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Applied Economic & Social Research

How Effective are Matching Schemes in Enticing Low-income Earners to Save More for Retirement?

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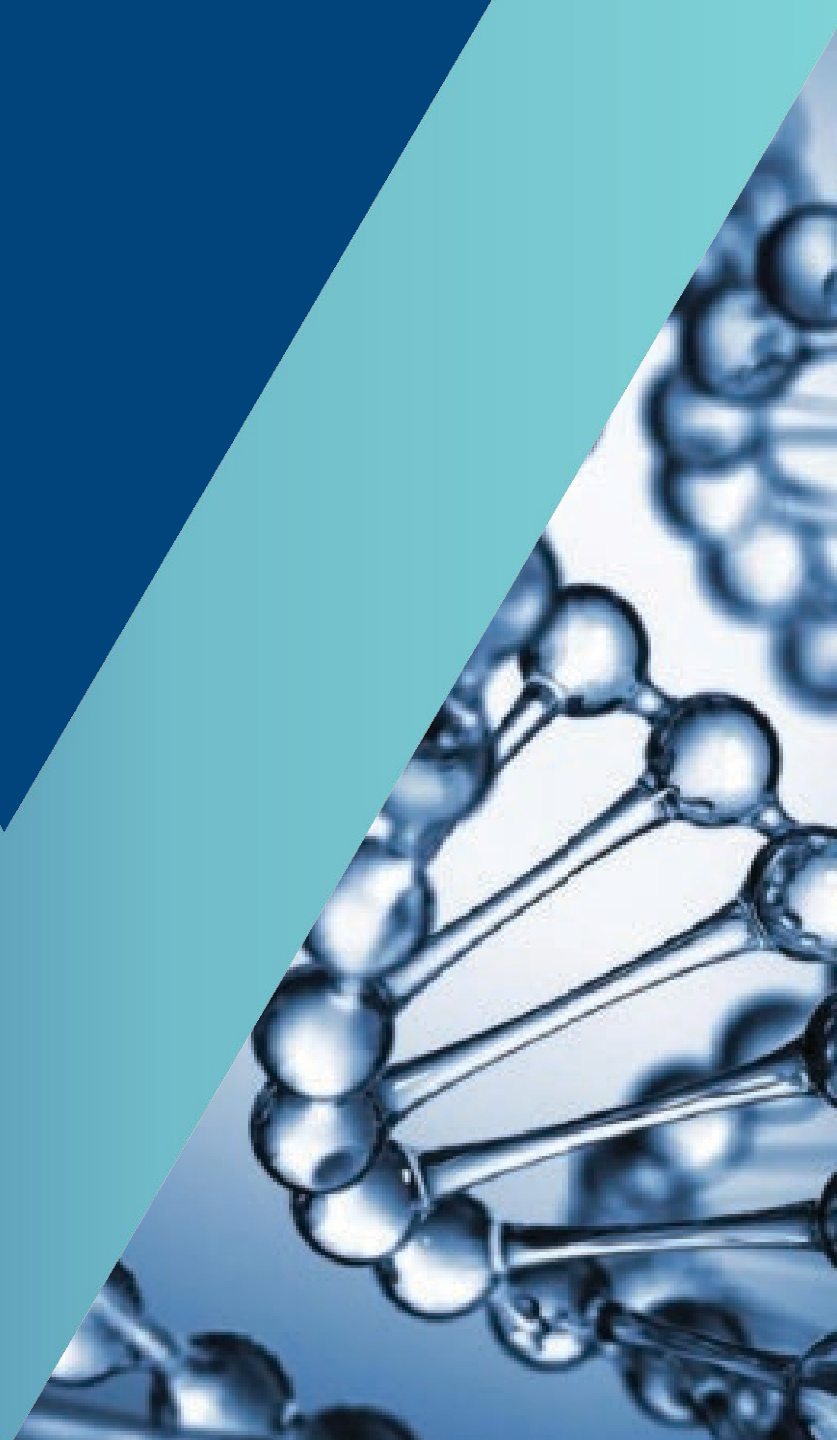

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Introduction

- Aging populations are shifting emphasis from public to private pensions
  - Governments typically encourage contributions through tax concessions, which favour 'big end of town'
  - To support low-middle income earners, governments use targeted matching schemes (e.g. New Zealand, Germany, Austria, Chile, Czech Republic, Hungary, Mexico, Turkey and United States)
- Theoretically, the impacts of matching schemes are ambiguous
  - Positive substitution effects
  - Negative retirement income effects
- In this study, we empirically test the responses to a simple and generous Australian scheme
  - Superannuation Co-contribution Scheme (co-contribution scheme)

Contribution to the literature

- First evidence on the effects of a simple match scheme to increase retirement income
  - Evidence to date suggests small responses, but limited to evaluations of two complicated schemes with match rates (up to 100%) that vary with income
    - U.S. Saver's Credit (Duflo et al. 2007; Ramnath 2013; Heim and Lurie 2014) and
    - German Riester scheme (Corneo, Keese and Schröder 2009 and 2010; Coppola and Gasche 2011)
  - Evidence from a simple field experiment with one match rate produced much stronger results (Duflo et al. 2006)
    - A 'one-off payment' makes external validity a concern
    - Did not address 'crowding-out' of contributions to employer-based accounts 401(k)
    - Select sample of H&R Block clients
- Test responses across the full distribution of contributions
    - Examining bunching impacts on bunching and relative strength of income and substitution effects throughout the distribution

Superannuation and the co-contribution scheme

- Australia's superannuation system
  - Mandatory employee scheme with minimum 9.5% employer contribution taxed at 15% flat
  - Voluntary personal contributions are possible, either after tax or concessional (salary sacrifice or rebate for self-employed)
  - Draw-down of benefit from age 58, penalties for early access, tax free from 60
- Superannuation co-contribution scheme
  - After-tax contributions are matched at a fixed rate
    - 50% (2012-); 100% (2003-04; 2009-11); 150% (2004-09)
  - Maximum eligible contribution depends on income
    - $1000 up to 'lower limit' (currently $39K); phased-out (tapered) at a fixed rate up to an 'upper limit' (currently $54K). Contributions above maximum are not matched
    - Must be a resident, have 10% or more income from employment & under 71

Co-contribution eligibility & payments

Financial year	Income thresholds ($)		Match rate (ϕ)	Maximum co-contribution payment ($\overline{pc}(\text{inc}) \times \phi$) when $inc \leq inc_L$	Taper rate of maximum eligible contribution ($\tau_{\overline{pc}}$)[a]
	Lower (inc_L)	Upper (inc_U)			
2003/2004	27500	40000	100%	$1,000	0.08
2004/2005	28000	58000	150%	$1,500	0.05
2005/2006[a]	28000	58000	150%	$1,500	0.05
2006/2007	28000	58000	150%	$1,500	0.05
2007/2008	28980	58980	150%	$1,500	0.05
2008/2009	30342	60342	150%	$1,500	0.05
2009/10	31920	61920	100%	$1,000	0.033
2010/11	31920	61920	100%	$1,000	0.033
2011/12	31920	61920	100%	$1,000	0.033
2012/13	31920	46920	50%	$500	0.033
2013/14	33516	48516	50%	$500	0.033
2014/15	34488	49488	50%	$500	0.033
2015/16	35454	50450	50%	$500	0.033
2016/17	36021	51021	50%	$500	0.033

Data

- ATO Longitudinal Information File (ALife)
  - Broad sample - 10% sample of tax register (back to 1980) at 30 June 2016
  - Longitudinally linked tax and superannuation contributions from 1990-91 using TFN
  - Annual refresh - 10% sample of tax register additions (February), update of existing sample (for t-2)
  - Superannuation data is from annual Member Contribution Statements
  - Super balances are only available from 2012-13
  - Voluntary and mandatory employer concessional contributions cannot be separated prior to 2009-10
- Sample for analysis
  - Omit those who do not meet eligibility criteria (<10% of income from employment; non-residents and those 71 and older)
  - Omit those whose taxable income is below the tax-free threshold and outlier contributors - top 10% of after-tax contributors each year

Empirical approach

$$y_{it} = \alpha_{0.5} C_{0.5,it} + \alpha_{1.0} C_{1.0,it} + \alpha_{1.5} C_{1.5,it} + \beta_1 inc_{it} + \beta_2 inc_{it}^2 + x_{it}'\gamma + \mu_i + \delta_t + \epsilon_{it} \quad (1)$$

$$C_{0.5,it} = 1\{\phi_t = 0.5\} E_{it}$$
$$C_{1.0,it} = 1\{\phi_t = 1.0\} E_{it}$$
$$C_{1.5,it} = 1\{\phi_t = 1.5\} E_{it}$$
$$\text{where } E_{it} = 1\{\overline{pc}(inc_{it}; inc_{Lt}, inc_{Ut}) > 0\}$$

Examine responses across the contribution distribution

$$y_{it} = 1\{pc_{it} > 0\}$$
$$y_{it} = 1\{pc_{it} = \$1000\}$$
$$y_{it} = pc_{it}$$
$$y_{it} = 1\{0 < pc_{it} \leq \$1000\}$$
$$y_{it} = 1\{1000 < pc_{it} \leq \$3000\}$$
$$y_{it} = 1\{pc_{it} > \$3000\}$$

Threats to identification

$$Corr(C_{it}.\mu_i) \neq 0$$

Empirical approach

Estimate first difference model

$$\Delta y_{it} = \alpha_{0.5}\Delta C_{0.5,it} + \alpha_{1.0}\Delta C_{1.0,it} + \alpha_{1.5}\Delta C_{1.5,it} + \beta_1 \Delta inc_{it} + \beta_2 \Delta inc_{it}^2 + x'_{it}\tilde{\gamma} + \Delta\delta_t + \Delta\epsilon_{it}$$

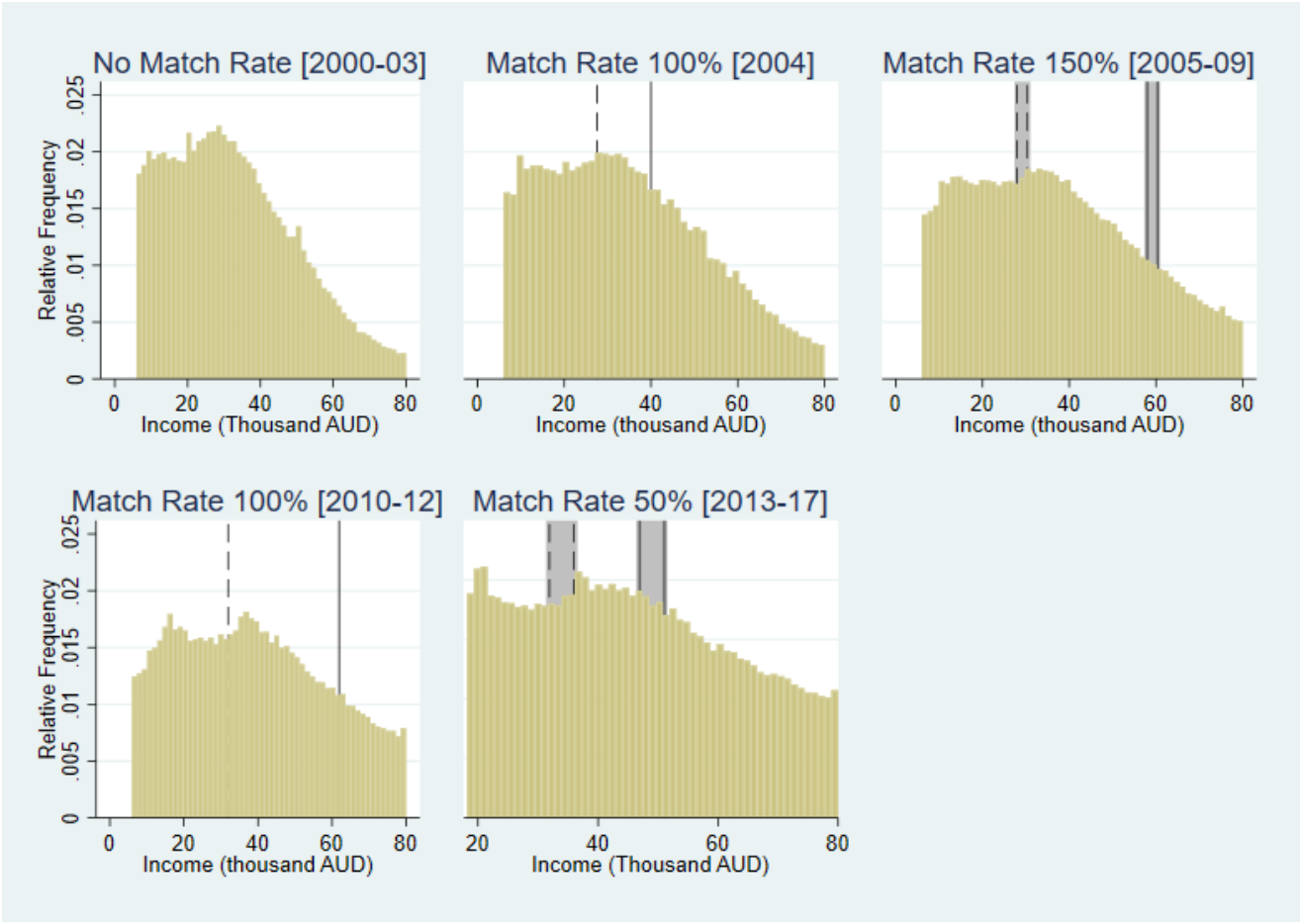
$$\Delta y_{it} = y_{it} - y_{it-1};$$
$$\Delta C_{0.5,it} = C_{0.5,it} - C_{0.5,it-1};$$
$$\Delta C_{1.0,it} = C_{1.0,it} - C_{1.0,it-1};$$
$$\Delta C_{1.5,it} = C_{1.5,it} - C_{1.5,it-1}\ldots$$

Key assumption

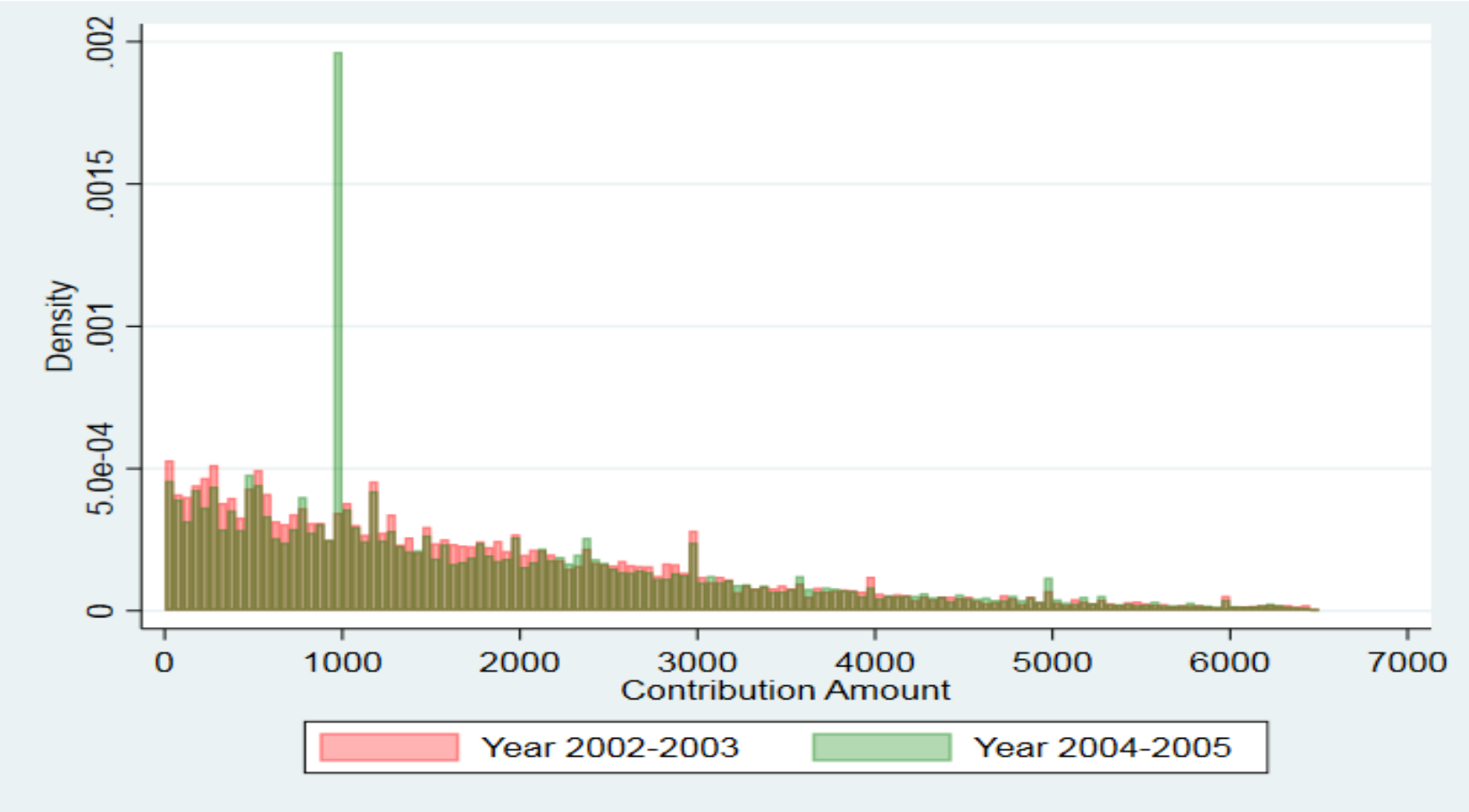
$$E(\Delta C_{it}, \Delta\epsilon_{it}) = 0$$

Also estimate fixed effects

Relative frequency distribution of total income

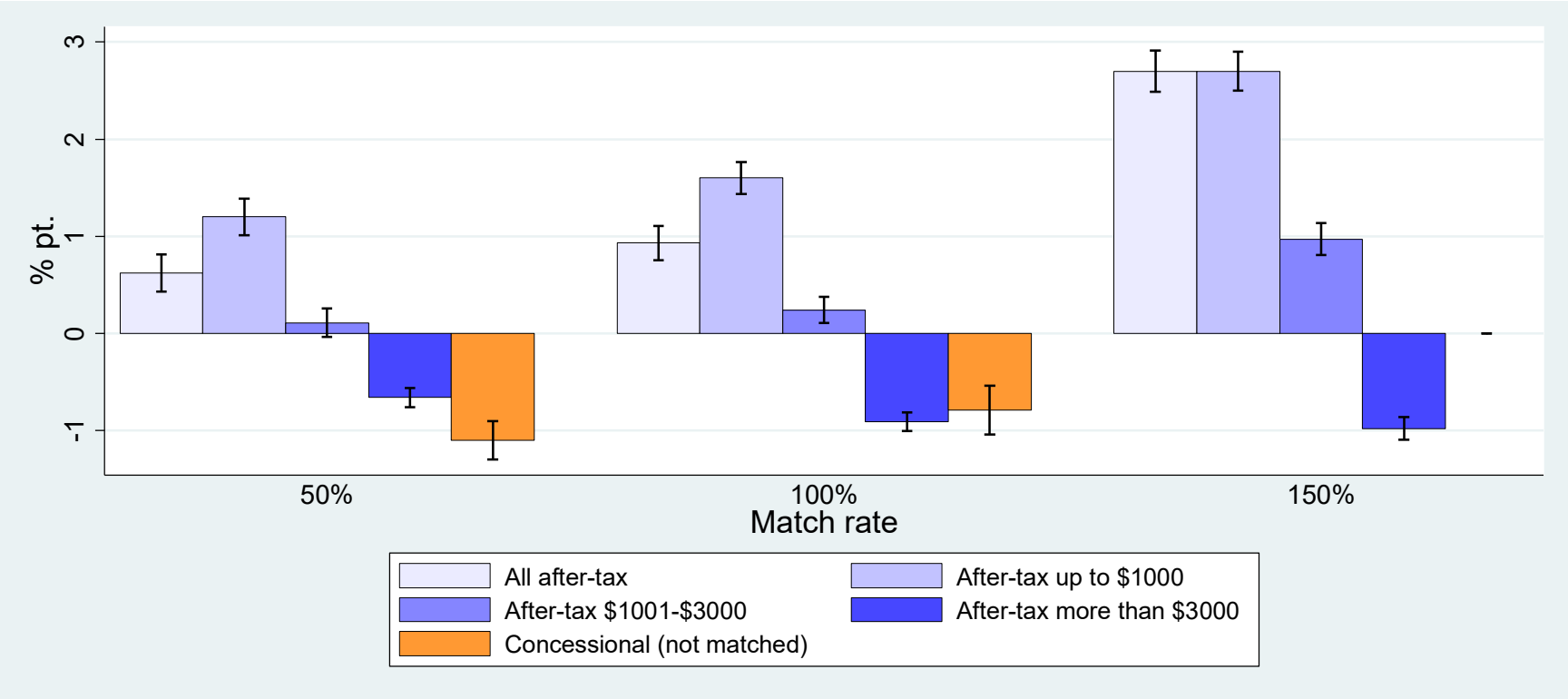


Histogram of positive after-tax contributions, before and after the co-contribution scheme



Sample who meet work and residency requirements with a positive contribution

Impacts on proportion who make voluntary superannuation contributions

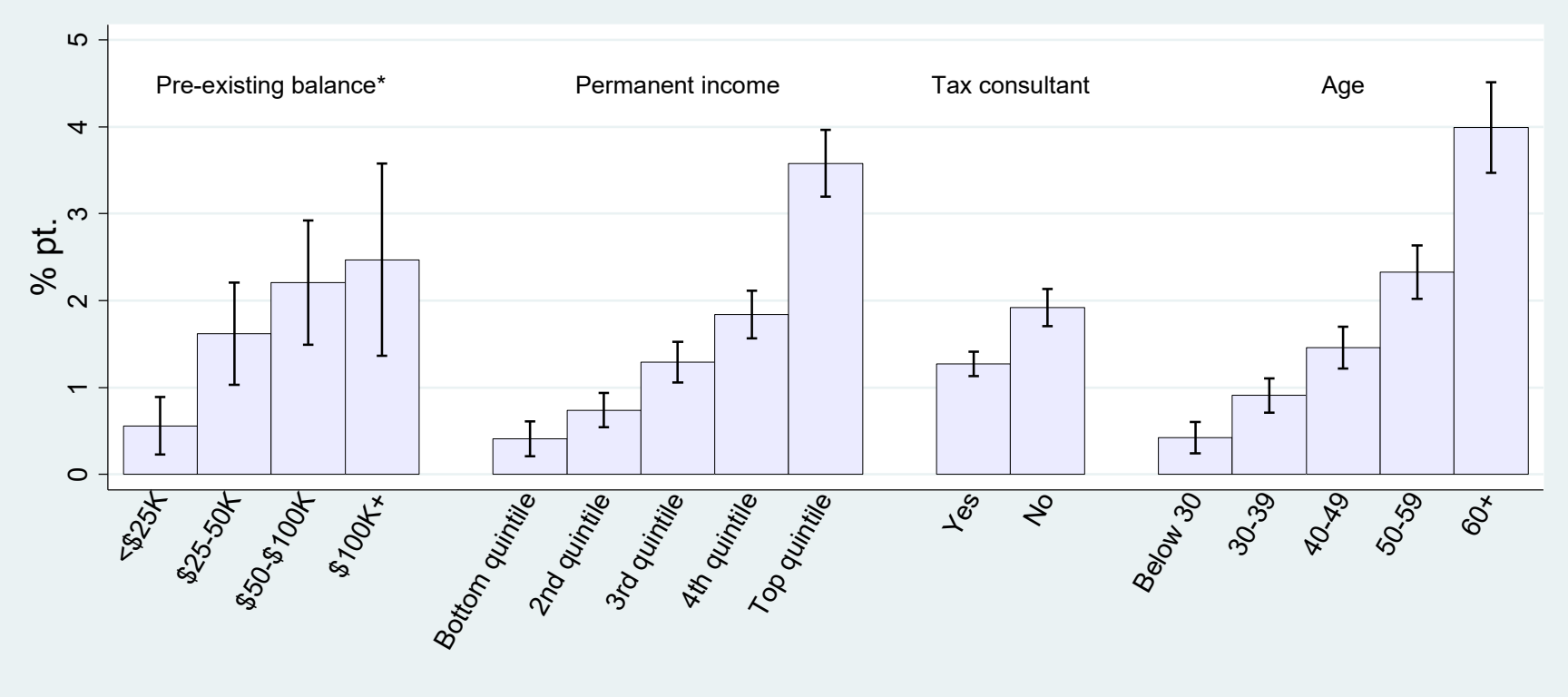


95% confidence intervals.
Reduction in average annual after-tax contributions of $24, $25 and $6 respectively for 50%, 100% and 150%.

Bunching at the salient maximum $1000

95% confidence intervals.

Impacts on contribution rates across sub-groups due to changes in treatment



95% confidence intervals.

*Lagged balances estimated with 50% match rate only because balances only available from 2013.

Conclusions

- Matching schemes are well-intentioned, but not effective despite
  - Simplicity
  - Generosity
  - High public awareness – 80% + (two ATO commissioned surveys); online ATO calculator; no higher use amongst those who use tax consultants
- Targeting matching schemes is difficult
  - Reductions in high contributors due to retirement income effect and bunching at the maximum
- Equity of the scheme is also a concern
  - High income earners who experience transitory low income are most likely to respond
  - Permanently low-middle income-earners may have limited means to make voluntary contributions
- May be more effective to focus on increasing and better-targeting the Age Pension

Relationship between after-tax contributions and changes in eligibility

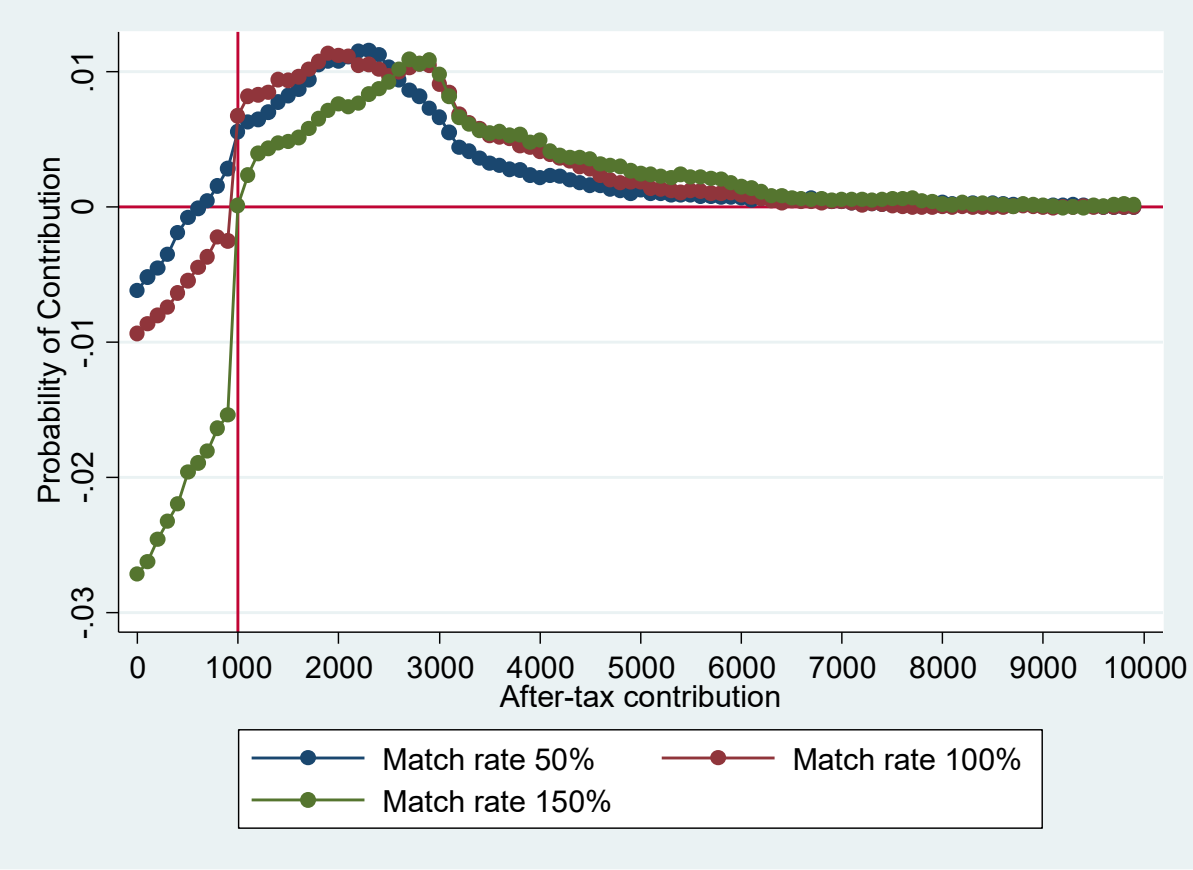
	Contributions within defined ranges					Continuous measures
	$1\{pc_{it} > \$0\}$	$1\{pc_{it} = \$1000\}$	$1\{\$0 < pc_{it} \leq \$1000\}$	$1\{\$0 < pc_{it} \leq \$3000\}$	$1\{pc_{it} > \$3000\}$	Personal after-tax contribution ($)
α^+	0.013***	0.012***	0.020***	0.0026***	-0.0095***	-31.6***
	(13.19)	(27.39)	(21.64)	(3.45)	(-17.57)	(-11.67)
α^-	0.014***	0.0055***	0.015***	0.0055***	-0.0061***	-2.33
	(17.86)	(14.54)	(19.03)	(9.04)	(14.19)	(1.14)
N	1,416,622	1,416,622	1,416,622	1,416,622	1,416,622	1,416,622

Notes: Estimated results from Equation (6). Model controls for year fixed effect, individuals' income ($A mill., deflated.), income squared, spouse's income, age, age squared, marital status and gender. *t* statistics in parentheses* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Relative frequency of total personal income

	All observations		Eligible observations		Ineligible observations	
	mean	std. dev.	mean	std. dev.	mean	std. dev.
Proportion eligible for co-contribution matching payment	0.515	0.500	-	-	-	-
Proportion eligible for the maximum co-contribution matching payment	0.265	0.441	0.520	0.500	-	-
Proportion who make a personal after-tax contribution	0.147	0.354	0.145	0.352	0.152	0.359
After-tax contribution ($)	291	1012	199	685	395	1271
Matching payment received ($)	49	213	96	291	-	-
Voluntary concessional contribution ($)	5,517	7,768	2,769	3,822	8,295	9,535
Total personal income ($)	50,651	63,780	30,390	15,906	73,316	84,845
Count	986,545		501,983		473,489	

Distributional impacts of the co-contribution scheme



Theoretical model

Insert predictions of the model