Retirement savings and income responses from increases in public pension eligibility ages

Ha Vu , Deakin University

with Marc Chan, Cain Polidano and Roger Wilkins, University of Melbourne

Son Nguyen, Australian Tax Office

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Motivation

- In response to population ageing, governments around the world increase the minimum age of access for public pensions.
- The impacts of such changes on individual retirement income and government fiscal savings depend largely on labour supply and savings responses.
- To date, the literature has almost exclusively focussed on labour supply responses, and little has been known about savings responses.

Motivation

- Savings responses are more difficult to predict, as compared to labour supply responses.
- As noted by Etgeton et al. (2022), savings responses are likely to depend on the extent to which people anticipate working longer.
  - If people anticipate more time in work and less in retirement, people may be discouraged from contributing to retirement savings.
  - However, if people plan to avoid extending their time in work, they may increase savings ahead of retirement age to fill the breach in income created by the delay in pension availability.
- The adjustments in savings discussed assume that people are active savers and are forward looking, but there is also evidence that people are generally passive savers (Chettey et al. 2014), which suggests many people may simply extend their time in work without adjusting savings.

Our study

- We examine impacts from increases in public pension access from 65 to 67 on private pension contributions and labour supply responses in Australia.
- These reforms, introduced in May 2009, were implemented through four six-monthly increments (for both males and females) every two years from 1 July 2017.
- We use the (ALife) administrative data that links tax records and superannuation contributions.
- We apply regression discontinuity design (RDD), exploiting step jumps in pension eligibility age around birthdate cut-offs to cleanly estimate the casual effects of the reforms.

Contribution

- To our best knowledge, we are the first to examine the savings responses from an increase in full retirement age.
- We build on Etgeton et al. (2022) who used survey data to examine the impacts of savings responses to increases in the early retirement age.
- We provide first evidence on the extent of substitution between private pension wealth and public pension wealth.
- Our study speaks to a wider literature on the substitution between public pension wealth and savings that typically utilises changes in pension wealth through other means besides changes in the pension eligibility age (Attanasio and Brugiavini (2003); Attanasio and Rohwedder (2003); Bottazzi et al. (2006); Aguila (2011); Feng et al. (2011); Hurd et al. (2012); Lachowska and Myck (2018)). These studies show that when faced with reductions in public pension wealth via the reduction in benefit size, people tend to increase savings.
- As noted by Etgeton et al. (2022), the pension age is a salient signal of 'socially acceptable' time to retire and hence, increase in pension ages may elicit stronger labour responses and more muted savings responses.

Tentative findings

- The increases in age pension eligibility age seem to have no impact on private pension contributions.
- We also find no response in labour supply ahead of *the affected ages*- the ages at which the age pension eligibility were delayed.
- We find strong labour supply at *the affected ages*.
- Overall, the results suggest that increases in age pension eligibility age elicits strong labour supply at the affected ages, but not much else.
- We will do further work to undercover the underlying mechanisms for these observed findings.

Rest of the talk

- Policy background
- Discussion of expected effects
- Data
- Model
- Key results
- Future research direction

Age Pension

- Non-contributory scheme — eligibility and benefit size depend on current income and assets and not employment history.
- To be eligible, applicants must be of eligible age and have (joint for couples) income and assets, excluding the value of the family home, below maximum thresholds.
- Full pension, which is legislated to be at least 27.7% of male average earnings for single claimants and 41.76% for couples.
- The size of the benefit received is tapered according to their asset and income levels.
- In 2016, the upper asset thresholds were A$937,250 for singles and A$1,319,000 for couples. For those who own their own home, these thresholds are around A$150,000 less.

The reform

From 2017 age pension eligibility age of men and women was raised by 6 months every two years from 65 to 67.
This reform announced in 2009.

Date In Effect	Affects men & women born (both dates inclusive)	Pension age
1/07/2017	01/07/1952 to 31/12/1953	65 years and 6 months
1/07/2019	01/01/1954 to 30/06/1955	66 years
1/07/2021	01/07/1955 to 31/12/1956	66 years and 6 months
1/07/2023	On or after 01/01/1957	67 years

Superannuation

- Near universal coverage of employees. Superannuation contributions are made through three channels: (1) employer contributions; (2) voluntary concessional contributions and (3) voluntary personal contributions.
- Over the period of analysis, the minimum required rate of employer contributions to employee superannuation accounts was initially 9%, but increased over time.
- Employer contributions, voluntary concessional (pre-tax) contributions are taxed at a concessional rate of 15%. Returns to superannuation while in the accumulation phase are also taxed at a flat rate of 15%.
- There is a minimum age for access to superannuation (55 until 2015, but progressively increasing to 60 by 2024), with the added requirement that the holder of the account is retired if aged under 65. Benefits are paid as either a lump-sum or as an income stream. If the latter option is taken, there are requirements for minimum rates of drawdown. Since 1 July 2007, all withdrawals from the fund in the retirement phase after the age of 60 have been tax free, as have been returns accrued during this phase.

Expected effects of increases in APE age

- The changes in pension eligibility age represent a reduction in pension wealth and at the same time, remove work disincentives during the affected ages.
- Reduction in pension wealth and work disincentives will induce those, who would intend to retire and enter welfare systems at the old retirement age, to work more. For those who intend to work more, they may want to *save less*. But for those who don't like to work more, they would need to save more or draw-down more of the private wealth later.
- Note that the reduction in pension wealth for those who plan to retire before the old retirement age would mean that they would either need to retire later, save more or draw-down more of private wealth. Theoretically, we should see a response in labour supply ahead of the directly affected ages because of this group.

Data

- Alife Data
  - Annual tax file data (1990/91-2018) linked longitudinally through tax file number.
  - Superannuation data is from member contribution statements (high quality) are available from 1996/97.
  - Voluntary contributions are available from 2009/10.
  - Balance data are available from 2012/13 onwards.

Sample selection

- We employ RD analysis, estimating the impacts for each of the incremental increases in Age Pension Eligibility age. Accordingly, we select the following birth cohorts:

Birth cohorts used in the analysis	Age Pension Eligibility Age
1. January 1951-June 1952	65.0
2. July 1952-December 1953	65.5
3. January 1954-June 1955	66.0
4. July 1955-December 1956	66.5
5. January 1957-June 1958	67.0

Sample selection

- Select those in five birth cohorts who were observed to have employment income (either from wages &salary or from own business, self-employed sources) in at least four financial years in the period from 2000-01 to 2007-08 financial years.
- Then we follow these people over the estimation period 2000-01 to 2017-18 (or until their death for those who died in the sample period).
  - We can estimate the 'placebo' effects for 9 years prior to the announcement of the reform.
  - We can estimate the policy effects for 9 years after the announcement of the reform.

Key variables

- Total contributions: from all sources
- Voluntary contributions (available from 2009/10 onwards)
- Total employment income (inclusive of superannuation pre-tax contributions). Note that for those who did not submit tax returns, we assume they have no employment income.
- Investment income: (interest income plus dividends plus net rental income). We exclude those who don’t submit tax returns in the analysis.
- Draw-downs (to be done)
- For each outcome, we exclude top 2% values of the pooled sample: 2000/01- 2017/18.

Econometric Model: Regression Discontinuity Design (RDD)

- We employ a local linear regression, a common econometric specification in RDD analyses:

$$y_i = \alpha + \beta_0 T_i + \beta_1 (X_i - c) + \beta_2 T_i (X_i - c) + \epsilon_i$$

  - where the estimation is based on a subset of the data within a chosen bandwidth/distance *h* to both sides of the DOB cut-off threshold *c. For the example, 1 July 1952 for the first incremental increase.*
  - i denotes birth date i, X_i denotes the birthdate (running variable).
  - T_i is the treatment indicator (=1 if $\mathrm{X_i} > c$, zero otherwise).
  - β_0 is the treatment effect, measuring the impact of **the 6-month increase** in age pension eligibility age.
  - y_i is outcome variable.

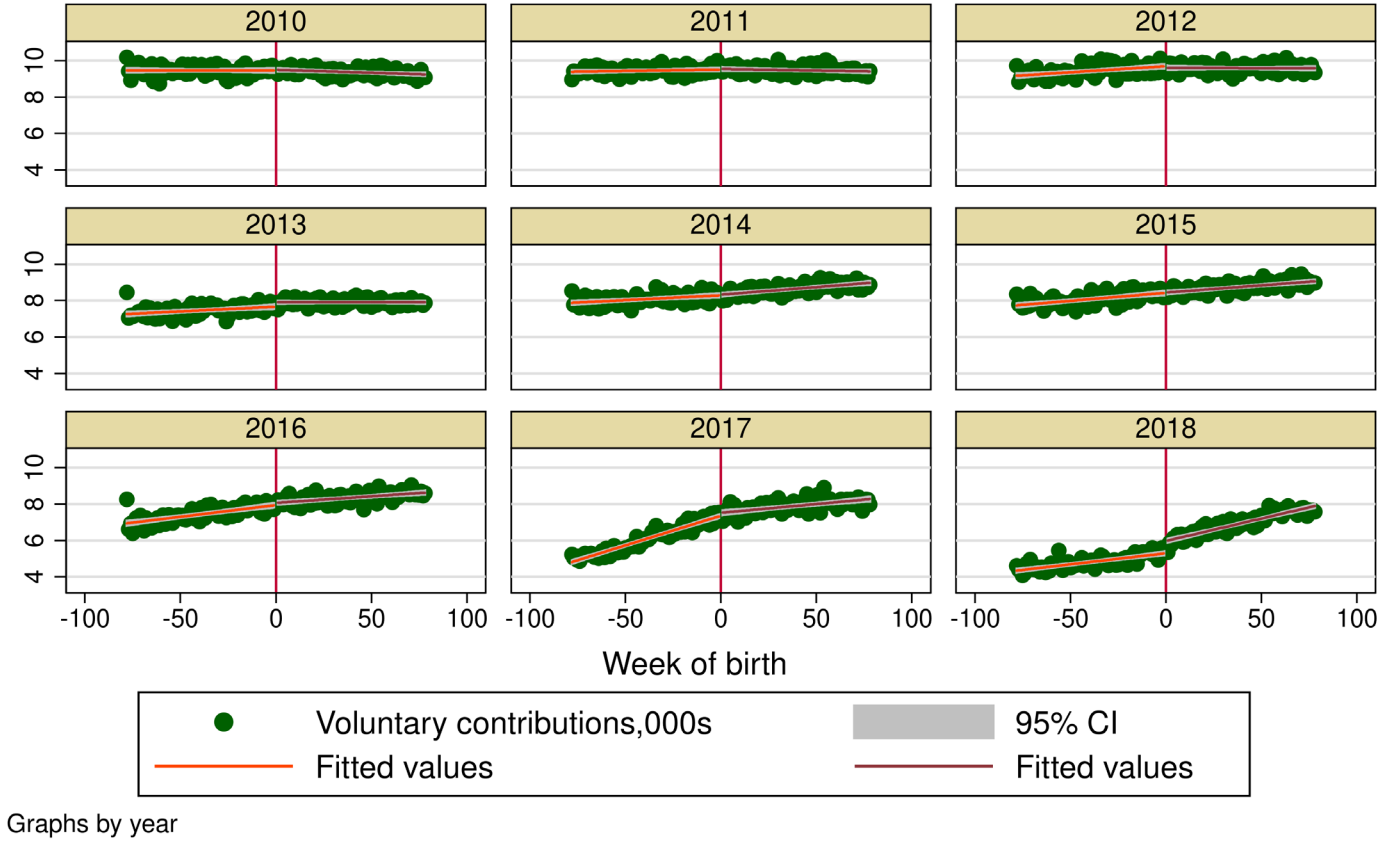
Bandwidth and estimation sample for each increase

- For the time being, we choose 18-month bandwidth.
- **Birth cohorts**
  - **1. January 1951-June 1952 (65.0)**
  - **2. July 1952-December 1953 (65.5)**
  - **3. January 1954-June 1955 (66.0)**
  - **4. July 1955-December 1956 (66.5)**
  - **5. January 1957-June 1958 (67.0)**
- **Note only incremental increase number 1 treated group reached affected age in our estimation period.**

Date in effects	Incremental Increases	Birth of Date cut-off	Control group	Treatment group
1/07/2017	1. APE 65.0-→APE 65.5	July 1, 1952	Cohort 1	Cohort 2
1/07/2019	2. APE 65.5 →APE 66.0	January 1, 1954	Cohort 2	Cohort 3
1/07/2021	3. APE 66.0→ APE 66.5	July 1, 1955	Cohort 3	Cohort 4
1/07/2023	4. APE 66.5→ APE 67.0	January 1, 1957	Cohort 4	Cohort 5

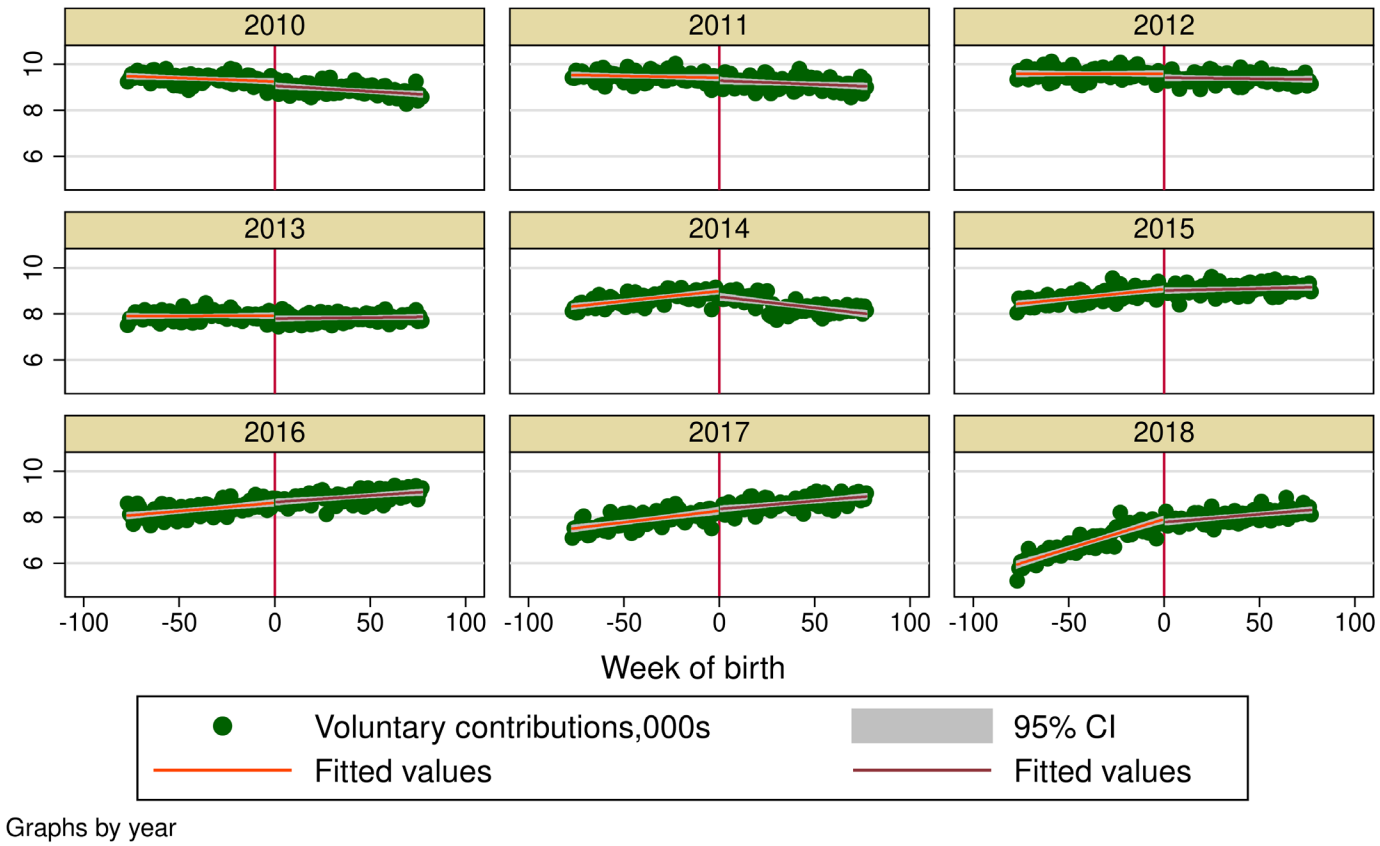
Results

Figure 1: Mean total contribution (wrong label in the figure) by week of birth: Incremental Increase from APE 65.0 to APE 65.5



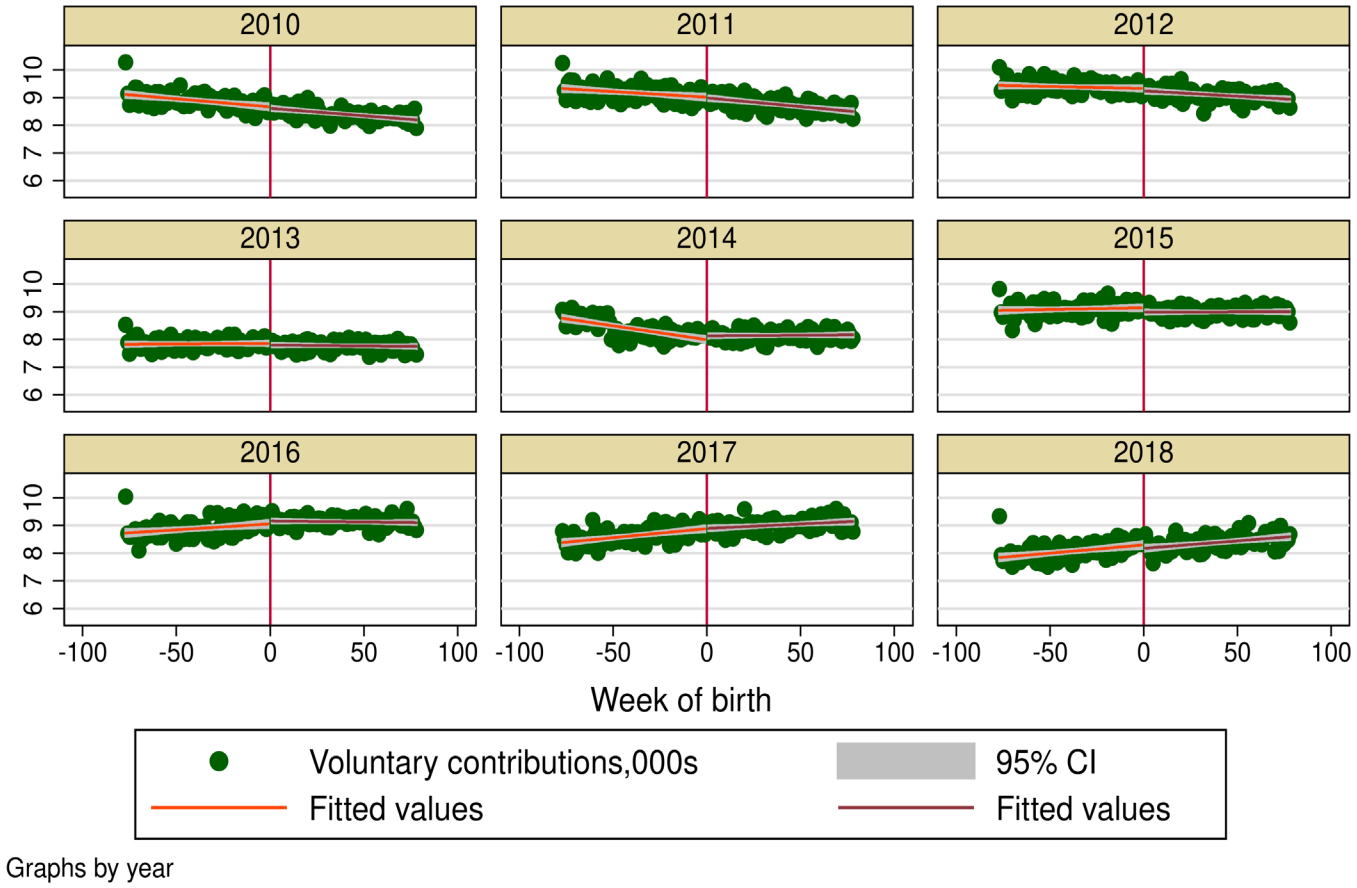
Notes: Each dot represents a one-week birth cohort. The horizontal axis of each panel is the number of weeks between the cohort's birth week and 1 July 1952. The solid line in each panel shows the predicted values based on the linear regression.

Figure 2: Mean total contribution by week of birth: Incremental Increase from APE 65.5 to APE 66.0



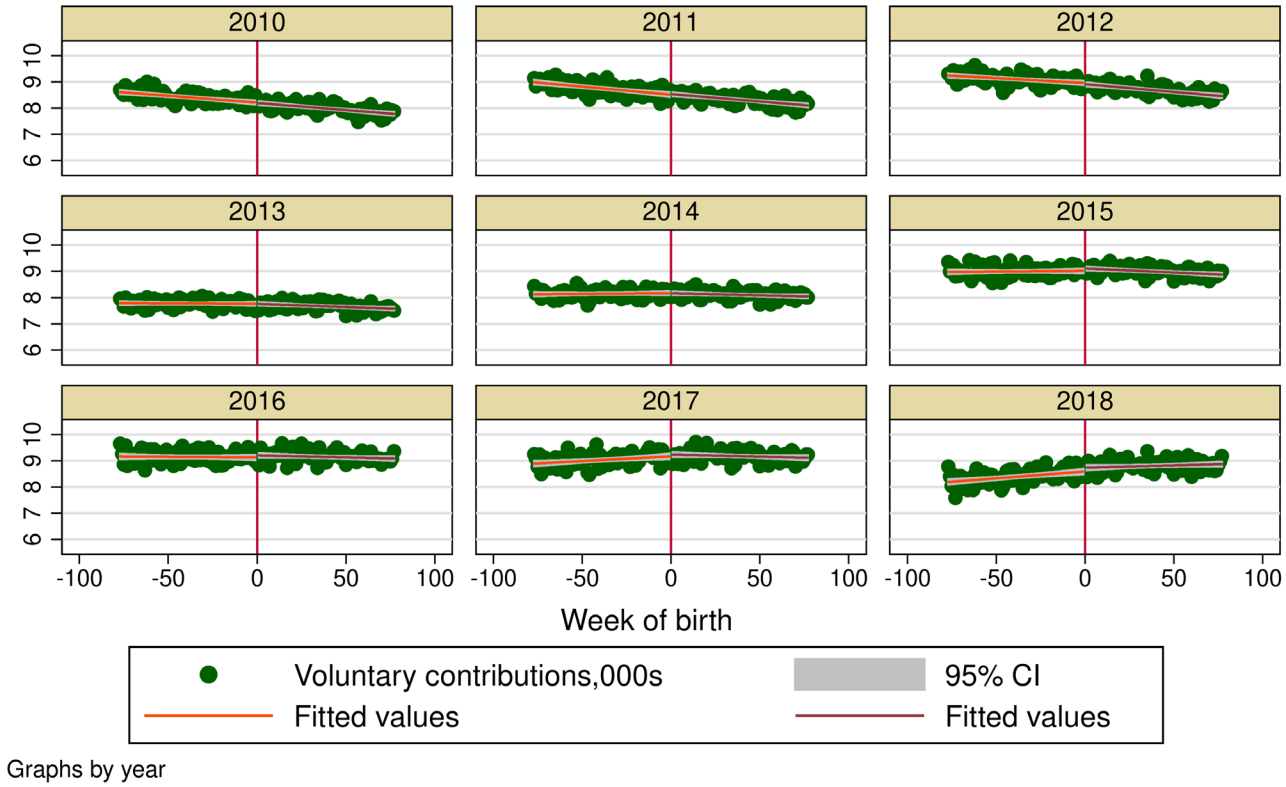
Notes: Each dot represents a one-week birth cohort. The horizontal axis of each panel is the number of weeks between the cohort's birth week and 1 January 1954. The solid line in each panel shows the predicted values based on the linear regression.

Figure 3: Mean total contribution by week of birth: Incremental Increase from APE 66.0 to APE 66.5



Notes: Each dot represents a one-week birth cohort. The horizontal axis of each panel is the number of weeks between the cohort's birth week and 1 July 1955. The solid line in each panel shows the predicted values based on the linear regression.

Figure 4: Mean total contribution by week of birth: Incremental Increase from APE 66.5 to APE 67.0



Notes: Each dot represents a one-week birth cohort. The horizontal axis of each panel is the number of weeks between the cohort's birth week and 1 January 1957. The solid line in each panel shows the predicted values based on the linear regression.

Table 1: RD estimated effects on total superannuation contributions of four incremental changes

	Financial Year								
Post-announcement	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
APE 65.0 vs 65.5									
Estimated effects	**6.245**	**26.06**	**-108.6**	**178.1****	**-2.790**	**-53.34**	**50.41**	**35.84**	384.9***
t-stat	(0.09)	(0.37)	(-1.51)	(3.16)	(-0.04)	(-0.77)	(0.75)	(0.54)	(5.88)
Mean (APE 65)	*9108.1*	*8849.2*	*8633.1*	*6720.2*	*7218.9*	*7157.2*	*6528.9*	*5304.3*	**4535.1**
APE 65.5 vs 66.0									
Estimated effects	**-143.9***	**-103.0**	**-170.2***	**-102.0***	**-222.9*****	**-60.43**	**14.86**	**62.90**	**-57.50**
t-stat	(-2.17)	(-1.55)	(-2.53)	(-1.96)	(-3.69)	(-0.91)	(0.23)	(0.94)	(-0.86)
APE 66.0 vs 66.5									
Estimated effects	**-55.21**	**-41.70**	**-65.04**	**-55.57**	**122.1***	**-162.8****	**88.66**	**-14.72**	**-89.66**
t-stat	**(-0.93)**	**(-0.68)**	**(-1.04)**	**(-1.17)**	**(2.34)**	**(-2.70)**	**(1.43)**	**(-0.23)**	**(-1.40)**
APE 66.5 vs.67									
Estimated effects	**15.44**	**22.61**	**-12.24**	**12.07**	**11.14**	**75.17**	**86.64**	**54.49**	**99.91**
t-stat	**(0.29)**	**(0.41)**	**(-0.21)**	**(0.28)**	**(0.24)**	**(1.38)**	**(1.53)**	**(0.92)**	**(1.68)**

* p<0.5, ** p<0.01 *** p<0.001

Table 1: RD estimated effects on total superannuation contributions of four incremental changes

Pre-announcement	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
APE 65.0 vs 65.5									
Estimated effects	42.58	50.85	13.65	22.81	58.47	-18.87	-109.8	12.56	-8.400
t-stat	(0.97)	(1.09)	(0.28)	(0.44)	(1.07)	(-0.32)	(-1.66)	(0.17)	(-0.12)
APE 65.5 vs 66.0									
Estimated effects	-75.14	-43.55	-78.84	-79.06	-57.45	-59.38	-76.36	-105.1	-198.9**
t-stat	(-1.87)	(-1.03)	(-1.81)	(-1.67)	(-1.15)	(-1.11)	(-1.27)	(-1.62)	(-3.06)
APE 66.0 vs 66.5									
Estimated effects	-0.788	7.212	-38.65	-32.99	29.90	-101.5*	7.224	-4.996	-41.70
t-stat	(-0.02)	(0.19)	(-0.98)	(-0.77)	(0.66)	(-2.08)	(0.13)	(-0.09)	(-0.72)
APE 66.5 vs.67.0									
Estimated effects	33.99	-10.35	-41.77	-7.068	25.45	-1.317	28.63	4.088	17.19
t-stat	(0.99)	(-0.29)	(-1.13)	(-0.18)	(0.62)	(-0.03)	(0.57)	(0.08)	(0.33)

* p<0.5, ** p<0.01 *** p<0.001

Table 2: RD estimated effects on employment income of the four incremental changes

	Financial Year								
Post-announcement	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
APE 65.0 vs 65.5									
Estimated effects	-30.50	68.82	-158.0	606.5**	160.0	206.8	157.1	258.4	2011.7***
t-stat	(-0.14)	(0.32)	(-0.72)	(2.87)	(0.77)	(1.02)	(0.79)	(1.36)	(11.16)
Mean (APE 65)	43661.5	42138.6	39674.3	35432.4	32420.1	29271.2	26079.2	21354.9	16783.9
APE 65.5 vs 66.0									
Estimated effects	-511.7*	-424.4*	-247.2	-376.8	175.7	87.66	75.08	410.9*	30.36
t-stat	(-2.45)	(-1.99)	(-1.16)	(-1.80)	(0.84)	(0.42)	(0.36)	(2.07)	(0.16)
APE 66.0 vs 66.5									
Estimated effects	-285.5	119.5	-303.0	-159.8	-99.15	-191.3	400.3	-98.02	33.52
t-stat	(-1.40)	(0.57)	(-1.45)	(-0.78)	(-0.48)	(-0.93)	(1.94)	(-0.49)	(0.17)
APE 66.5 vs.67									
Estimated effects	97.26	91.20	576.0*	199.1	265.8	448.8*	215.0	482.3*	304.2
t-stat	(0.44)	(0.45)	(2.55)	(0.95)	(1.27)	(2.14)	(1.00)	(2.32)	(1.49)

* p<0.5, ** p<0.01 *** p<0.001

Table 2: RD estimated effects on employment income of the four incremental changes

Pre-announcement	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
APE 65.0 vs 65.5									
Estimated effects	126.3	8.574	105.3	-22.48	-129.3	1.852	-308.1	321.8	-221.4
t-stat	(0.70)	(0.05)	(0.57)	(-0.12)	(-0.67)	(0.01)	(-1.50)	(1.47)	(-0.96)
APE 65.5 vs 66.0									
Estimated effects	-202.6	-259.9	-304.5	-287.5	-458.1*	-412.1*	-488.2*	-941.4***	-375.2
t-stat	(-1.15)	(-1.48)	(-1.71)	(-1.58)	(-2.45)	(-2.11)	(-2.45)	(-4.40)	(-1.75)
APE 66.0 vs 66.5									
Estimated effects	-133.0	-190.8	-344.9*	-178.8	-74.65	72.95	23.01	-70.40	-100.0
t-stat	(-0.77)	(-1.11)	(-1.98)	(-1.01)	(-0.41)	(0.39)	(0.12)	(-0.34)	(-0.48)
APE 66.5 vs.67.0									
Estimated effects	105.3	-77.11	-122.4	-98.80	90.98	38.10	60.33	-196.5	56.30
t-stat	(0.61)	(-0.45)	(-0.71)	(-0.57)	(0.51)	(0.21)	(0.32)	(-0.99)	(0.20)

* p<0.5, ** p<0.01 *** p<0.001

Table 3: RD estimated effects on investment income of four incremental changes

	Financial Year								
Post-announcement	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
APE 65.0 vs 65.5									
Estimated effects	201.1**	217.0**	178.3*	77.82	115.2	224.8**	139.9	201.3*	33.74
t-stat	(2.89)	(3.02)	(2.42)	(1.03)	(1.46)	(2.73)	(1.68)	(2.35)	(0.37)
Mean (APE 65)	*6219.3*	*6753.9*	*7020.4*	*7121.8*	*7217.6*	*7283.4*	*7055.7*	*7078.6*	*7547*
APE 65.5 vs 66.0									
Estimated effects	-3.863	8.254	65.72	-47.55	-75.37	-31.43	-133.3	-42.40	-62.34
t-stat	(-0.06)	(0.12)	(0.93)	(-0.66)	(-1.01)	(-0.40)	(-1.69)	(-0.53)	(-0.75)
APE 66.0 vs 66.5									
Estimated effects	69.64	30.34	85.15	-54.52	42.53	-49.37	-84.50	30.80	-52.95
t-stat	(1.09)	(0.46)	(1.26)	(-0.80)	(0.60)	(-0.68)	(-1.15)	(0.41)	(-0.68)
APE 66.5 vs.67									
Estimated effects	57.26	22.15	19.47	-7.839	-2.633	-22.00	33.40	-40.13	-74.03
t-stat	(0.93)	(0.35)	(0.30)	(-0.12)	(-0.04)	(-0.32)	(0.48)	(-0.57)	(-1.01)

* p<0.5, ** p<0.01 *** p<0.001

Table 3: RD estimated effects on investment income of four incremental changes

Pre-announcement	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
APE 65.0 vs 65.5									
Estimated effects	34.09	-36.30	20.29	112.4	81.01	106.1	141.4*	184.3**	205.6**
t-stat	(0.67)	(-0.69)	(0.37)	(1.89)	(1.29)	(1.59)	(1.99)	(2.60)	(2.97)
APE 65.5 vs 66.0									
Estimated effects	-47.96	-44.88	-32.73	-79.74	-55.21	-45.98	-37.59	-37.10	-106.5
t-stat	(-0.99)	(-0.90)	(-0.62)	(-1.40)	(-0.92)	(-0.72)	(-0.55)	(-0.54)	(-1.59)
APE 66.0 vs 66.5									
Estimated effects	35.14	-7.888	7.822	-16.34	-89.28	-40.41	35.78	-33.84	-15.59
t-stat	(0.76)	(-0.17)	(0.16)	(-0.30)	(-1.57)	(-0.67)	(0.55)	(-0.52)	(-0.24)
APE 66.5 vs.67.0									
Estimated effects	-0.293	-37.47	-79.49	-62.66	-12.50	-34.83	42.14	59.69	39.37
t-stat	(-0.01)	(-0.82)	(-1.65)	(-1.21)	(-0.23)	(-0.60)	(0.68)	(0.96)	(0.64)

* p<0.5, ** p<0.01 *** p<0.001

Table 4: RD estimated effects on total voluntary superannuation contributions of four incremental changes

	Financial Year								
Post-announcement	2090-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
APE 65.0 vs 65.5									
Estimated effects	-68.90	-61.27	-51.74	11.23	10.61	48.79	32.83	51.22	49.97
t-stat	(-1.21)	(-1.04)	(-0.84)	(0.32)	(0.24)	(1.02)	(0.66)	(1.04)	(1.22)
APE 65.5 vs 66.0									
Estimated effects	-109.2*	-105.7	-71.65	-88.46**	-136.9***	-101.1*	-30.23	-2.640	38.33
t-stat	(-2.12)	(-1.95)	(-1.27)	(-2.65)	(-3.52)	(-2.25)	(-0.64)	(-0.06)	(1.00)
APE 66.0 vs 66.5									
Estimated effects	5.798	-125.6**	-16.19	-41.29	102.2**	-54.45	-59.23	-41.86	-35.21
t-stat	(0.13)	(-2.60)	(-0.32)	(-1.34)	(3.08)	(-1.36)	(-1.36)	(-0.93)	(-0.96)
APE 66.5 vs.67									
Estimated effects	-18.45	-51.67	-45.75	-22.62	0.717	25.68	33.04	-45.72	-62.68
t-stat	(-0.47)	(-1.21)	(-1.02)	(-0.81)	(0.02)	(0.70)	(0.83)	(-1.11)	(-1.85)

* p<0.5, ** p<0.01 *** p<0.001

Discussion

- Overall, we can see the main effects via the labour supply right at the affected ages. We don't see effects ahead of time, in savings and labour supply.
- This pattern of results is interesting given the fact that a reduction in pension wealth for those retire **early** should propel them to either extend their labour supply or save more, ahead of the affected ages.

Future direction of research

- Sub-group analysis
- Estimating impacts on superannuation drawdowns
- Robustness checks
- Further analyses using HILDA and administrative welfare receipt data. We aim to tease out the mechanisms for the observed impacts.

Thank you! We welcome your suggestions!

ha.vu@deakin.edu.au