Freeze

	Gender	
	Male	**Female**
Super balance on retirement:		
Nominal	$849,246	$665,182
Real ($2017)	$436,002	$341,504
Change from benchmark:		
Nominal	-$37,458	-$31,415
Real ($2017)	-$19,231	-$16,128
Percent	-4.2%	-4.5%
Annual superannuation retirement income: Real ($2017)	$25,743	$18,547
Change from benchmark: Real ($2017)	-$1135	-$876
Source: Author's calculations as described in text.		

Table 3
Wage Suppression Scenario B:
Indefinite Real Wage Freeze

	Gender	
	Male	**Female**
Super balance on retirement:		
Nominal	$844,727	$661,392
Real ($2017)	$433,682	$339,558
Change from benchmark:		
Nominal	-$41,977	-$35,205
Real ($2017)	-$21,551	-$18,074
Percent	-4.7%	-5.1%
Annual superannuation retirement income: Real ($2017)	$25,606	$18,441
Change from benchmark: Real ($2017)	-$1272	-$982
Source: Author's calculations as described in text.		

Table 4
Wage Suppression Scenario C:
Effective Payments Below Award Minimums

	Gender	
	Male	**Female**
Super balance on retirement:		
Nominal	$558,734	$479,890
Real ($2017)	$286,854	$246,375
Change from benchmark:		
Nominal	-$48,758	-$48,758
Real ($2017)	-$25,032	-$25,032
Percent	-8.0%	-9.2%
Annual superannuation retirement income: **Real ($2017)**	$16,937	$13,380
Change from benchmark:		
Real ($2017)	-$1478	-$1359

Source: Author's calculations as described in text.
Changes measured against benchmark simulation based on $25 per hour award rate.

Table 5
Wage Suppression Scenario D:
Reduction in Sunday Penalty Rates

	Gender	
	Male	**Female**
Super balance on retirement:		
Nominal	$366,816	$287,971
Real ($2017)	$188,323	$147,844
Change from benchmark:		
Nominal	-$33,941	-$33,941
Real ($2017)	-$17,425	-$17,425
Percent	-8.5%	-10.5%
Annual superannuation retirement income: Real ($2017)	$11,119	$8,029
Change from benchmark:		
Real ($2017)	-$1029	-$946

Source: Author's calculations as described in text.
Changes measured against benchmark simulation based on 16-hour weekly roster (8 hours on Sundays) paid at previous penalty rate.

Table 6 **Wage Suppression Scenario E:** **Underpayment of Retail and Fast Food Workers**		
	Gender	
	Male	**Female**

Super balance on retirement:
    Nominal
    Real ($2017)
	$315,432
	$161,942
		$236,587
		$121,464

Change from benchmark:
    Nominal
    Real ($2017)
    Percent
	-$59,878
	-$30,741
	-16.0%
		-$59,878
		-$30,741
		-20.2%

Annual superannuation retirement income: Real ($2017)	$9,562	$6,597
Change from benchmark: **Real ($2017)**	-$1815	-$1670
Source: Author's calculations as described in text. Changes measured against benchmark simulation based on 20 hours pay per week at minimum Award rate.		

Table 7 **Wage Suppression Scenario F:** **Unilateral Reduction in Super Contributions**		
	Gender	
	Male	**Female**

Super balance on retirement:
    Nominal
    Real ($2017)
	$886,704
	$455,234
		$695,597
		$357,632

Change from benchmark:
    Nominal
    Real ($2017)
    Percent
	-$192,040
	-$98,593
	-17.8%
		-$161,055
		-$82,686
		-18.8%

Annual superannuation retirement income: Real ($2017)	$26,878	$19,423
Change from benchmark: **Real ($2017)**	-$10,135	-$7,818
Source: Author's calculations as described in text. Changes measured against benchmark simulation with 14.5% employer superannuation contributions.		

Table 8 Wage Suppression Scenario G.1: Eliminate EBA, Fall Back to Industrial Award		
	Gender	
	Male	**Female**
Super balance on retirement:		
Nominal	$618,161	$471,382
Real ($2017)	$317,364	$242,007
Change from benchmark:		
Nominal	-$268,543	-$225,215
Real ($2017)	-$137,870	-$115,625
Percent	-30.3%	-32.3%
Annual superannuation retirement income: Real ($2017)	$1,738	$13,143
Change from benchmark: Real ($2017)	-$8140	-$6279
Source: Author's calculations as described in text.		

Table 9 Wage Suppression Scenario G.2: Eliminate EBA, Fall Back to Airline Operations Award		
	Gender	
	Male	**Female**
Super balance on retirement:		
Nominal	$539,013	$460,169
Real ($2017)	$276,729	$236,250
Change from benchmark:		
Nominal	-$274,121	-$274,121
Real ($2017)	-$140,734	-$140,734
Percent	-33.71%	-37.33%
Annual superannuation retirement income: Real ($2017)	$16,339	$12,831
Change from benchmark: Real ($2017)	-$8,309	-$7,643
Source: Author's calculations as described in text. Changes measured against benchmark simulation with average weekly earnings from airline transportation.		

performance. Real incomes decline for the duration of the wage freeze. Then the "echo" of that event is experienced in subsequent wage levels (since even after real wage increases recommence, the wage trajectory remains permanently suppressed below its path in the absence of a wage freeze). Finally, the loss of compound interest that would have been earned on the foregone superannuation contributions further amplifies the damage.

Other, more dramatic wage suppression scenarios result in much larger impacts on superannuation balances, annual post-retirement incomes, and cumulative payouts. The most dramatic proportional reductions in superannuation balances and post-retirement incomes are experienced in Scenario G (Tables 8 and 9), involving the unilateral cancellation of EBAs and the retrenchment of wages and other conditions to minimum award levels. In this situation, superannuation entitlements are reduced by about one-third for both men and women – not surprisingly given the dramatic nature of the wage reduction. Nominal (current dollar) superannuation balances on retirement are reduced by up to $270,000. Lifetime nominal income streams paid out from those balances are also reduced by hundreds of thousands of dollars. Clearly workers will endure a dramatic and lasting financial burden from this especially aggressive employer wage suppression strategy.

Figure 3 illustrates the percentage loss in superannuation balances (on retirement), for both male and female workers, corresponding to each of the wage suppression scenarios simulated. As noted, the largest proportional losses are experienced in the case of EBA termination and resulting wage cuts, followed by the reduction of superannuation contribution rates, and wage theft from retail and fast food workers.

Figure 4 provides a similar comparison, this time illustrating the absolute reduction in retirement superannuation balances associated with each wage suppression scenario (measured in nominal dollars).
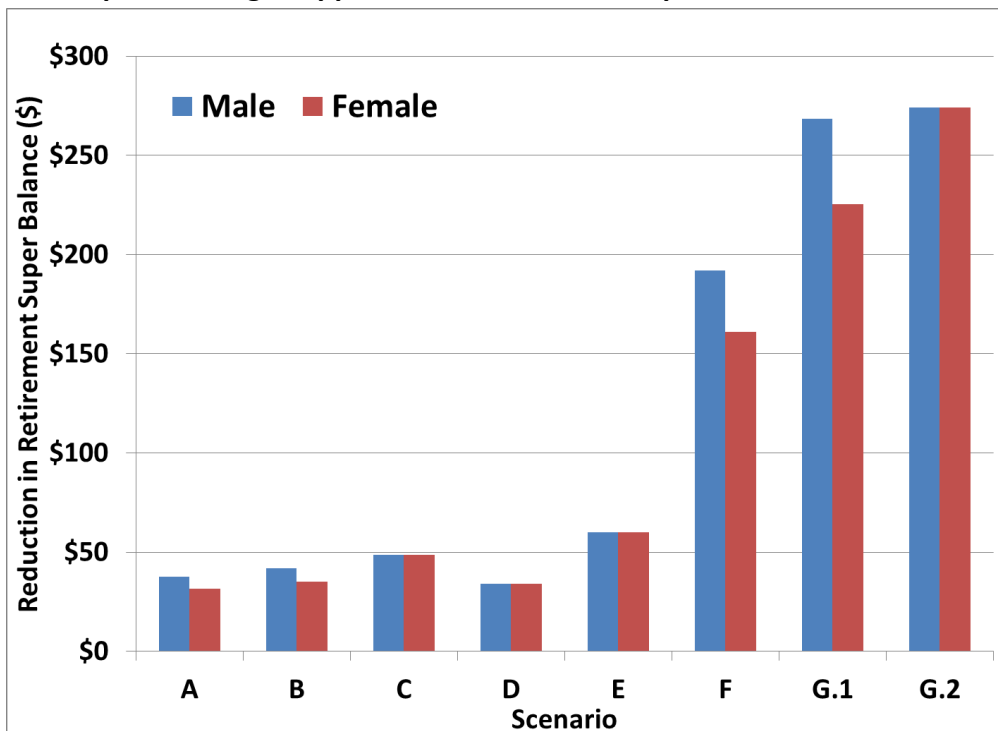
Figure 3

Proportional Impact of Wage Suppression Scenarios on Superannuation Entitlements
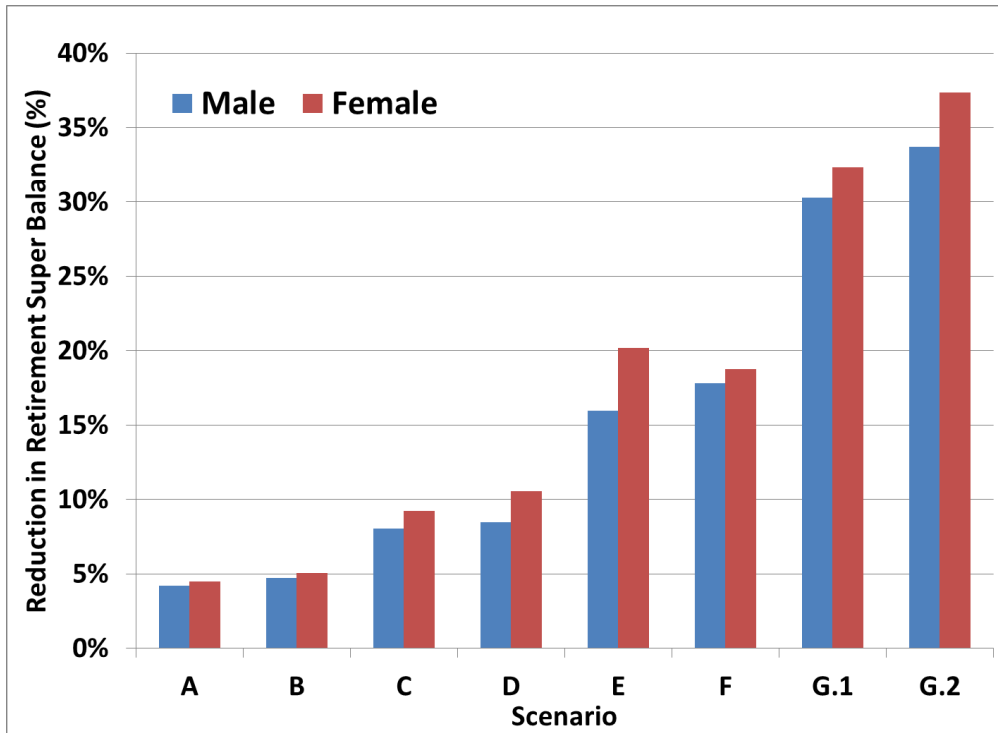
Source: Author's calculations as described in text.

Figure 4

Absolute Impact of Wage Suppression Scenarios on Superannuation Entitlements

Source: Author's calculations as described in text.

Finally, the fiscal impacts of wage suppression on government are also found to be highly negative, and are summarised in Table 10. First off, in the wake of wage suppression the government collects less tax on superannuation contributions and investment income.[41] Later, after the worker retires, government payments of Age Payments increase accordingly – because workers' income streams from superannuation are reduced. The two effects produce a negative net outflow of funds from government, relative to the benchmark simulations. In the most extreme simulations, involving elimination of EBAs and large wage cuts (Scenario G), the government loses up to $25,000 in foregone taxes on superannuation contributions and investment income, while paying out an even larger incremental amount in Age Pension benefits – for a total net fiscal loss that can exceed $50,000 per worker (all figures in real $2017 terms). Even the less dramatic wage suppression strategies (like temporary nominal wage freezes) result in thousands of dollars of lost tax revenue and increased Age Pension payouts. And the ultimate cumulative expense to government when these wage-suppressing measures are imposed across large groups of workers will be enormous (discussed further in Section IV).

In sum, the negative spillover effects resulting from the interaction of employer wage suppression strategies with the superannuation system imposes a significant fiscal burden that is shared by all Australians – not just those who are the direct victims of wage reductions.[42]

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[41] Because this report focuses on the interaction of wage suppression with the superannuation system, we are not considering the reduction in current income taxes paid by these workers through their career as a result of lower wages, which would constitute a much larger fiscal cost on government.

[42] Keep in mind that we have simulated the fiscal side-effects of wage suppression and superannuation conservatively, by assuming a prototypical retired worker (a single non-homeowner) who qualifies for relatively large Age Pension benefits in the first place. For other classes of retired workers (those in couples, and those owning homes), the initial level of Age Pension benefits would be smaller – and the potential growth in those payments as a result of wage suppression would be larger.

Scen.	Gender	Change in Tax	Change in Age Benefit	Change in Net Fiscal Balance
Table 10				
Fiscal Effects of Wage Suppression and Superannuation				
($real 2017 per worker)				
A	M	-$3,394	$3,987	-$7,381
	F	-$2,846	$3,568	-$6,414
B	M	-$3,803	$4,468	-$8,271
	F	-$3,190	$3,998	-$7,188
C	M	-$4,417	$4,466	-$8,884
	F	-$4,417	$4,619	-$9,036
D	M	-$3,075	$1,764[1]	-$4,839
	F	-$3,075	$185[1]	-$3,260
E	M	-$5,425	$1,933	-$7,358
	F	-$5,425	$0[1]	-$5,425
F	M	-$17,399	$22,032	-$39,431
	F	-$14,592	$19,039	-$33,630
G1	M	-$24,330	$27,309	-$51,640
	F	-$20,404	$23,526	-$43,930
G2	M	-$24,835	$26,749	-$51,584
	F	-$24,835	$28,857	-$53,692

Source: Author's calculations as described in text.

1. *In these scenarios, low-wage workers receive full or near-full Age Pension benefits even before the wage suppression, hence the impact of wage suppression on post-retirement Age Pension payments is small or non-existent.*

IV. Aggregate Economic and Fiscal Impacts

The preceding simulations have highlighted the long-run negative impacts on individual retired workers from aggressive wage suppression measures implemented today by employers and governments. Furthermore, the simulations showed how a portion of the resulting losses are borne by government – in the form of reduced tax revenues on superannuation contributions and investment income, and increased payouts of Age Pension benefits.

However, these significant individual impacts are replicated thousands of times over, across the significant numbers of Australian workers who have been confronted with one or more of these wage suppression strategies. As a result, the aggregate impact imposed on the overall superannuation system, the overall incomes of the population of retired persons, and the fiscal position of government, will be enormous unless wage suppression is curtailed and normal wage patterns are restored. This section will broadly describe the likely order of magnitude of these aggregate economic and fiscal costs, resulting from the cumulating impact of wage suppression across Australia's retirement income system.

Table 11 lists the eight scenarios simulated in Part III of the report, together with some broad indicators of the potential number of Australian workers likely to have been affected by each of the specific wage suppression strategies considered. In conducting this analysis, it is difficult to separate the impact of pro-active wage-reducing measures imposed deliberately by employers, from the more general wage stagnation arising as a result of the generally weak condition of labour markets and collective bargaining. As noted above, for example, Australia's *entire labour market* is presently experiencing a freeze in real wages (akin to that described in Scenario B), reflecting a combination of specific policies imposed to restrain wage growth at or below the rate of CPI inflation, together with the side-effects of a generally underutilised labour market (in which workers generally have little leverage to demand and receive higher wages). We cannot predict, of course, how long that effective real wage freeze in the overall labour market will last. So in our tally of the potential number of Australian workers facing some form of active wage suppression, we narrow our approach to those confronting specific policies or measures aimed deliberately at suppressing wages – as distinct from generally weak wage increases resulting from weak overall labour market conditions. However, even that more diffuse and "autonomous" stagnation of wages

(resulting from sustained weakness in the labour market) also impacts superannuation entitlements and the net fiscal costs of the retirement system; and hence the aggregate estimates summarised in Table 11 should be understood as a conservative estimate of the overall impacts of wage suppression on superannuation and Age Pension benefits.

Broad estimates of the number of Australian workers experiencing one or more of these forms of wage suppression are provided below, for each scenario considered. Given the lack of official data regarding most of these wage suppression strategies

	Scenario	Approx. Workers Affected	Lost Super Balance ($real, retirement year)		Net Fiscal Cost ($real)	
			Per Worker ($)[1]	Aggregate ($b)	Per Worker ($)[1]	Aggregate ($b)
A	**2-yr Nominal Wage Freeze**	1,500,000	$16-19,000	$24.2-28.8	$6-7,000	$9.6-11.1
B	**Perpetual Real Wage Freeze**	600,000	$18-22,000	$10.8-12.9	$7-8,000	$4.3-5.0
C	**Effective Income Below Award**	100,000	$25,000	$2.5	$9000	$0.9
D	**Sunday Penalty Rates Cut**	550,000	$17,000	$9.6	$3-5000	$1.8-2.7
E	**Wage Theft in Fast Food, Retail**	167,000	$31,000	$5.1	$5-7000	$0.9-1.2
F	**Super Contr'bn Rate Cut to SG**	100,000	$83-99,000	$8.3-9.9	$34-39,000	$3.4-3.9
G	**EBA Terminated, Back to Award**	240,000	$90-140,000	$21.6-33.6	$44-54,000	$10.5-12.9
TOTAL		**3.25 million[2]**		**$82.1-102.5 billion**		**$31.4-37.7 billion**

Table 11
Aggregate Economic and Fiscal Impacts of Wage Suppression Through the Superannuation System

Source: Author's calculations as described in text.
1. *Rounded to nearest $1000, as reported in Table 2-9 and Table 10.*
2. *This total has double-counted individuals who experience more than one form of wage suppression, but the estimates of aggregate losses in super balance and fiscal flows have not double-counted the corresponding values (since the costs arising from each channel of wage suppression have been modeled distinctly).*

(some of which, after all, are illegal), these estimates should be considered as indicative of the broad order of magnitude of the incidence of wage suppression (rather than as precise point estimates). However, ample evidence attests to the fact that large numbers of Australian workers have indeed faced one or more of these forms of wage suppression – with consequent implications for their long-run superannuation entitlements.

Scenario A: A large number of Australian workers have experienced temporary nominal wage freezes imposed by employers in both the private and public sectors of the economy. Just the few major employers directly listed in Part III above (including major private-sector employers such as Qantas, and numerous government agencies at the Commonwealth, state, and municipal levels) alone account for over one-half million employees. But the incidence of temporary wage freezes is much greater than this. Analysts at the Reserve Bank of Australia have recently analysed the current slowdown of wages on the basis of new micro data;[43] they found that the slow pace of wage growth can be decomposed into a smaller proportion of workers receiving any adjustment in their wages, and a decrease in the size of a typical wage adjustment. Using quarterly data, the RBA report finds a marked decrease in the proportion of workers who receive a wage adjustment in any particular quarter: to about one-fifth of all workers per quarter, down from one-quarter in 2012. The data are not longitudinal and hence it is not possible to trace the time duration between wage adjustments for individual workers; however, on the simplifying assumption that the probability of receiving a wage increase is independent across quarters, we can generate an approximate estimate of the proportion of workers who could wait two consecutive years for a nominal wage increase: by this measure 16.8 percent of all workers might go two years without a wage adjustment.[44] Moreover, the RBA analysis also notes that about 5 percent of wage adjustments in any particular quarter are in fact *negative* (and they are included within the 20 percent of workers who *do* receive a wage adjustment in each quarter), so the probability of not having a wage *increase* over a two year period could be even larger than this.[45] Applied to the population of non-managerial employees (just under 10 million), the 16.8 percent ratio generates an estimate of over

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[43] See James Bishop and Natasha Cassidy, "Insights into Low Wage Growth in Australia," *RBA Bulletin*, March 2017, pp. 13-20.

[44] If the probability of not receiving a wage adjustment in a particular quarter is 0.8, then the joint independent probability of not receiving a wage adjustment in eight consecutive quarters is 0.8^8, or 16.8 percent.

[45] In the RBA's analysis, if 5 percent of the 20 percent of workers receiving a wage adjustment in any quarter experienced a wage *decrease*, that would represent about 4 percent of having their pay cut workers over the course of a year.

1.5 million Australians who are likely to have experienced a nominal wage freeze for two years.

Scenario B: Many Australian workers are presently experiencing a freeze in real wages; indeed, in a shorter-run perspective, the experience of Australia's entire labour market over the last year is consistent with this scenario (with nominal hourly wage increases barely matching CPI growth). The number of workers subject to frozen real wages on an indefinite basis as a matter of explicit policy is smaller, consisting mostly of employees of various state governments. The public sector wage policy of the NSW government is the most well-defined example of this form of indefinite real wage suppression; it applies to some 400,000 employees in the state's broader public sector.[46] Considering wage policies that impose indefinite real wage freezes in other government and public sector organisations (where this practice is most common) conservatively brings the likely total to in excess of 600,000 employees in aggregate.

Scenario C: Concerns that certain enterprise agreements, often determined without the active participation of the relevant union, may result in effective compensation to employees that is inferior to the minimum terms specified in relevant Modern Awards have been expressed and pursued in several sectors. Examples include food retail, fast food, and transportation services. At least 100,000 workers in Australia are covered under enterprise agreements which are being challenged, or have already been terminated, for failure to pass the "better-off overall test."

Scenario D: On average over the 2014-16 period, an estimated 550,000 workers worked Sundays in the sectors covered by the Fair Work Commission's recent decision on penalty rates.[47] Reduced penalty rates in these industries will reduce incomes and consequently superannuation contributions; the proportional wage cuts each worker experiences will depend on their individual shift patterns, but the working pattern described above in Scenario D (16 hours per week, half on Sundays) is not atypical. The workers affected by lower penalty rates include non-managerial employees who are employed under the minimum conditions of a Modern Award, but also those working under collective or individual contracts – whose pay will also ultimately be undermined by the lower threshold against which the "better-off overall test" must be applied in judging their compensation.

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[46] See NSW Public Service Commission, *Workforce Profile Report*, 2016, http://www.psc.nsw.gov.au/reports---data/workforce-profile/workforce-profile-reports.

[47] David Peetz, "The Impact of the Penalty Rates Decision on Australian and Victorian Workers in Retail and Hospitality Industries," Department of Economic Development, Jobs Transport and Resources, State of Victoria, May 2017, https://t.co/zcNnbceXHa.

Scenario E: Of course there are no official data describing the incidence of wage theft through cash-in-hand arrangements in the small retail, fast food, and other low-wage small-scale service sectors (since the process is illegal). However, there is abundant evidence that this is a widespread phenomenon – one that has not been energetically challenged by regulators.[48] One survey of young workers in the restaurant and retail sectors in Wollongong found a large proportion experienced underpayment in various forms (including illegal unpaid work trials, cash-in-hand wages below the minimum wage, and other abuses).[49] An audit of on-line restaurant job ads in ethnic media in Sydney found 78 percent of advertised jobs were offering less than the legal minimum wage.[50] The problem of wage theft is also widespread in the cleaning industry; for example, a review by the Fair Work Ombudsman found a 37.1 percent rate of non-compliance with statutory minimum standards among cleaning contractors.[51] We assume conservatively that 10 percent of total employment in the fuel retail, other store-based retail, food and beverage service, and cleaning and pest control industries (or some 167,000 workers in total[52]) have experienced wage theft in the form of under-Award wage payments.

Scenario F: This scenario reflects efforts by employers to reduce superannuation contributions that were initially in excess of minimum statutory requirements. In many cases, this form of wage suppression will be experienced in tandem with the termination of an EBA (which may have specified above-minimum contribution rates); this was the case, for example, in the EBAs that were terminated at Griffin Coal, Murdoch University, and Aurizon.[53] In the current case of Murdoch University, for example, the previous EBA provided for a 17 percent contribution rate, which may now fall by 7.5 percentage points back to the SG minimum (a bigger drop than

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[48] See Paul Karp, "Coalition Plans Crackdown on 7-Eleven-Style Wage Theft," *The Guardian*, May 19 2016, https://www.theguardian.com/australia-news/2016/may/19/coalition-plans-crackdown-on-7-eleven-style-wage-theft.

[49] See Anna Patty, "The Great Student Swindle," *Sydney Morning Herald*, 2016, http://www.smh.com.au/ interactive/2016/great-student-swindle/.

[50] See Paul Gregoire, "Reducing Wage Theft: An Interview with Unions NSW's Thomas Costa," Sydney Criminal Lawyers, July 28 2017, https://www.sydneycriminallawyers.com.au/blog/reducing-wage-theft-an-interview-with-unions-nsws-thomas-costa/.

[51] See Fatima Measham, "Exploitation of Workers in Australia's Cleaning Industry," *Right Now*, March 22 2016, http://rightnow.org.au/opinion-3/exploitation-of-workers-in-australias-cleaning-industry/; and Fair Work Ombudsman, "National Cleaning Services Campaign," June 2011, https://www.fairwork.gov.au/ArticleDocuments/714/national-cleaning-services-campaign-final-report.pdf.aspx/.

[52] Author's calculations from ABS Catalogue 6291.0.55.003, Table 6.

[53] Note that the estimates of reduced superannuation entitlements described in Scenario G cover the impact of EBA termination on wage rates only, hence this scenario (involving the separate impact of EBA termination on superannuation contribution *rates*) does not double-count those losses.

assumed in Scenario F). Another dimension of this problem is experienced via the significant proportion of Australian workers whose employers fail to even contribute according to the minimums specified in Superannuation Guarantee guidelines; the Australian Tax Office has recently estimated that aggregate evaded contributions total $2.85 billion per year (or over 5 percent of all contributions),[54] while Industry Super Australia has estimated that 2.76 million Australian workers experience some form of superannuation underpayment from their employers.[55] However, the more direct attack on superannuation contribution rates envisioned in Scenario F is less common; we conservatively assume that 100,000 Australian workers have experienced some reduction in superannuation contribution rates by their employers.

Scenario G: Federal Department of Employment data indicate that the number of private sector workers employed under an enterprise agreement has declined sharply over the last three years (overlapping closely with the time period since the Fair Work Commission's precedent-setting Aurizon decision). Private-sector EBA coverage has shrunk by 479,000 positions from December 2013 through March 2017 (a decline of 25 percent in just over three years).[56] At the same time, the proportion of workers employed under the terms of Modern Awards has increased substantially: from 17.9 percent of all non-managerial employees in 2012, to 24.5 percent by 2016.[57] The number of workers covered only by a minimum award grew by over 700,000 (or almost 50 percent) in that period. It is therefore reasonable to assume that a substantial proportion of the private sector workers who used to be covered under an enterprise agreement but are no longer, have fallen back onto the minimum terms and conditions specified by a Modern Award. We will conservatively assume that half of the workers formerly covered by an EBA in the private sector (or 240,000 workers in total) have ultimately transitioned to coverage by an Award.

Considering all of these specific instances of active wage suppression, it is clear that a very large number of Australian workers – likely in excess of 3 million, or around one-quarter of the entire labour force – have been the victims of deliberate wage-reducing policies enacted by employers and governments.[58] The most common forms of wage

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[54] See John Collett, "Tax Office Reveals Size of Underpayment of Super for the First Time," *Sydney Morning Herald*, August 29 2017, http://www.smh.com.au/money/super-and-funds/tax-office-reveals-size-of-underpayment-of-super-for-the-first-time-20170829-gy65t8.html.

[55] Industry Super Australia, "Unpaid Super,"January 2017, http://www.industrysuperaustralia.com/ campaigns/ httpwww-industrysuperaustralia-comassetsuploadsfinal-unpaid-super-january-2017-pdf/.

[56] Department of Employment, "Trends in Federal Enterprise Bargaining," August 2017, https://www.employment.gov.au/trends-federal-enterprise-bargaining.

[57] Author's calculations from ABS Catalogue 6306.0, Data Cube 9.

[58] We note again that the estimates in Table 11 should be interpreted only as broad indicators of the order of magnitude of the incidence of each form of wage suppression, given the lack of official data

suppression include temporary nominal wage freezes, indefinite real wage freezes, and the reduction of penalty rates for Sunday work.

With such a large number of workers confronting wage suppression strategies, the aggregate economic and fiscal impacts of wage suppression (experienced through the superannuation system and its interaction with Age Pension benefits) will be enormous if the pattern of wage suppression is maintained. Table 11 reports the product of the number of workers estimated to be experiencing each variety of wage suppression, with the per-worker reductions in retirement-year superannuation balances estimated to arise in each instance (as reported above in Tables 2 through 9). In every case, the aggregate reductions in workers' superannuation balances by the time they retire (once again assuming that workers' wages do not "catch up" to these wage reductions in future years) measure in the billions of dollars. A range of estimates is provided for each scenario, reflecting differences in the impacts experienced by male and female workers. The most damaging scenarios in an aggregate sense are the two-year nominal wage freeze and the unilateral termination of EBAs – each of which would ultimately reduce aggregate superannuation balances by $20 to $30 billion (measured in real $2017 terms). In the former case, the aggregate loss is large because of the large number of workers experiencing wage freezes; in the latter case, it is because of the very large impact of EBA termination on the superannuation savings of individual workers. But all the other wage suppression scenarios would also ultimately reduce aggregate superannuation balances by many billions of dollars (by the time affected workers reach retirement age). Across all scenarios considered, the aggregate toll on affected workers' superannuation balances on retirement would be enormous: between $82 and $102 billion by the time they retire.[59] As above, these estimates are contingent on the assumptions incorporated into the superannuation simulation model (including the current age of the affected workers), the assumption that the impact of the defined wage suppression scenarios on the affected workers is sustained through the rest of their career (that is, they do not "catch up" to their previous wage trajectories in subsequent years), and on our broad estimates of the number of workers faced with wage suppression in each scenario.

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on most of the populations affected by each strategy (some of which, after all, are illegal). Note also that the total number of workers identified in Table 11 will double-count some who experience more than one of the specific forms of wage suppression identified – however the aggregate value of lost superannuation and net fiscal revenues do not double-count, since the costs arising from each scenario have been simulated separately.

[59] Keep in mind these losses are measured in real $2017 terms; in current dollars by the time the workers retire, the nominal figures will be much larger.

The cumulative fiscal damage of wage suppression experienced by governments would also be very large, as indicated in the last columns of Table 11. Applying the per-worker fiscal losses (arising from both reduced taxes on superannuation contributions and investment income, and increased Age Pension payouts after affected workers retire) reported above, to the same broad estimates of the number of workers potentially affected by each wage suppression scenario, provides an estimate of the order of magnitude of future fiscal effects on government.[60] Once again the fiscal losses would be largest in the cases of the nominal wage freeze (because so many workers are affected) and the EBA termination (because the cost per worker is so high). Across all the scenarios considered, government could ultimately lose between $31 and $38 billion (in real $2017 terms) in cumulative foregone tax revenues and increased Age Pension payouts. Clearly, all Australians will pay a high price in the long-run, if employers' aggressive wage suppression strategies are allowed to continue – not just those particular workers whose wages are directly cut.

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[60] Again, this does not include the loss of current income tax to government resulting from wage suppression; we consider here only fiscal effects experienced through the operation of the superannuation and Age Pension systems.

V. Conclusions and Policy Implications:

It is clear that the processes of wage determination in Australia's labour market have been shocked in recent years by a combination of chronic demand-side weakness, the erosion of wage-setting institutions, and an aggressive new attitude on the part of employers who are driving down wages and breaking the traditional relationship between incomes and productivity. Australian workers continue to become more productive every year. But real wages are not growing at all – and for many workers they are falling, in some cases dramatically.

Overall labour income averages are the composite outcome of wage decisions that are made in thousands of different workplaces every year. And in many of those workplaces, workers have been confronted with extraordinary and aggressive wage suppression strategies, which are now an important factor behind the overall stagnation of labour incomes. There are many consequences arising from the unprecedented stagnation of wages, and the breakdown of the normal link between productivity and incomes – including personal and familial financial stress, weak consumer spending and purchasing power, and damage to government fiscal balances. The simulations reported in this report confirm that lasting damage is also being done to Australia's retirement income system by the aggressive wage suppression strategies of employers.

All Australians will pay a significant price if wage growth is not restored, so that labour incomes begin once again to rise at least in tandem with productivity. Workers, unions, governments, and superannuation trustees and administrators should all be cognizant of the damage to superannuation accumulation, and the corresponding increased costs of Age Pension benefits, arising from wage-suppressing actions by employers. From the perspective of superannuation governance, an additional consideration must be taken into account: if the goal of the system, as defined by the "sole purpose" test, is indeed to maximise the retirement benefits of superannuation fund members, then the growing use of wage suppression strategies by employers is a relevant and concerning development – one that would seem to justify a response from the superannuation system.

Appendix A: Modeling Assumptions

This section describes the assumed values for key parameters utilised in the base-case accumulation simulations, and sources (where relevant) for those assumptions. Sensitivity tests are conducted for key input variables, as indicated (and reported in Appendix B), to consider the impact on final simulation results of changes in key parameters.

Age: The base case assumes a worker initially aged 40. Sensitivity cases consider the impact of simulation results on younger (30) and older (50) workers.

Gender: We separately simulate the accumulation and pension payments for men and women. The key differences between the genders are different starting earnings, differences in the assumed initial superannuation balance, and differences in assumed longevity (all discussed below).

Inflation: Long-run inflation is assumed to equal the mid-point of the Reserve Bank of Australia's target band, 2.5 percent. This assumption is relevant mostly with respect to the conversion of the real ($2017) figures calculated within the model into nominal current-dollar terms.[61]

Starting Earnings: Most of the modeled scenarios assume the workers initially earn an annual amount equivalent to the average ordinary time weekly earnings for full-time workers, by gender. This equals $1631.90 per week for men, and $1368.60 for women (ABS Catalogue 6302.0). In some scenarios, initial wages are set in reference to a minimum award rate, as described in the scenario. Sensitivity cases consider the impact of simulation results with 20% higher starting wages.

Wage Growth: Earnings are assumed to increase by a long-run average of 0.5 percent per year in real terms.[62]

Retirement Age: We assume the worker retires at age 67, the statutory retirement age for purposes of the Age Pension that will apply (effective 2023) to workers in all modeled scenarios.

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[61] The inflation assumption is also relevant in modeling the impact of the two-year nominal wage freeze in Scenario A.

[62] This is slightly slower than the recorded experience of average hourly real wages in recent Australian history. For example, measured by the growth in the Wage Price Index relative to growth in the Consumer Price Index, real wages have grown at an annual average rate of 0.6 percent in Australia over the past 10 years; author's calculations from ABS Catalogues 6345.0 and 6401.0.

Opening Superannuation Balances: On the basis of AFSA data regarding median superannuation holdings by gender by age group,[63] we assume a 40-year old male worker has an initial superannuation balance of $50,000, while the 40-year old female worker has $30,000.[64]

Contributions: Employer contributions (before tax) are as specified in the current timetable for the Superannuation Guarantee: 9.5 percent of earnings at present, phasing up to 12 percent by 2026.[65] In our scenarios, no employees exceed the maximum contributions base for the Guarantee.

Investment Returns: We assume a gross nominal annual rate of return on assets of 6.0 percent, reflecting industry expectations for returns on a typical balanced portfolio.[66] This implies long-run after-inflation returns of 3.5 percent per year, from which annual administration and investment expenses of 0.5 percent must be deducted. Sensitivity cases consider the impact of simulation results with higher (7.0%) and lower (5.0%) returns. We assume investment earnings are paid at the midpoint of each year.

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[63] See Ross Clare, "Superannuation Account Balances by Age and Gender," Association of Superannuation Funds of Australia, December 2015, https://www.superannuation.asn.au/policy/reports.

[64] We have selected median superannuation balances corresponding to the mid-point of the 40-44 year age band reported by Clare (even though our assumed workers are only 40). However, the actual median balance for each gender has likely grown since the data underlying Clare's report was assembled, so the two changes should broadly offset each other.

[65] See Australian Tax Office, "Super Guarantee Percentage," https://www.ato.gov.au/rates/key-superannuation-rates-and-thresholds/?anchor=Superguaranteepercentage#Superguaranteepercentage.

[66] This figure equals the average realised nominal annual rate of return for Australian super funds over the past 15 years; see Association of Superannuation Funds of Australia, "Superannuation Statistics," June 2017, https://www.superannuation.asn.au/resources/superannuation-statistics. It is also representative of the forward-looking assumptions typically used in actuarial and consulting simulations of future superannuation accumulations. For example, a survey of Australian retirement income simulators conducted by the consulting firm Chant West found the median rate of return assumed was between 5.75 and 6.5 percent, consistent with our 6.0% base case; see Janice Mace, "Retirement Income Calculators: Crystal Balls or Wishful Thinking?," *SuperGuide*, August 21, 2017, https://www.superguide.com.au/boost-your-superannuation/retirement-income-calculators. Our 6.0% assumption exceeds the benchmark return assumption for a balanced fund (4.8%) made in ASIC's own "Smart Money" retirement income planning tool (see https://www.moneysmart.gov.au/tools-and-resources/calculators-and-apps/retirement-planner), but that cautious assumption falls well below the forward-looking assumptions used in other industry simulations (it was in fact the lowest assumed rate of return in all the simulators surveyed by Chant West) and below recorded long-run actual average returns.

Taxation: Employer contributions to the superannuation fund are taxed at a 15 percent rate, as are investment earnings within the fund (up until the year of retirement, after which investment earnings are non-taxable under the account-balance system).

Pension Payout: The model calculates an annual stream of income from the worker's superannuation fund (as an account-based or allocated pension) such that the accumulated fund is exhausted 4 years after the current assumed life expectancy at retirement age. This 4-year margin is incorporated to reflect the likely increase in retirement life expectancy over the worker's remaining life, and/or to represent a desired cushion to make it less likely the worker outlives their superannuation.

Life Expectancy: Men who have reached retirement at age 67 are presently assumed to live another 19 years (to 86), while women are assumed to live another 22 years (to 89).[67] As noted, our simulation model boosts those by 4 years each (to 90 for men and 93 for women). This assumption does not affect estimates of accumulated superannuation assets, only the estimated annual payouts from that balance.

Age Pension Benefits: Each retired worker's Age Pension entitlements will depend on their specific personal and financial circumstances, including whether they are single or part of a couple; whether they own their own home; their other sources of income; and their assets (including both superannuation and non-superannuation assets). For the benchmark simulation we assume a single worker, who does not own their own home, and has no other assets or sources of income; the resulting Age Pension entitlement could be lower for workers in other circumstances, and hence this simulation should be considered as an upper bound on the value of Age Pension payout they are likely to receive.[68] Given these assumed characteristics, in all scenarios but one, the retiree passes the asset test for the Age Pension.[69] So in most cases the

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[67] Calculated from medium mortality rate assumptions in ABS "Population Projections 2006-2101"; Qsuper Superannuation Fund, qsuper.qld.gov.au.

[68] For example, a single worker who does not own their own home would not experience any taper in Age Pension benefits resulting from the application of the asset test under any of the simulations considered in this report; only the income test would constrain their Age Pension benefits. For home-owners or members of couples, the asset test could constrain Age Pension payouts in the early years of their retirement (reducing benefits by $3 for every $1000 of assets). This would serve to *increase* the net fiscal impact of *reductions* in superannuation balances (since the tapering of benefits under the asset test is more severe than under the deemed income test), and hence the fiscal effects reported in these simulations are conservative.

[69] The only circumstance in which a single non-home-owning retiree would have enough superannuation assets for the asset test to reduce their Age Pension is the benchmark scenario for the male worker with an initial 14.5% contribution rate (Scenario F); in that case the asset test reduces their Age Pension more than the income test during the first years of retirement.

amount of age pension paid out will be reduced 50 cents by every dollar of deemed income from the retired worker's superannuation account (over the lower threshold).[70] If in fact the worker is entitled to less Age Pension benefit than implied in the base case scenario, then the increase in Age Pension resulting from the impact of lower wages on superannuation savings is likely to be greater (since the taper rates associated with the income and/or asset tests will be in effect); in this regard, our estimates of the fiscal side-effects of wage suppression are conservative.

Age Pension Maximums and Thresholds: The simulation assumes that Age Pension maximum benefits, and the thresholds for application of the income and asset tests, are adjusted in line with annual CPI inflation (that is, they are held constant in real terms).

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[70] Superannuation assets are converted into deemed income at an assumed annual rate of return of 1.75% per year for balances below $50,200, and by 3.25% per year for assets above that level; deemed income above the minimum thresholds ($168 per fortnight for singles, $300 per fortnight for couples) reduces Age Pension benefits by 50 cents for each dollar. For single retirees, this is equivalent to reducing annual Age Pension benefits by 1.625% for all superannuation assets over $157,569, which is the minimum assets required for deemed income to exceed the $168-per-fortnight lower threshold. For more details on the application of the deemed income and asset tests to superannuation see Australian Department of Human Services, "Age Pension," https://www.humanservices.gov.au/individuals/services/centrelink/age-pension.

Appendix B: Sensitivity Test Results:

The simulation results above depend on the specific modeling assumptions described in Appendix A, regarding age, income, income growth, investment returns, retirement age, life expectancy, and more. Changes in these modeling assumptions have implications for the outcomes of the simulations – and hence for our estimates of the impacts of wage suppression on superannuation accumulation, post-retirement incomes, and government fiscal effects. To evaluate the sensitivity of those results to some of the more important input parameters, we conducted several sensitivity tests: whereby we vary the input parameter in question and track the impacts on the simulation results. This approach helps to confirm the robustness of our findings to the particular modeling assumptions.

Table 12 summarises the results of these sensitivity tests. Variations in three specific input parameters were considered:

- *Starting age of the worker*: The benchmark simulations assume a worker at age 40. The sensitivity tests consider the cases of workers who are 30 and 50.
- *Starting earnings of the worker*: Most of the simulations consider a worker earning the average ordinary-time full-time earnings (separately defined for male and female workers). We consider a sensitivity case of workers initially earning 20 percent more than the average.
- *Long-run annual investment returns*: The benchmark simulations assume a long-run nominal return on assets of 6.0 percent. The sensitivity tests consider cases of 5.0 and 7.0 percent per year.

Sensitivity tests were performed by varying these input parameters for all of the scenarios reported above. For brevity, Table 12 reports the findings for just one of those scenarios: Scenario A, measuring the impact of a two-year freeze in nominal wages (and a corresponding 5 percent reduction in real wages over two years). The results of these tests are not surprising. If workers are younger; if their initial wages are higher; and/or if the investment earnings on their accounts are higher, then the implications of wage suppression on their superannuation savings and post-retirement incomes will be greater.

Table 12 Sensitivity Tests of Reduced Superannuation Balances on Retirement ($real 2017)				
		30	**40**	**50**
Starting Age	**Male**	-$31,418	-$19,231	-$14,016
	Female	-$26,349	-$16,128	-$11,755
Starting Earnings		**Average**	**20% Above Average**	
	Male	-$19,231	-$23,077	
	Female	-$16,128	-$19,354	
Investment Returns		**5%**	**6%**	**7%**
	Male	-$17,136	-$19,231	-$21,644
	Female	-$14,371	-$16,128	-$18,152
Source: Author's calculations as described in text.				