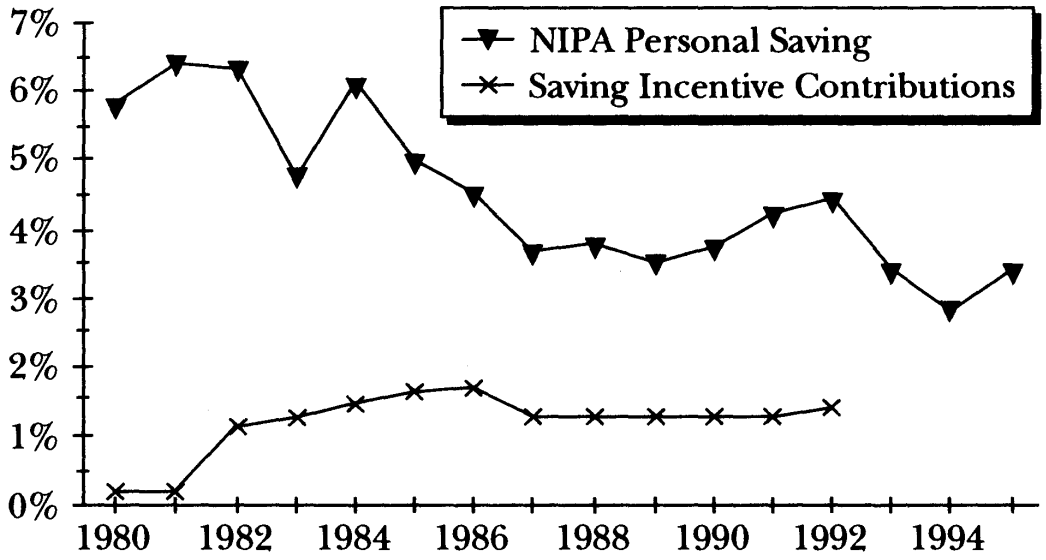
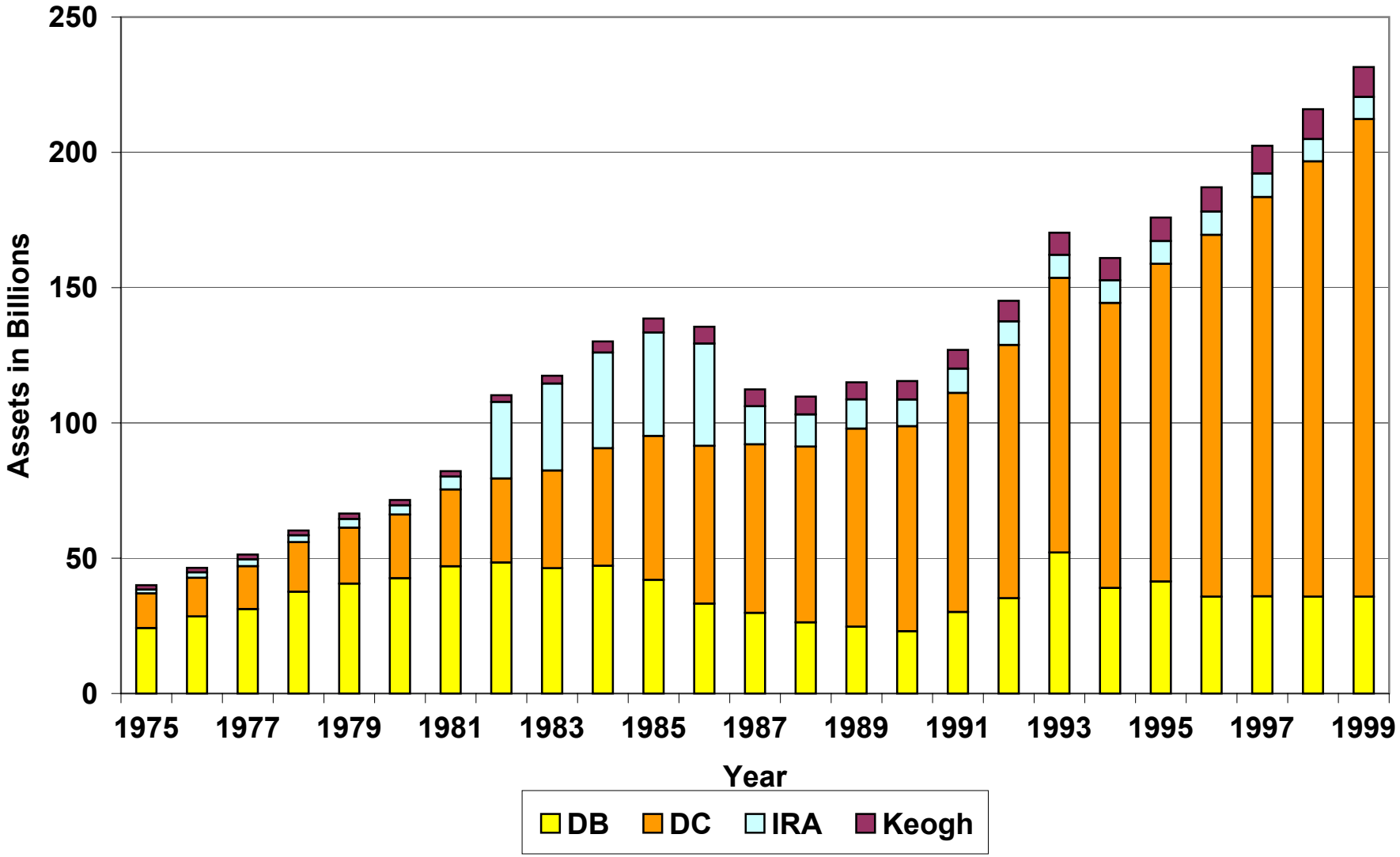
Figure 1
Personal Saving and Saving Incentive Contributions as a Percentage of GDP, 1980–1995



Sources: National Income and Product Accounts and the references in footnote 1.

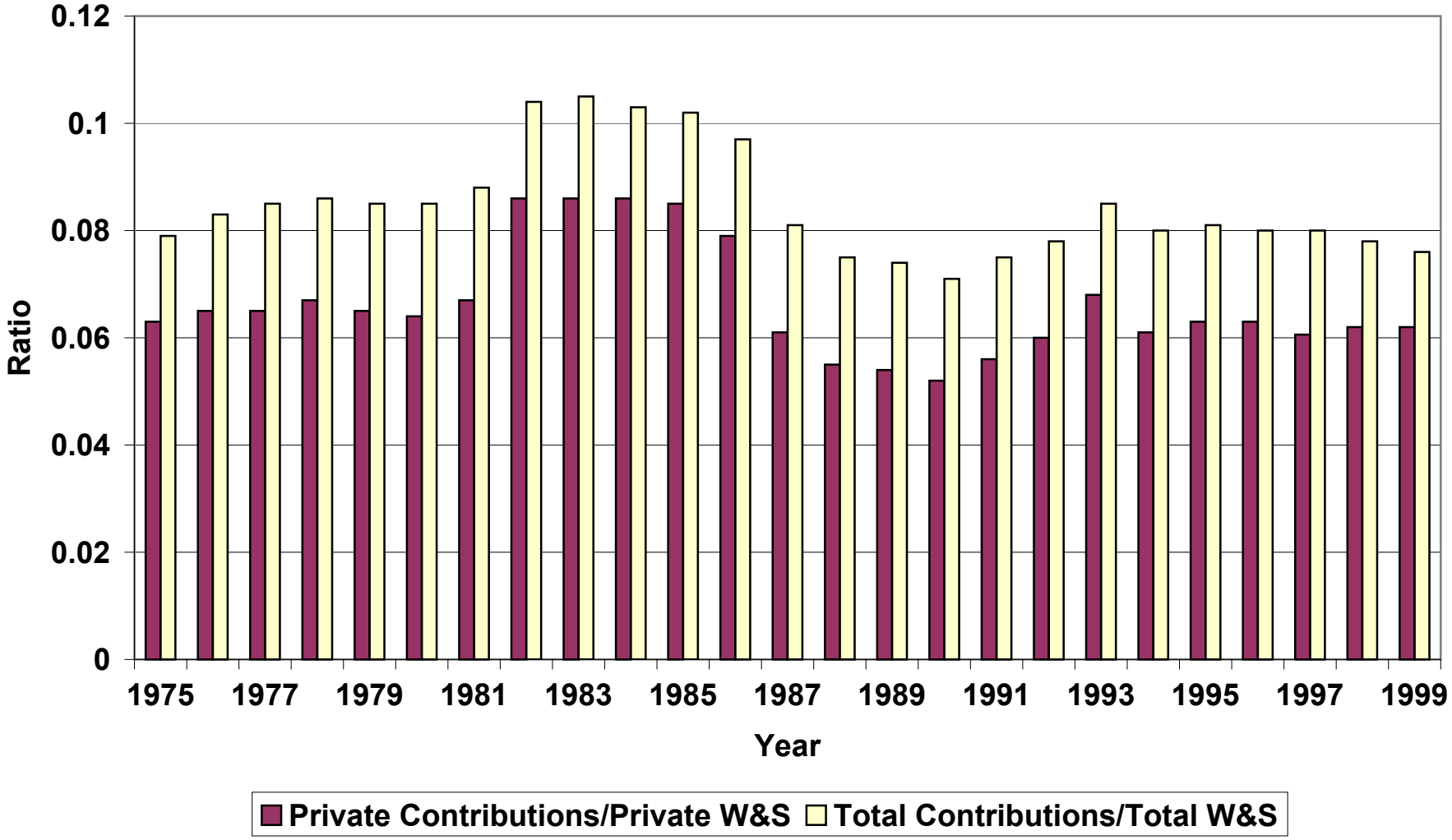
Source: Engen et al (1996), p. 116

Figure 5a. Private Pension Contributions

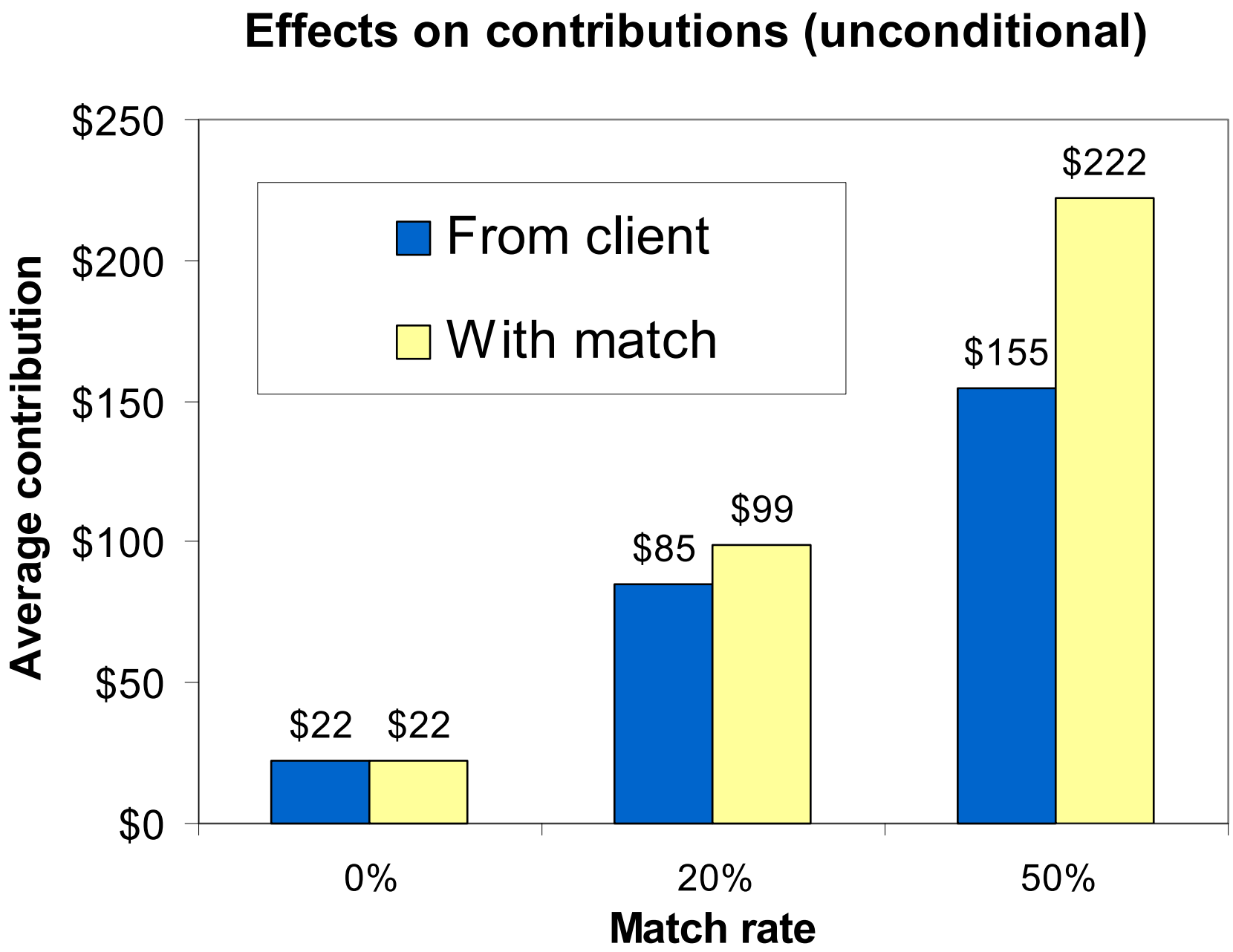


Source: statistics computed by the author(s)

Figure 6b. Ratio of Private and Total Pension Contributions to Wage and Salary Earnings



Source: statistics computed by the author(s)



Source: Duflo et al. (2006)

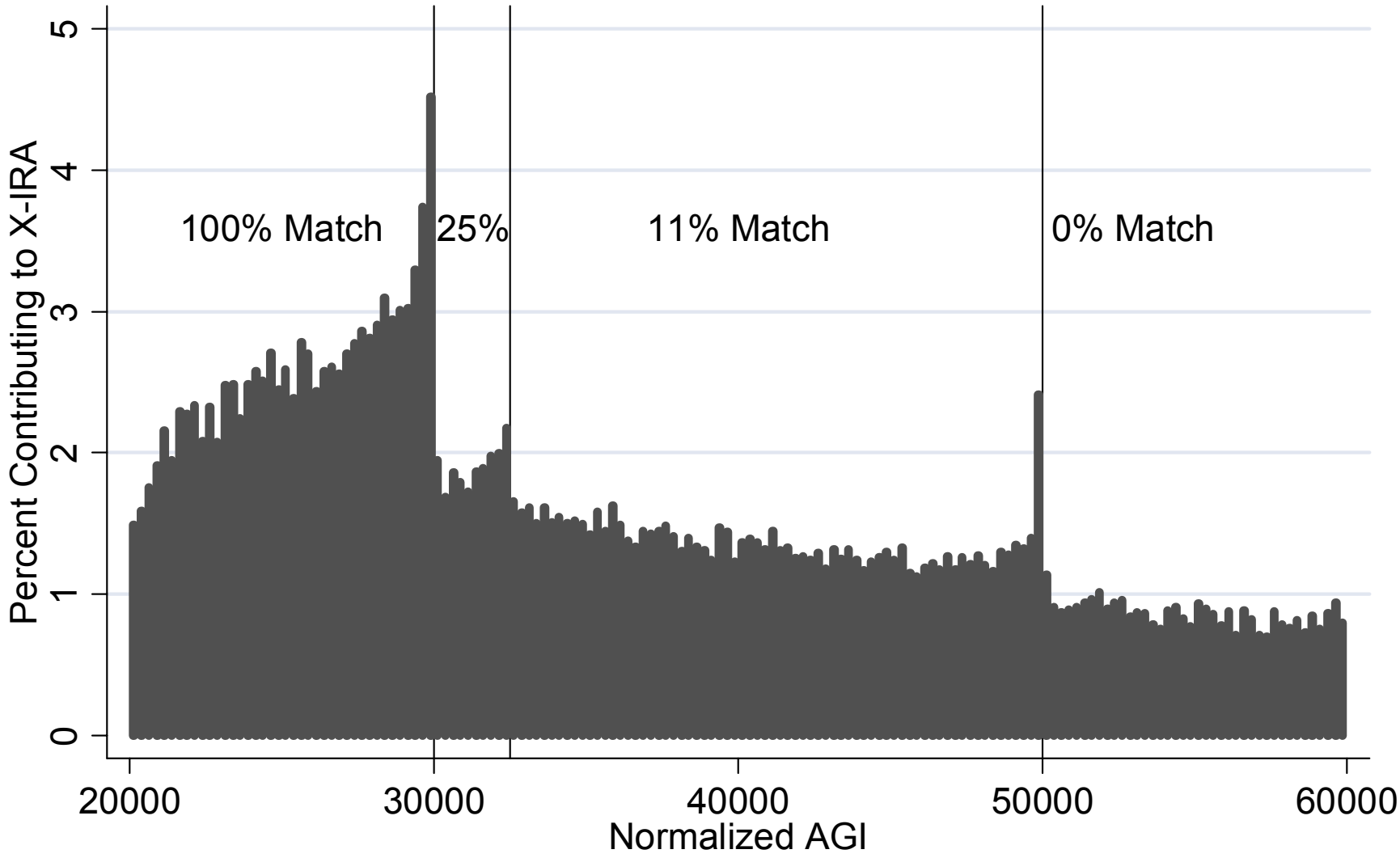
Table 8: Saver's Credit Parameters

Credit Rate t	Equivalent Match Rate t/(1-t)	Married Filing Jointly AGI range	Head of Household AGI range	Single and others AGI range
50%	100%	$0-$30,000	$0-$22,500	$0-$15,000
20%	25%	$30,001-$32,500	$22,501-$24,375	$15,001-$16,250
10%	11.1%	$32,501-$50,000	$24,376-$37,500	$16,251-$25,000
0%	0%	$50,001+	$37,501+	$25,001+

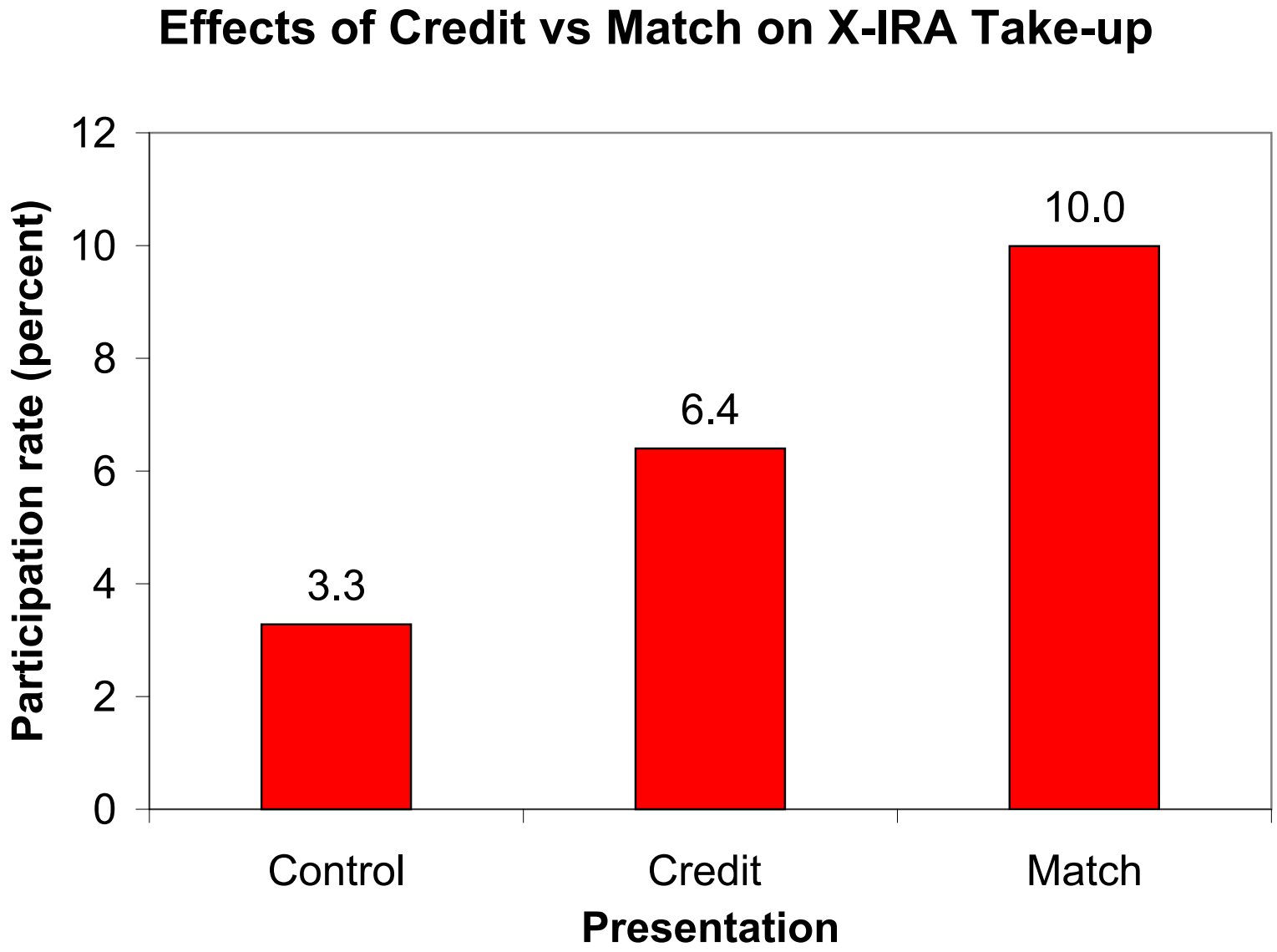
Saver's credit is a non-refundable federal income tax credit proportional to the sum of IRAs and 401(k)s contributions up to $2,000 of contributions (per spouse for married)
AGI = gross income - 401k - Traditional IRA

Source: Duflo et al. (2006)

Figure 4



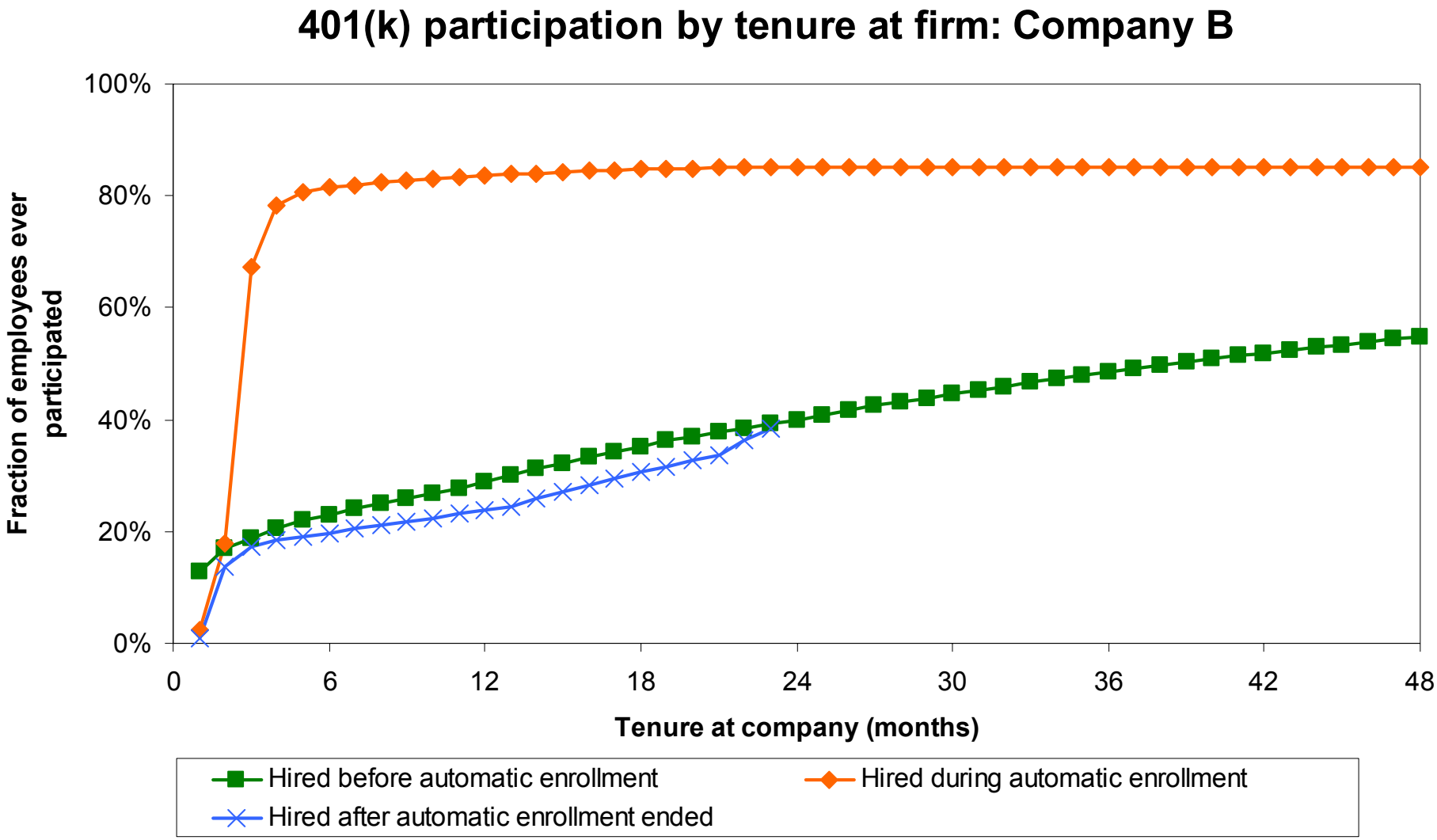
Source: Duflo et al. (2006)



Source: Duflo et al. (2006)

Automatic enrollment effect

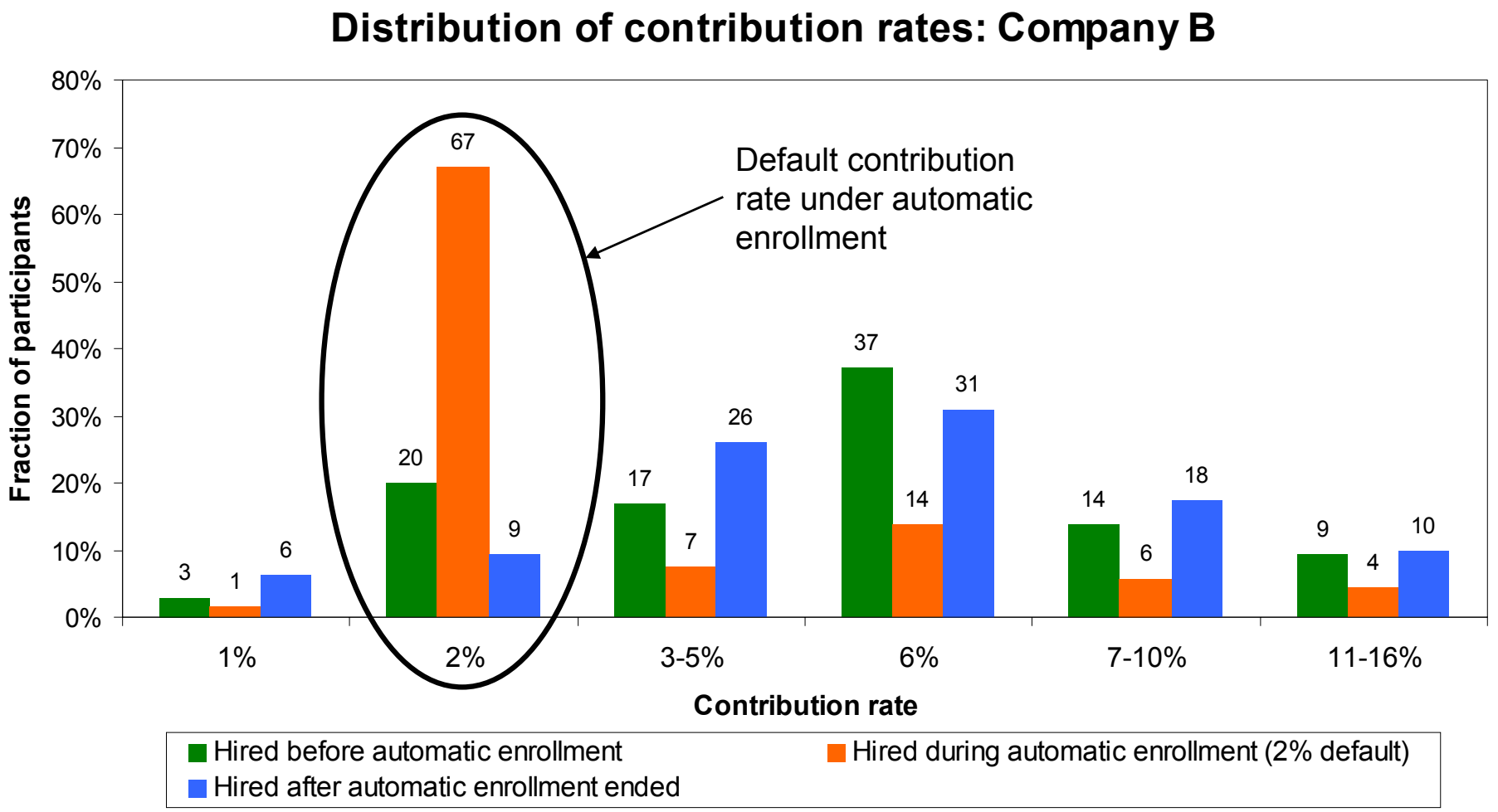
Automatic enrollment dramatically increases participation.



Source: Madrian and Shea (2001)

Automatic enrollment effect

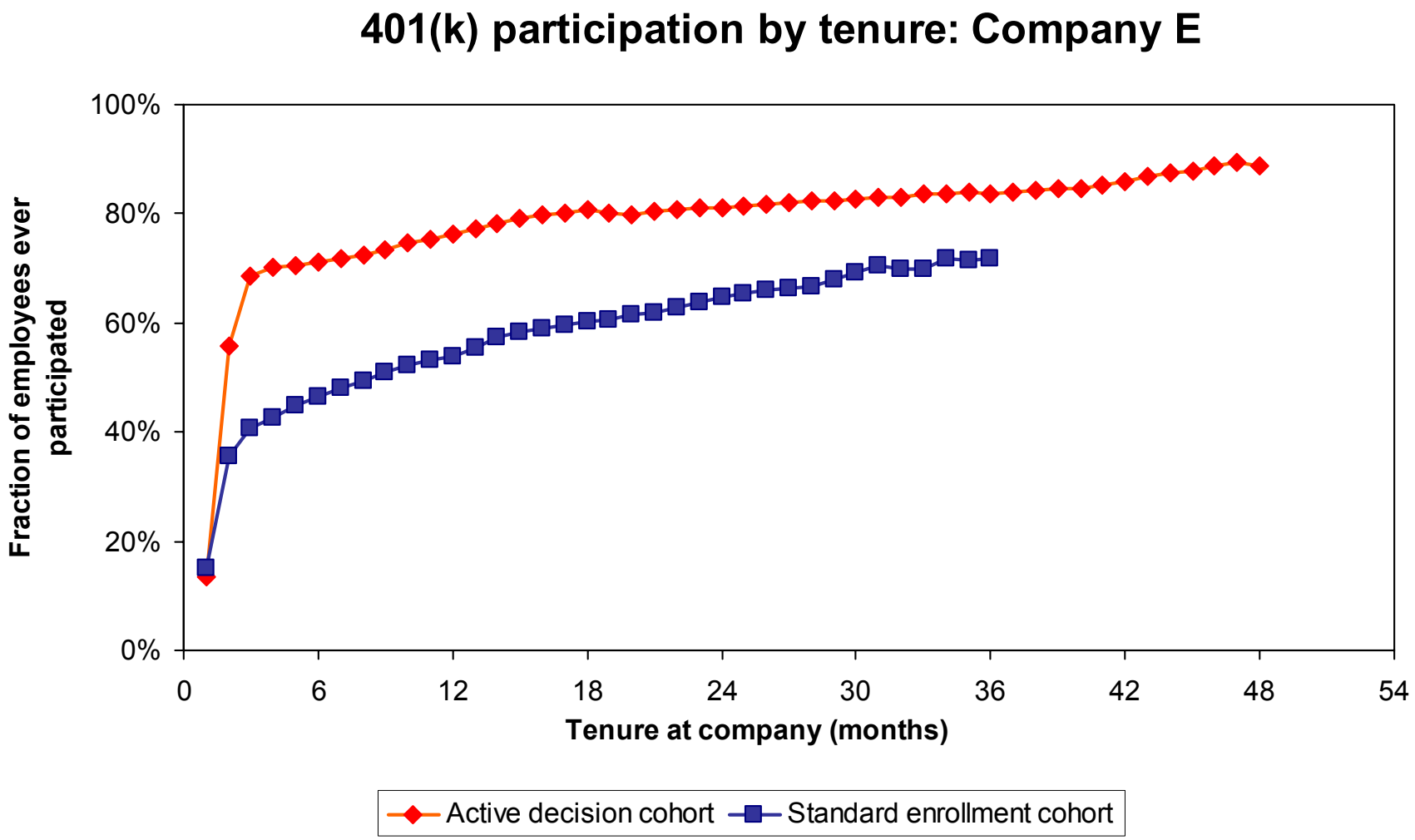
Employees enrolled under automatic enrollment cluster at the default contribution rate.



Source: Madrian and Shea (2001)

Active decision effect on participation

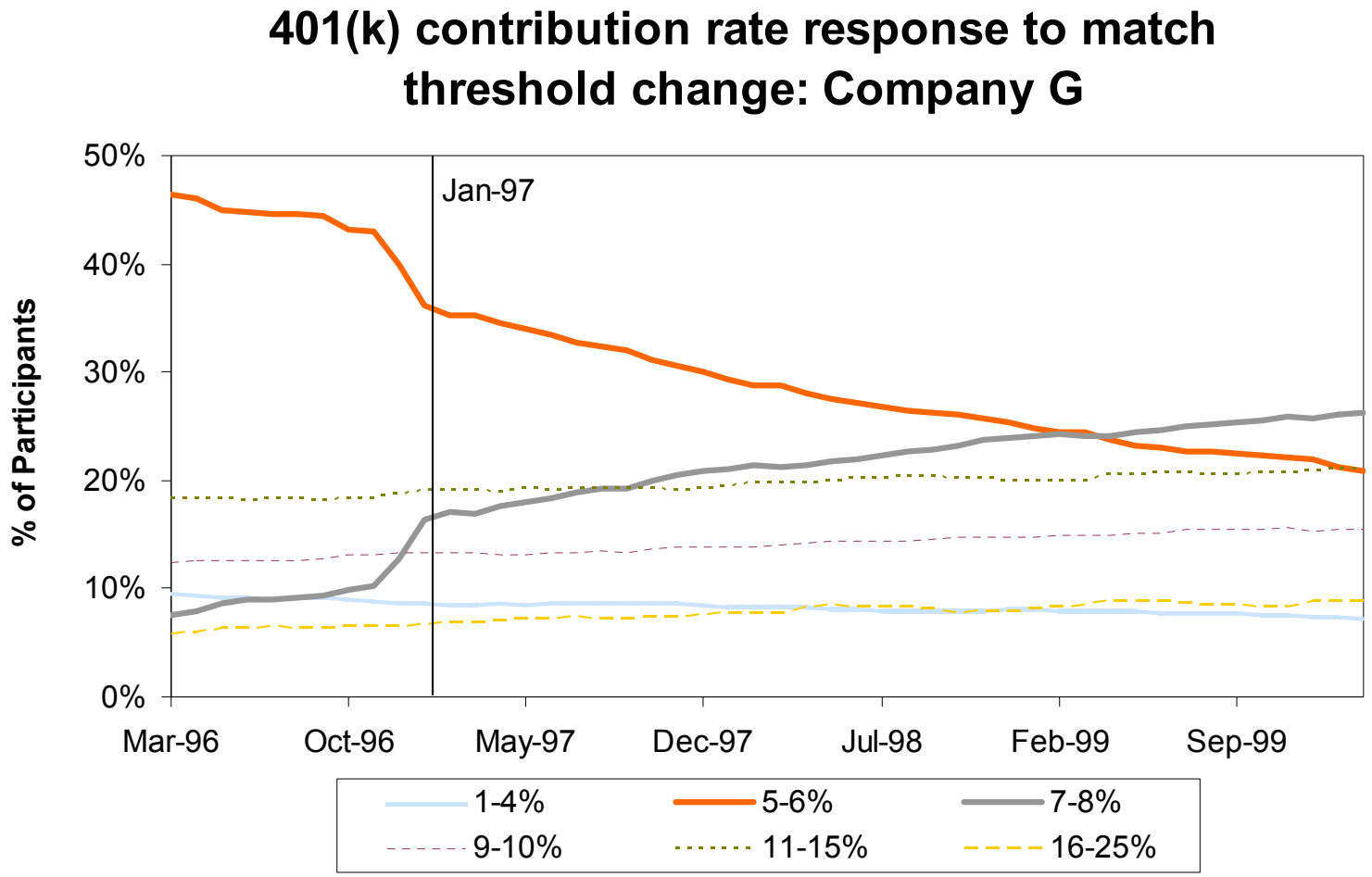
401(k) participation increases substantially when employees are not allowed to be passive about savings.



Source: courtesy of David Laibson

Employer match threshold and contribution rates

Changing the match threshold caused employees to slowly move from the old threshold to the new threshold.



Source: courtesy of David Laibson

The Flypaper Effect in Individual Investor Asset Allocation (Choi, Laibson, Madrian 2007)

Studied a firm that used several different match systems in their 401(k) plan.

I'll discuss two of those regimes today:

Match allocated to employer stock and workers can reallocate

- Call this "default" case (default is employer stock)

Match allocated to an asset actively chosen by workers; workers *required* to make an active designation.

- Call this "no default" case (workers must choose)

Economically, these two systems are identical.

They both allow workers to do whatever the worker wants.

Source: courtesy of David Laibson

Consequences of the two regimes

	Balances in employer stock	
	Default ES	No Default
Own Balance in Employer Stock	24%	20%
Matching Balance in Employer Stock	94%	27%
Total Balance in Employer Stock	56%	22%

Source: courtesy of David Laibson

Cash Distributions

What happens to savings plan balances when employees leave their jobs?

- Employees can request a cash distribution or roll balances over into another account
  - Balances >$5000: default leaves balances with former employer
  - Balances <$5000: default distributes balances as cash transfer
- Vast majority of employees accept default (Choi et al. 2002, 2004a and 2004b)
- When employees receive small cash distributions, balances typically consumed (Poterba, Venti and Wise 1998)

Source: courtesy of David Laibson

Post-Retirement Distributions

- Social Security
  - Joint and survivor annuity (reduced benefits)
- Defined benefit pension
  - Annuity
  - Lump sum payout if offered
- Defined contribution savings plan
  - Lump sum payout
  - Annuity if offered

Source: courtesy of David Laibson

Defined Benefit Pension Annuitization

- Annuity income and economic welfare of the elderly
  - Social Security replacement rate relatively low on average
  - 17% of women fall into poverty after the death of their spouse (Holden and Zick 2000)
- For married individuals, three distinct annuitization regimes
  - Pre-1974: no regulation
  - ERISA I (1974): default joint-and-survivor annuity with option to opt-out
  - ERISA II (1984 amendment): default joint-and-survivor annuity, opting out required notarized permission of spouse

Source: courtesy of David Laibson

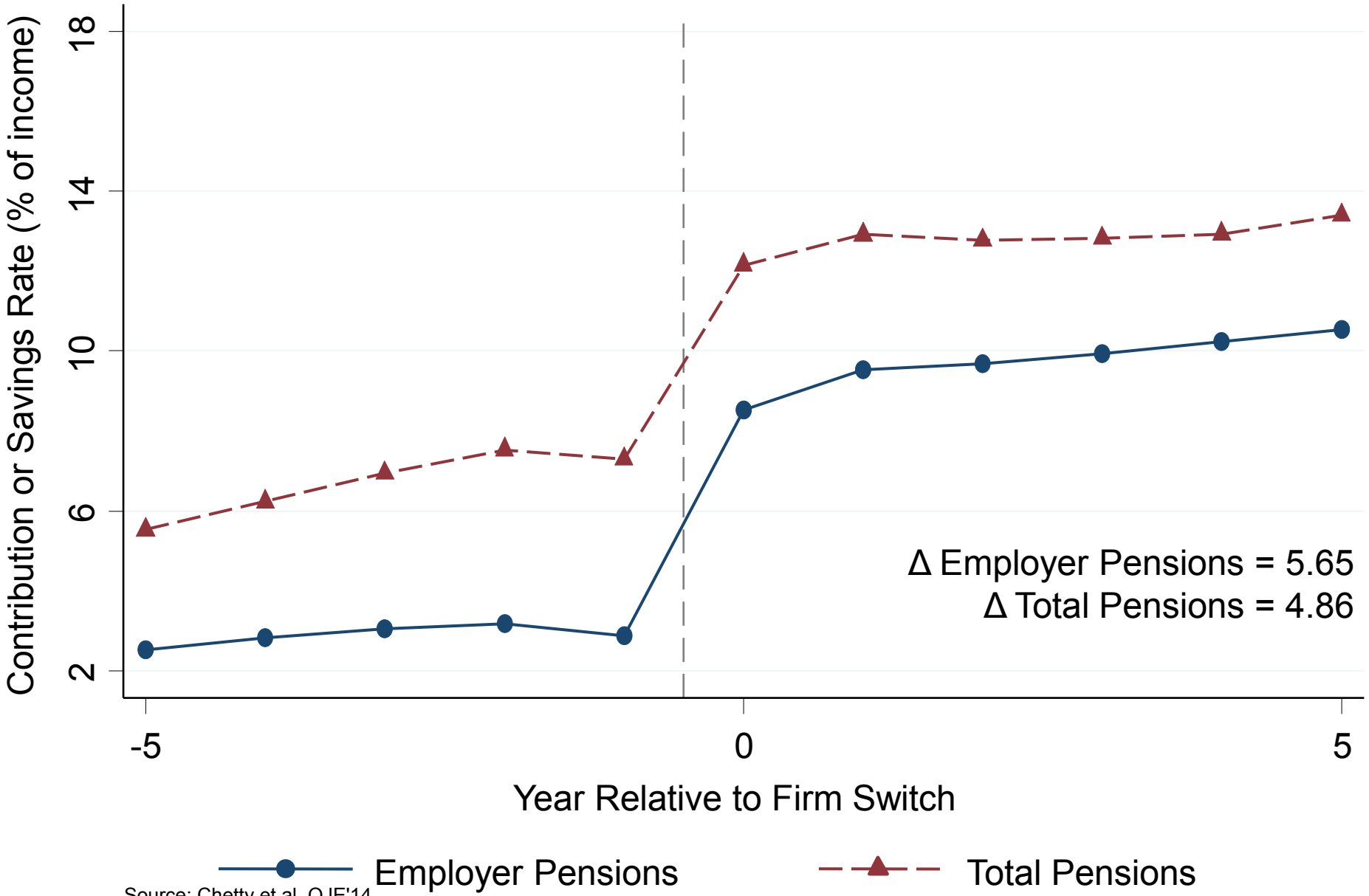
Impacts of Government Policies on Savings for Active vs. Passive Savers

	Automatic Contribution		Price Subsidy	
	Raises Pension Contribs. M+P?	Raises Total Savings M+P+S?	Raises Pension Contribs. M+P?	Raises Total Savings M+P+S?
Active Savers	No	No	Yes	Uncertain
Passive Savers	Yes	Uncertain	No	No
Data	**Yes**	**Yes**	**Yes**	**No**

Source: Chetty et al. QJE'14

Event Study around Switches to Firm with >3% Increase in Employer Pension Rate

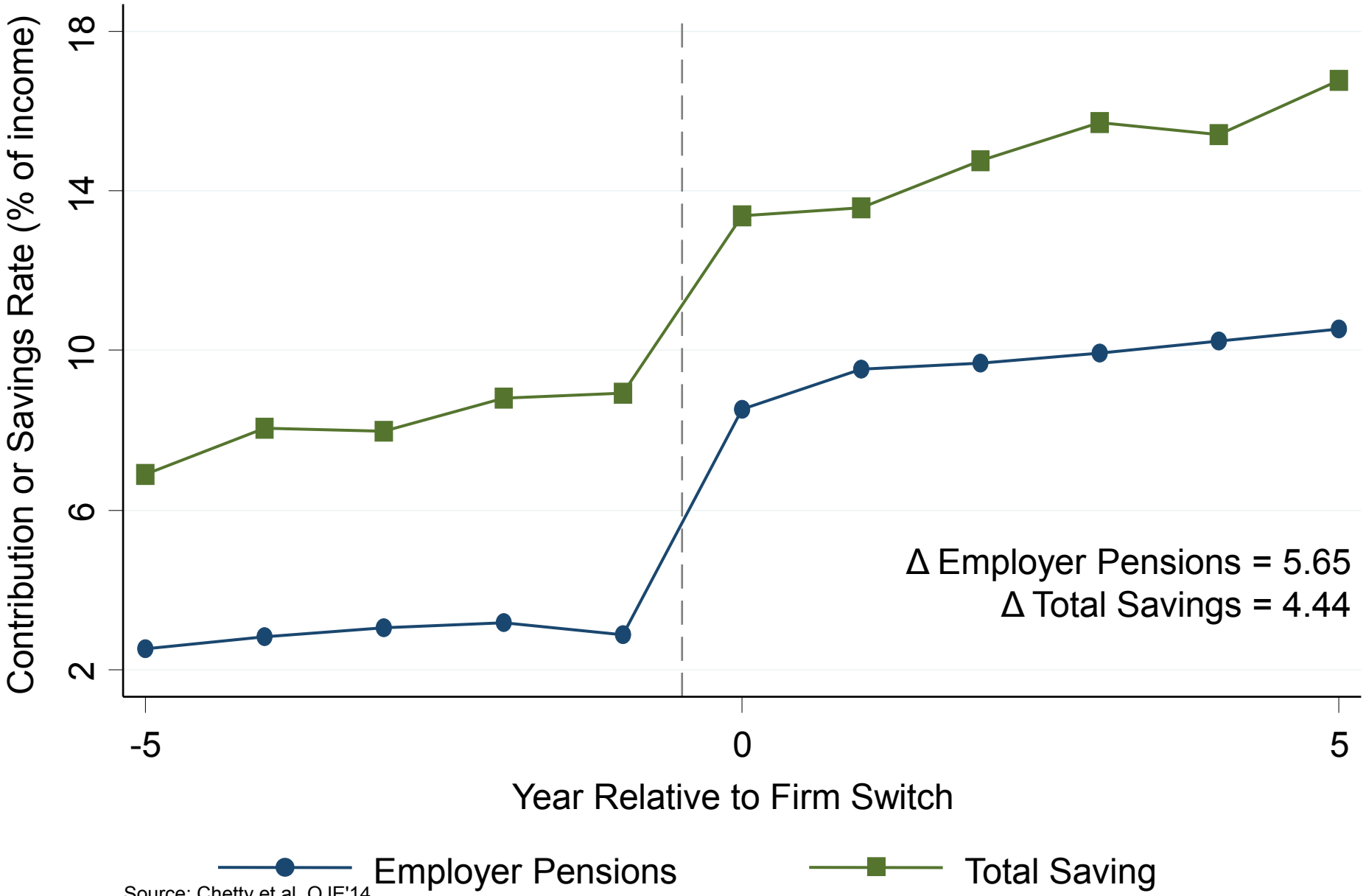
Individuals with Positive Pension Contributions or Savings Prior to Switch



Source: Chetty et al. QJE'14

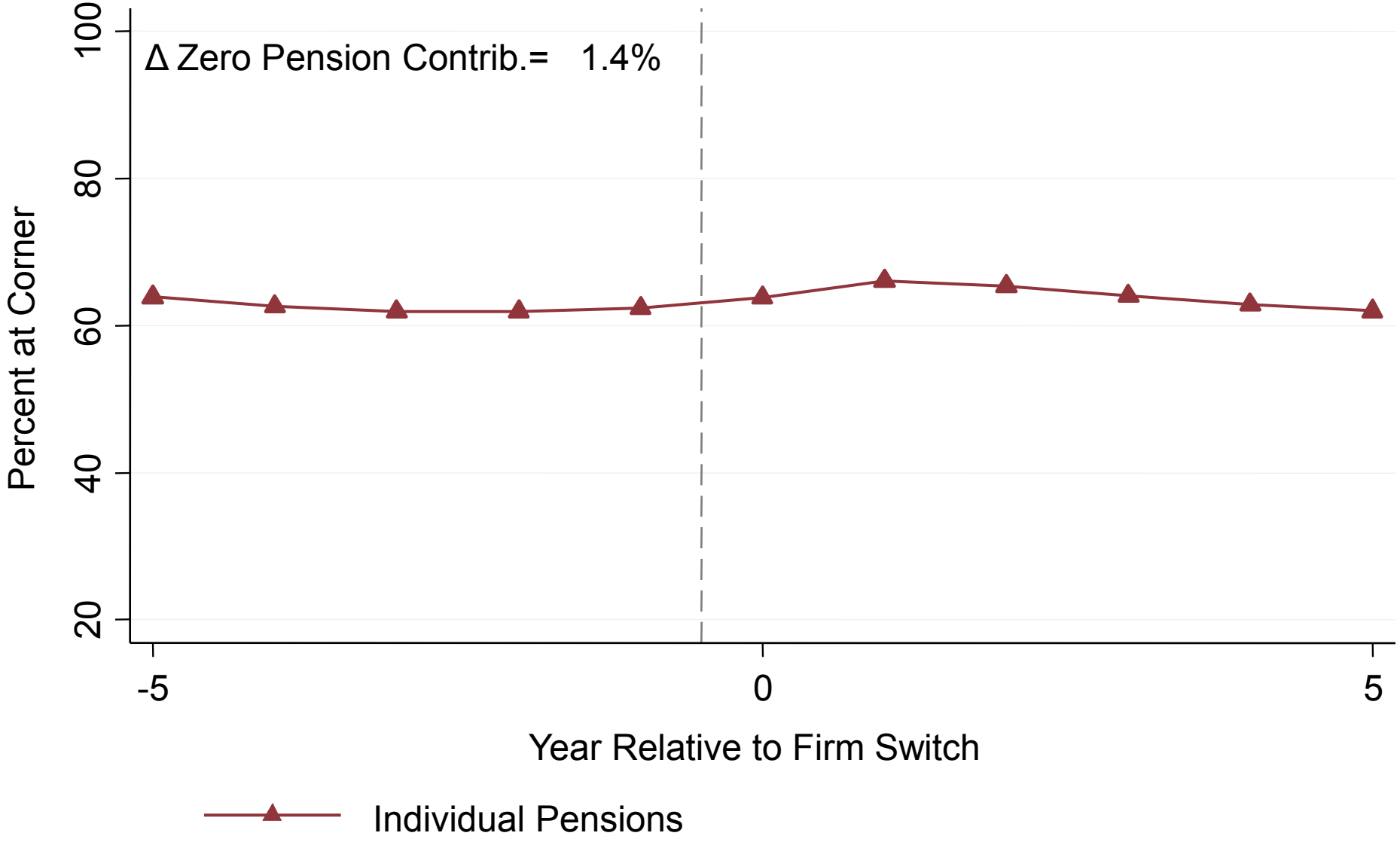
Event Study around Switches to Firm with >3% Increase in Employer Pension Rate

Individuals with Positive Pension Contributions or Savings Prior to Switch



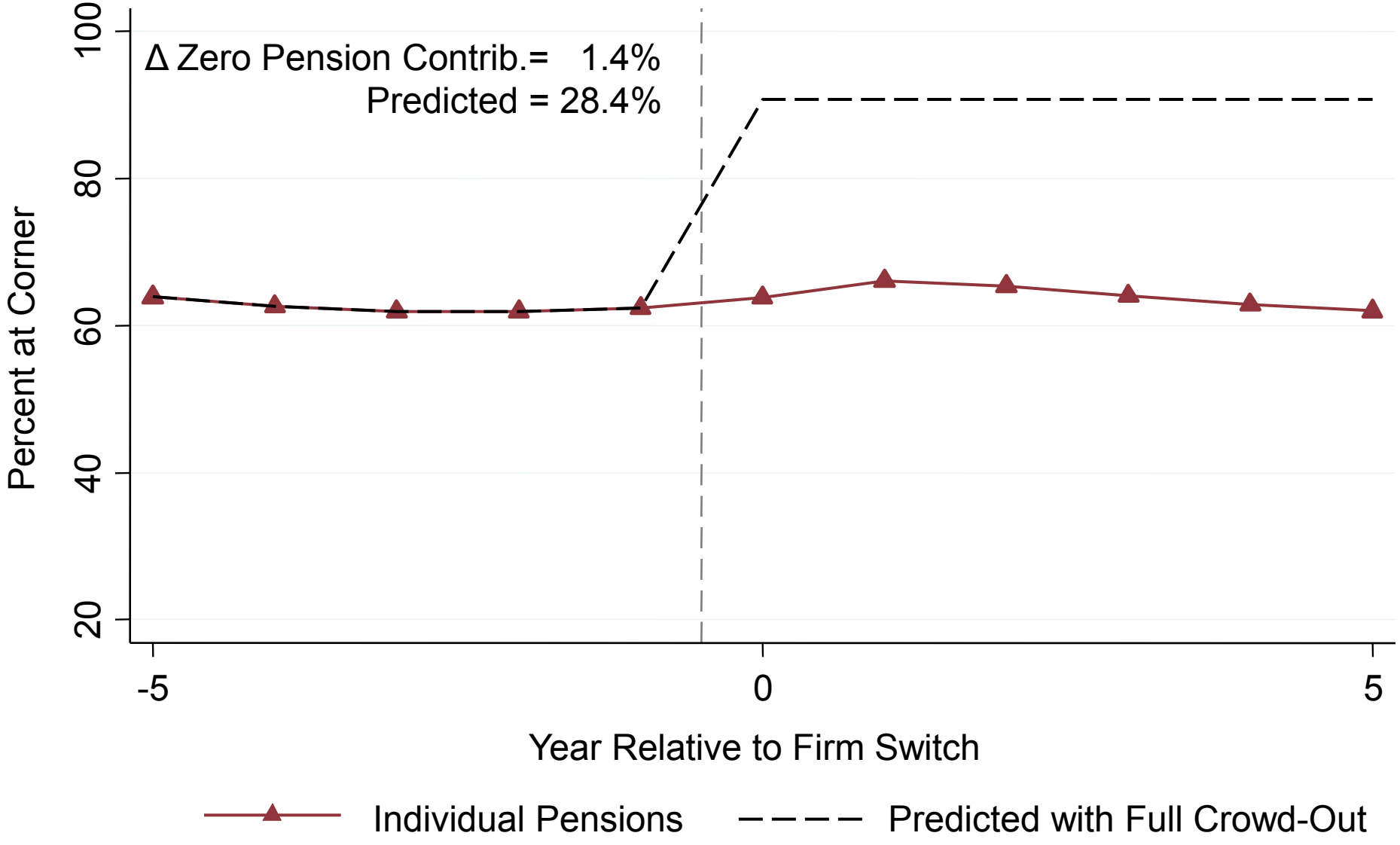
Source: Chetty et al. QJE'14

Fraction at Corner around Switches to Firm with >3% Increase in Employer Pension Rate

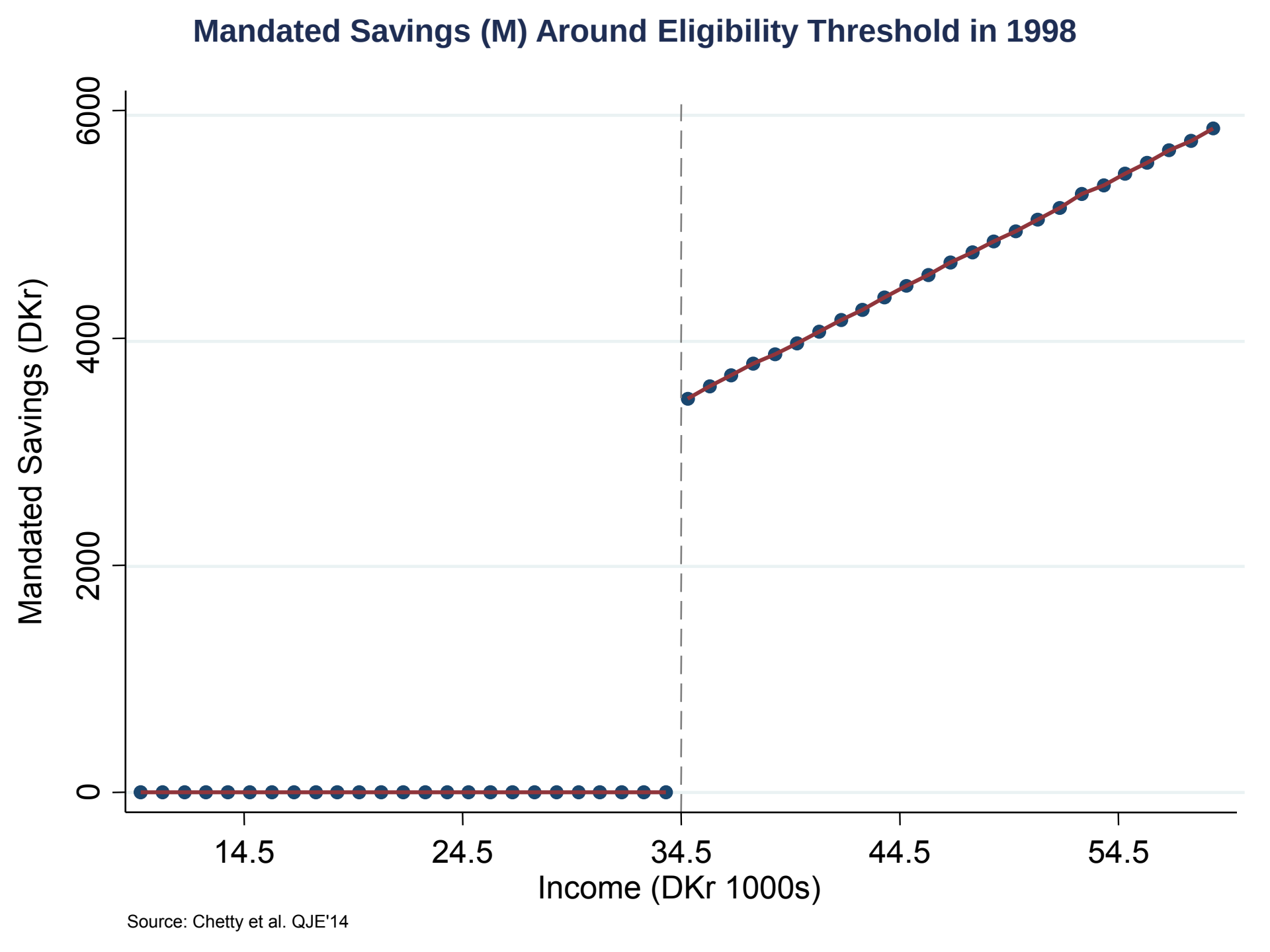


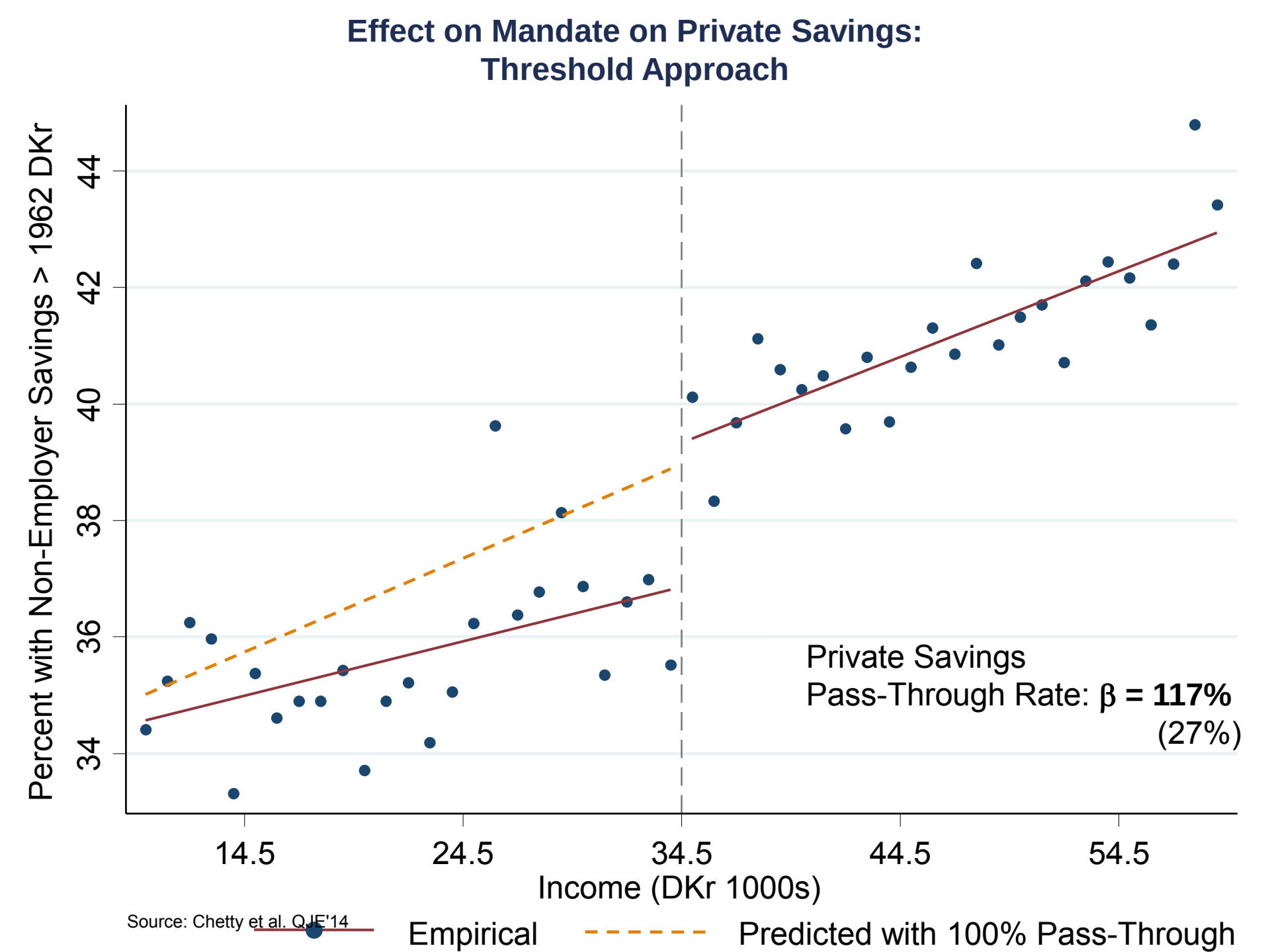
Source: Chetty et al. QJE'14

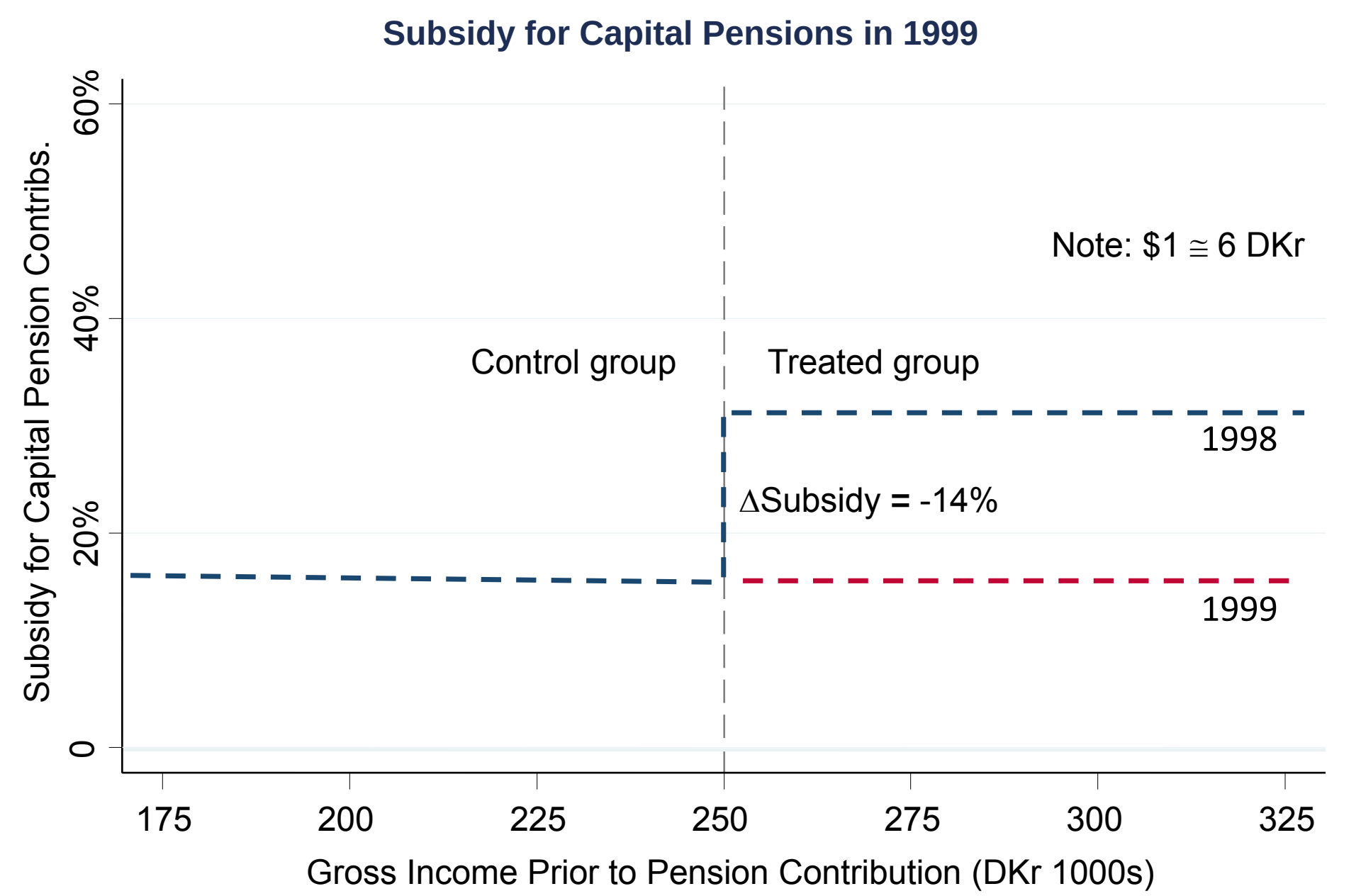
Fraction at Corner around Switches to Firm with >3% Increase in Employer Pension Rate



Source: Chetty et al. QJE'14

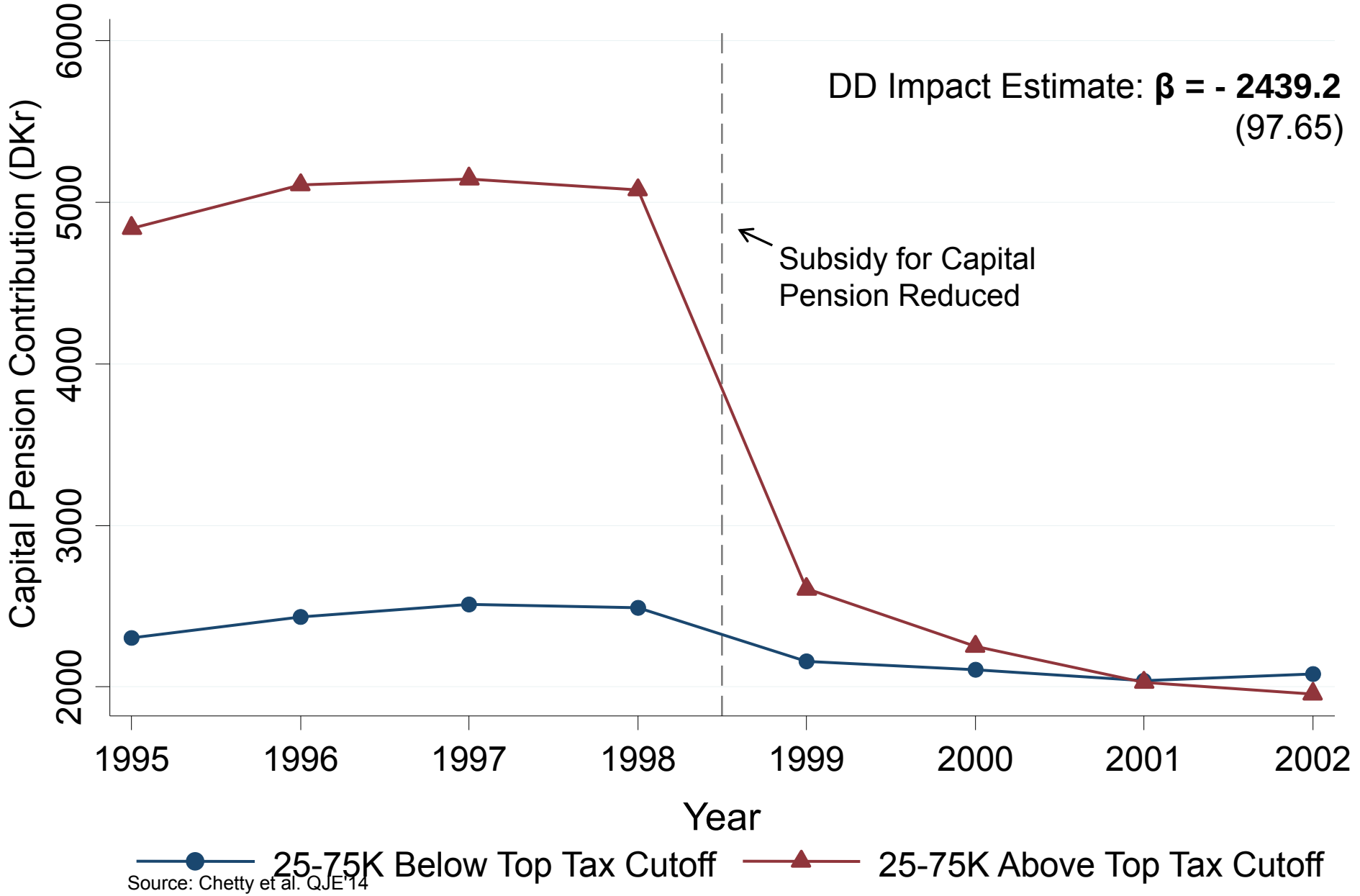

Mandated Savings (M) Around Eligibility Threshold in 1998
Mandated Savings (DKr)
0
2000
4000
6000
14.5
24.5
34.5
44.5
54.5
Income (DKr 1000s)
Source: Chetty et al. QJE'14


Effect on Mandate on Private Savings:
Threshold Approach
Percent with Non-Employer Savings > 1962 DKr
34
36
38
40
42
44
14.5
24.5
34.5
44.5
54.5
Income (DKr 1000s)
Private Savings
Pass-Through Rate: β = 117%
(27%)
Source: Chetty et al. QJE'14
Empirical
Predicted with 100% Pass-Through



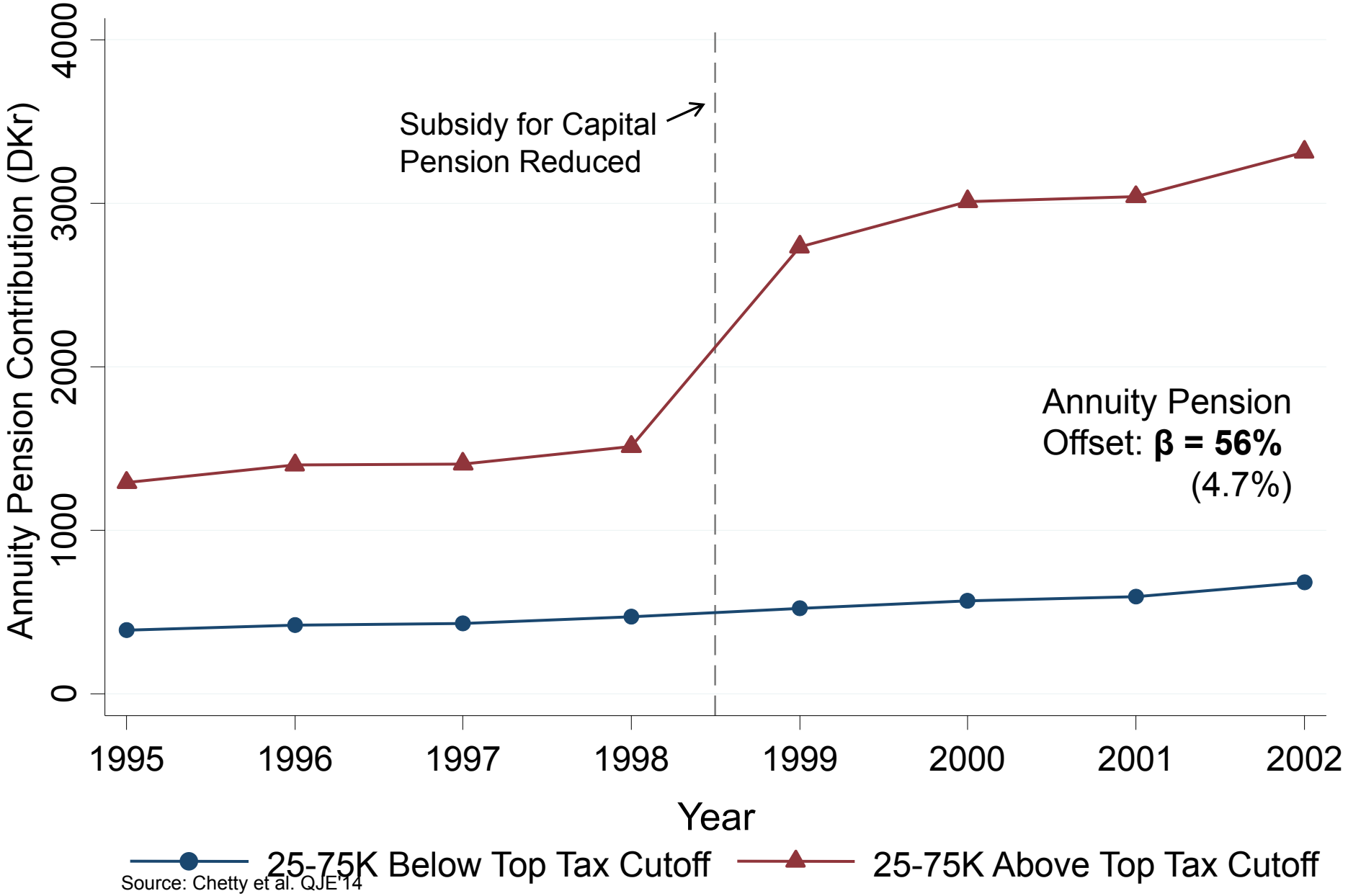
Source: Chetty et al. QJE'14

Impact of Subsidy Reduction On Individual Capital Pension Contribs.



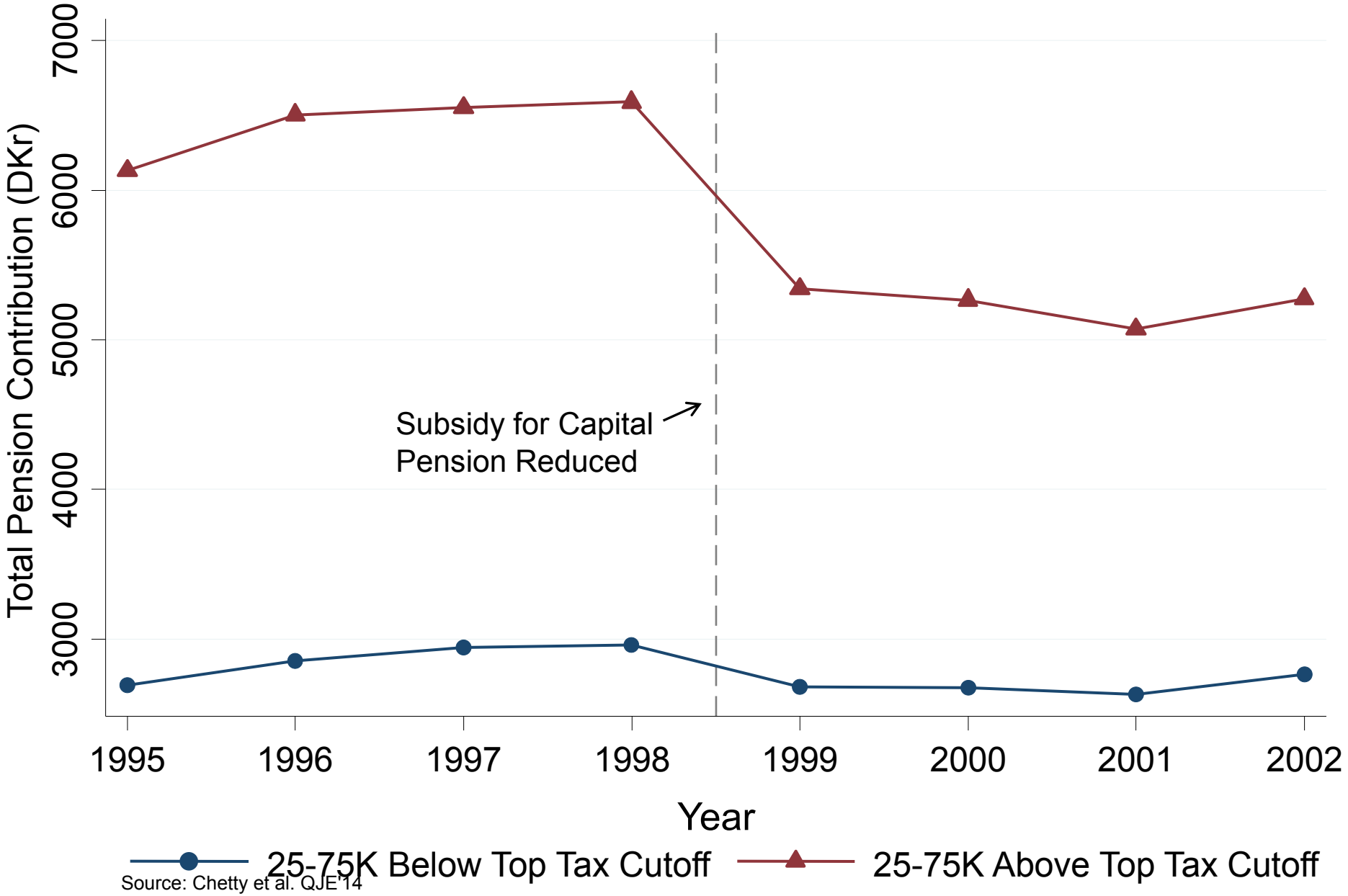
Source: Chetty et al. QJE'14

Impact of Capital Pension Subsidy Reduction On Annuity Pension Contributions

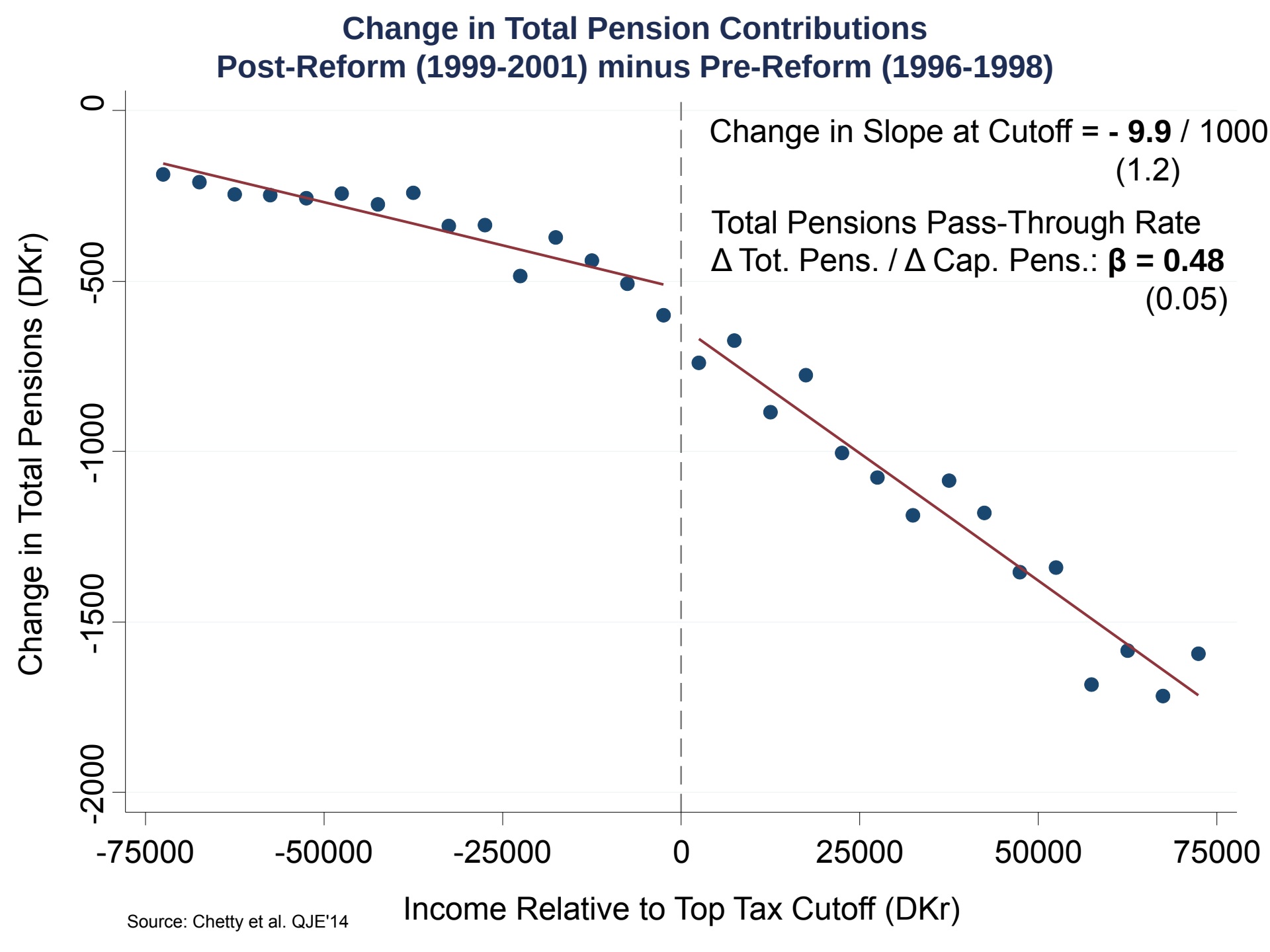


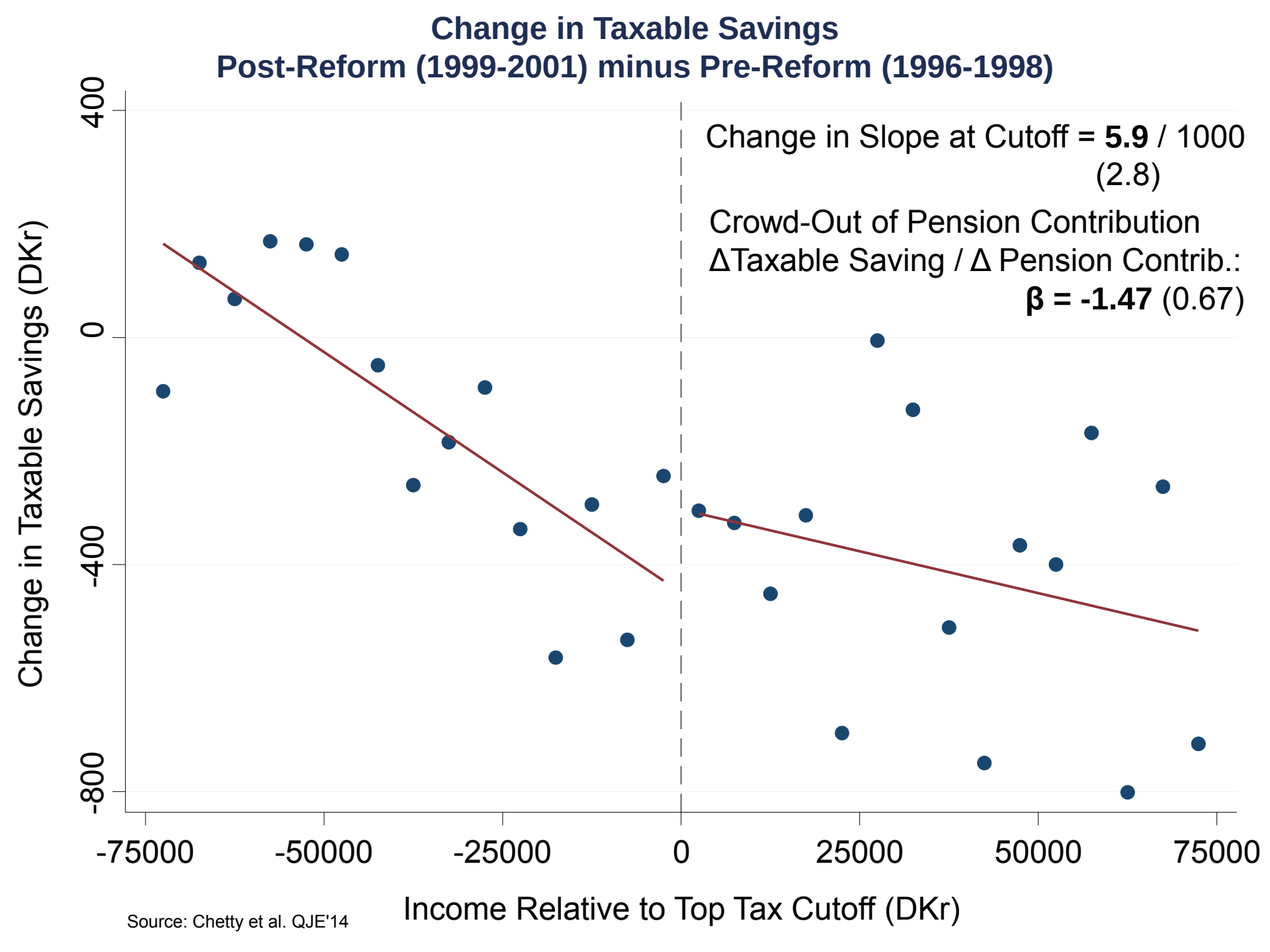
Source: Chetty et al. QJE'14

Impact of Capital Pension Subsidy Reduction On Total Pension Contributions

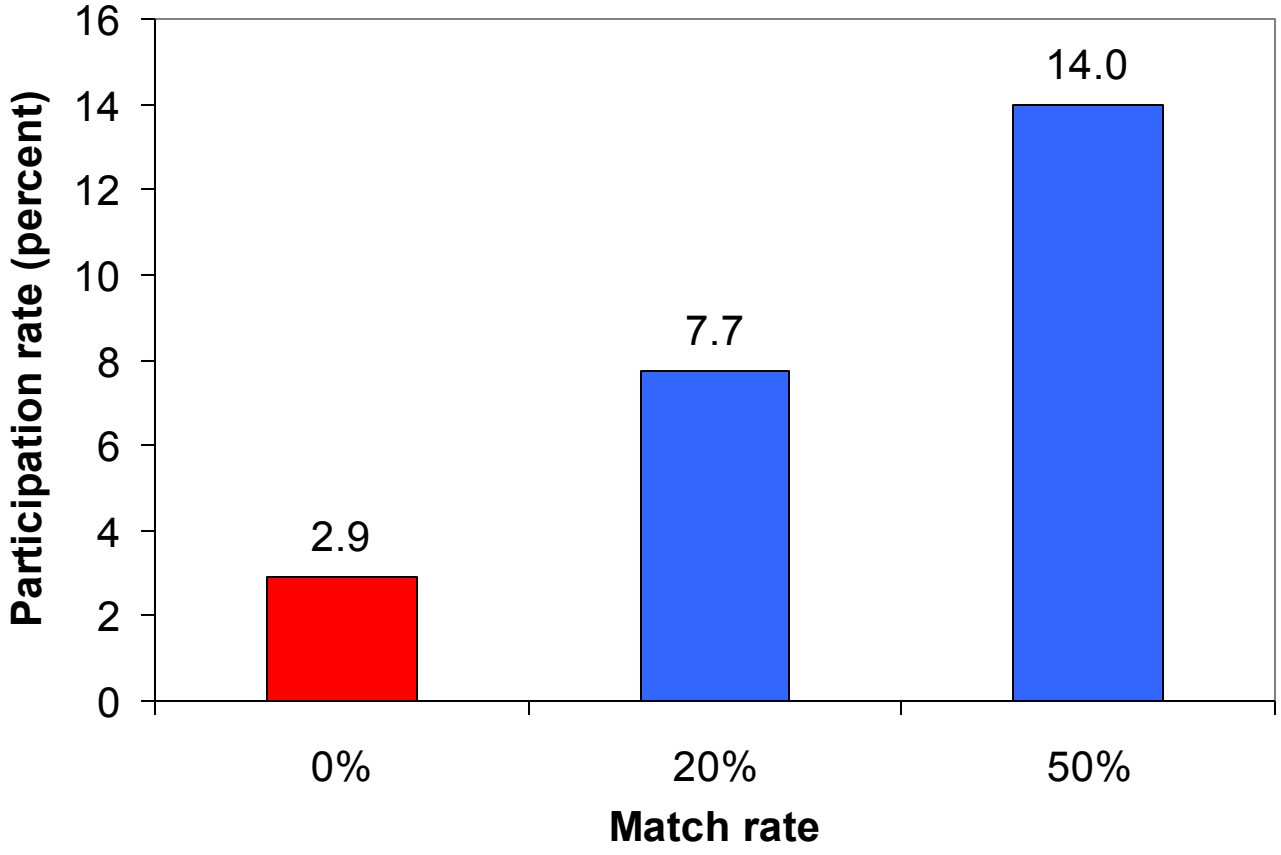


Source: Chetty et al. QJE'14


Change in Total Pension Contributions
Post-Reform (1999-2001) minus Pre-Reform (1996-1998)
Change in Slope at Cutoff = - 9.9 / 1000
(1.2)
Total Pensions Pass-Through Rate
Δ Tot. Pens. / Δ Cap. Pens.: β = 0.48
(0.05)
Change in Total Pensions (DKr)
0
-500
-1000
-1500
-2000
-75000
-50000
-25000
0
25000
50000
75000
Income Relative to Top Tax Cutoff (DKr)
Source: Chetty et al. QJE'14


Change in Taxable Savings
Post-Reform (1999-2001) minus Pre-Reform (1996-1998)
Change in Slope at Cutoff = 5.9 / 1000
(2.8)
Crowd-Out of Pension Contribution
ΔTaxable Saving / Δ Pension Contrib.:
β = -1.47 (0.67)
Change in Taxable Savings (DKr)
400
0
-400
-800
-75000
-50000
-25000
0
25000
50000
75000
Income Relative to Top Tax Cutoff (DKr)
Source: Chetty et al. QJE'14

Effects of match rates on X-IRA participation



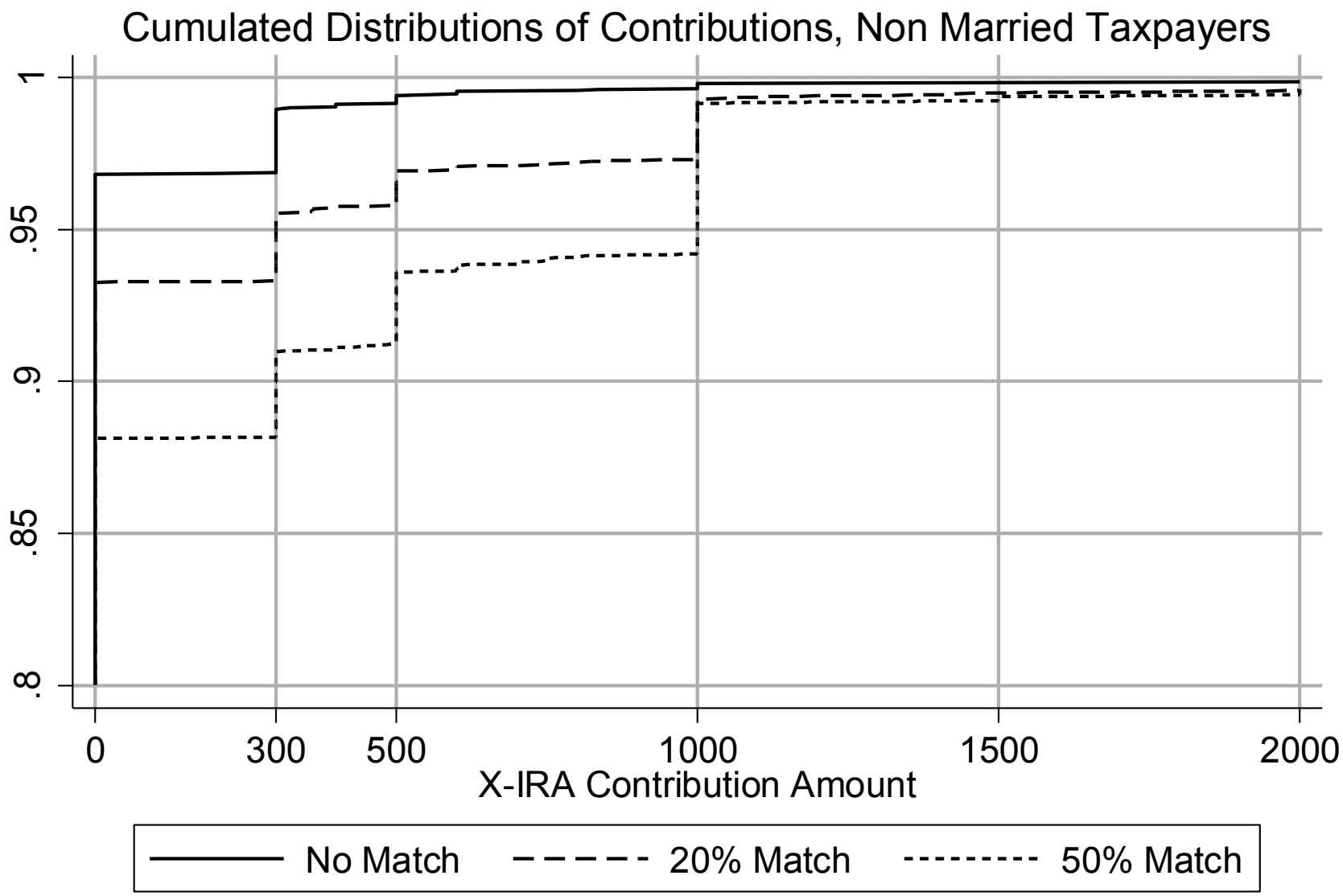
Source: Duflo et al. QJE'06

Table 2: Effects of the experiment on X-IRA behavior

	0% match	20% match	50% match	20% - 0%	50% - 20%	50% - 0%
Opened an X-IRA (%)	2.90	7.72	13.98	4.82	6.26	11.07
	(0.24)	(0.40)	(0.50)	(0.46)	(0.65)	(0.56)
Amount contributed ($) (unconditional)	$22	$85	$155	$63	$70	$133
	(3)	(6)	(7)	(7)	(10)	(8)
Amount contributed ($) (conditional)	$765	$1,102	$1,108	$337	$6	$343
	(84)	(55)	(34)	(102)	(62)	(85)
Amount contributed+match	$22	$99	$222	$77	$124	$200
(unconditional)	(3)	(7)	(10)	(7)	(12)	(11)
Amount contributed+match (conditional)	$765	$1,280	$1,591	$515	$310	$826
	(84)	(60)	(44)	(109)	(74)	(103)

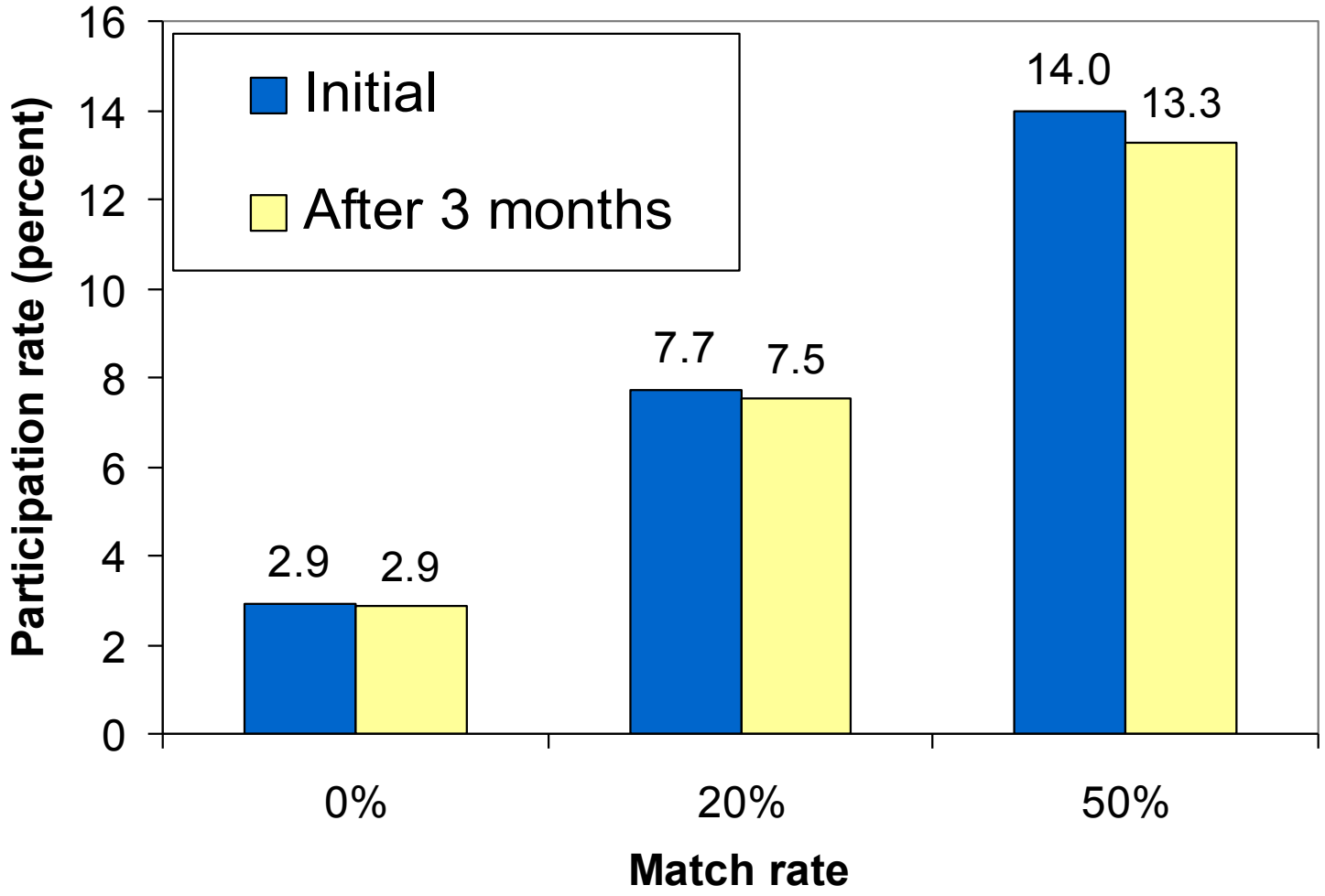
Source: Duflo et al. QJE'06

Figure 1B

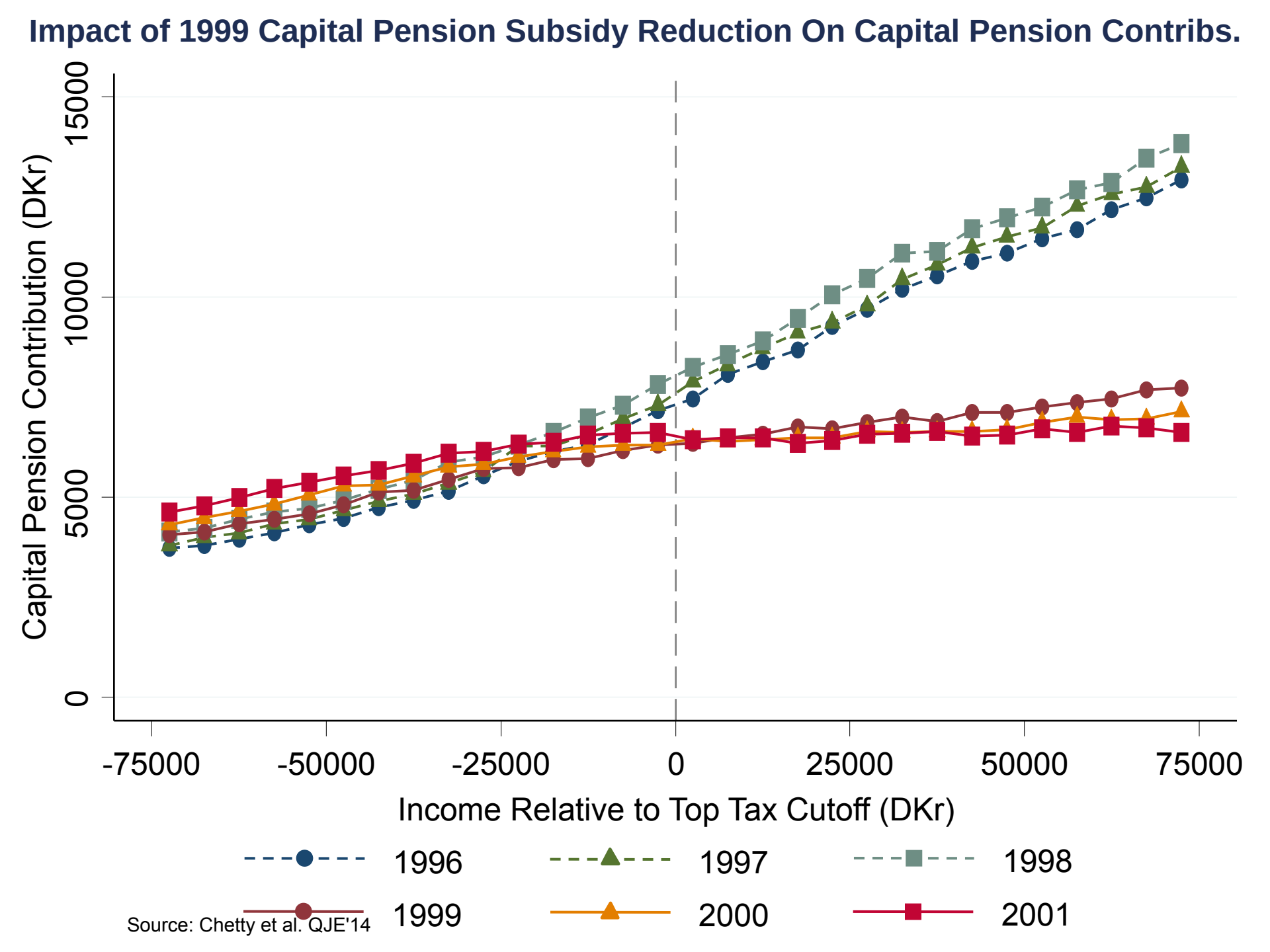


Source: Duflo et al. QJE'06

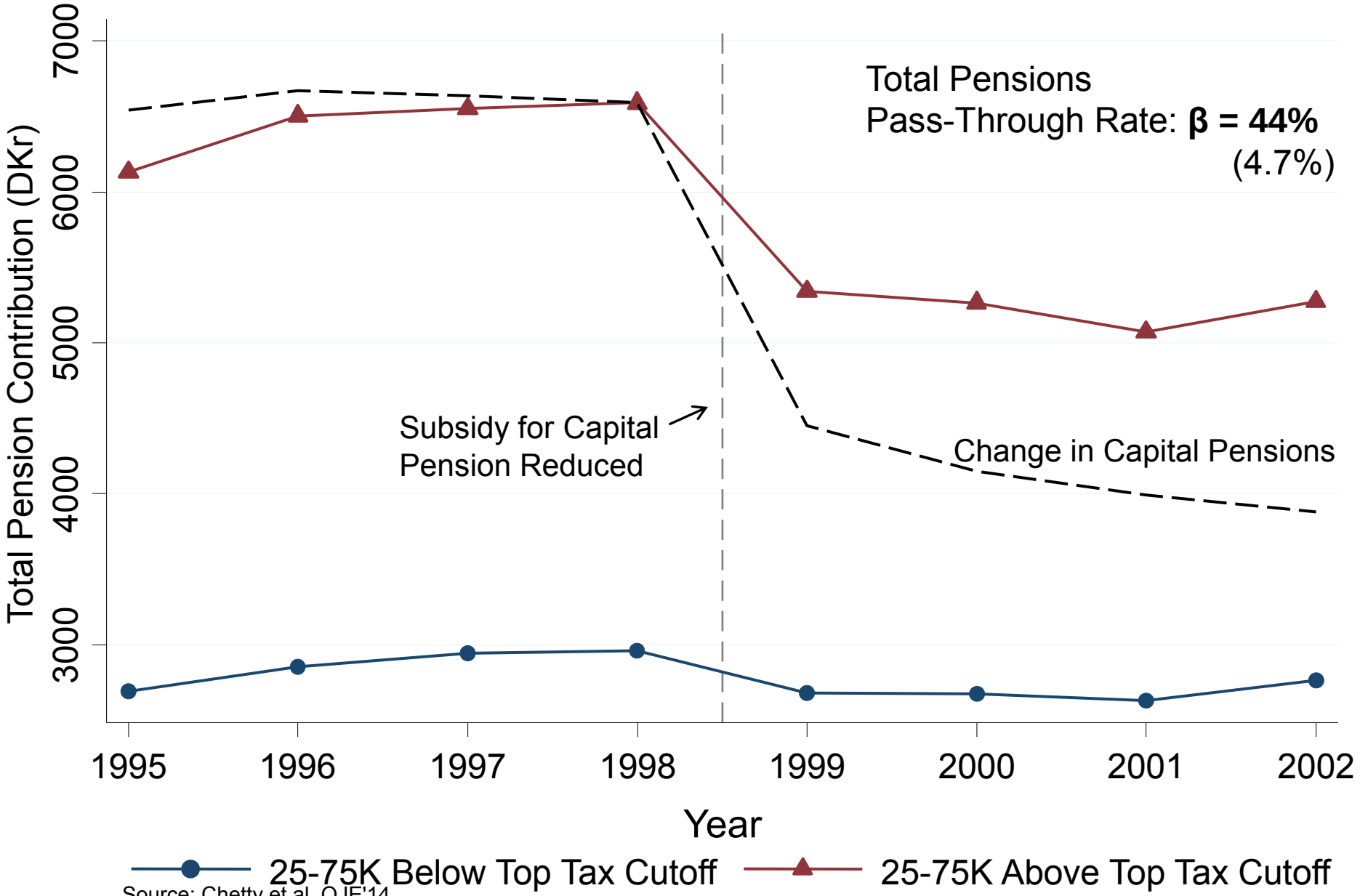
Withdrawal activity: fraction contributors after 3 months



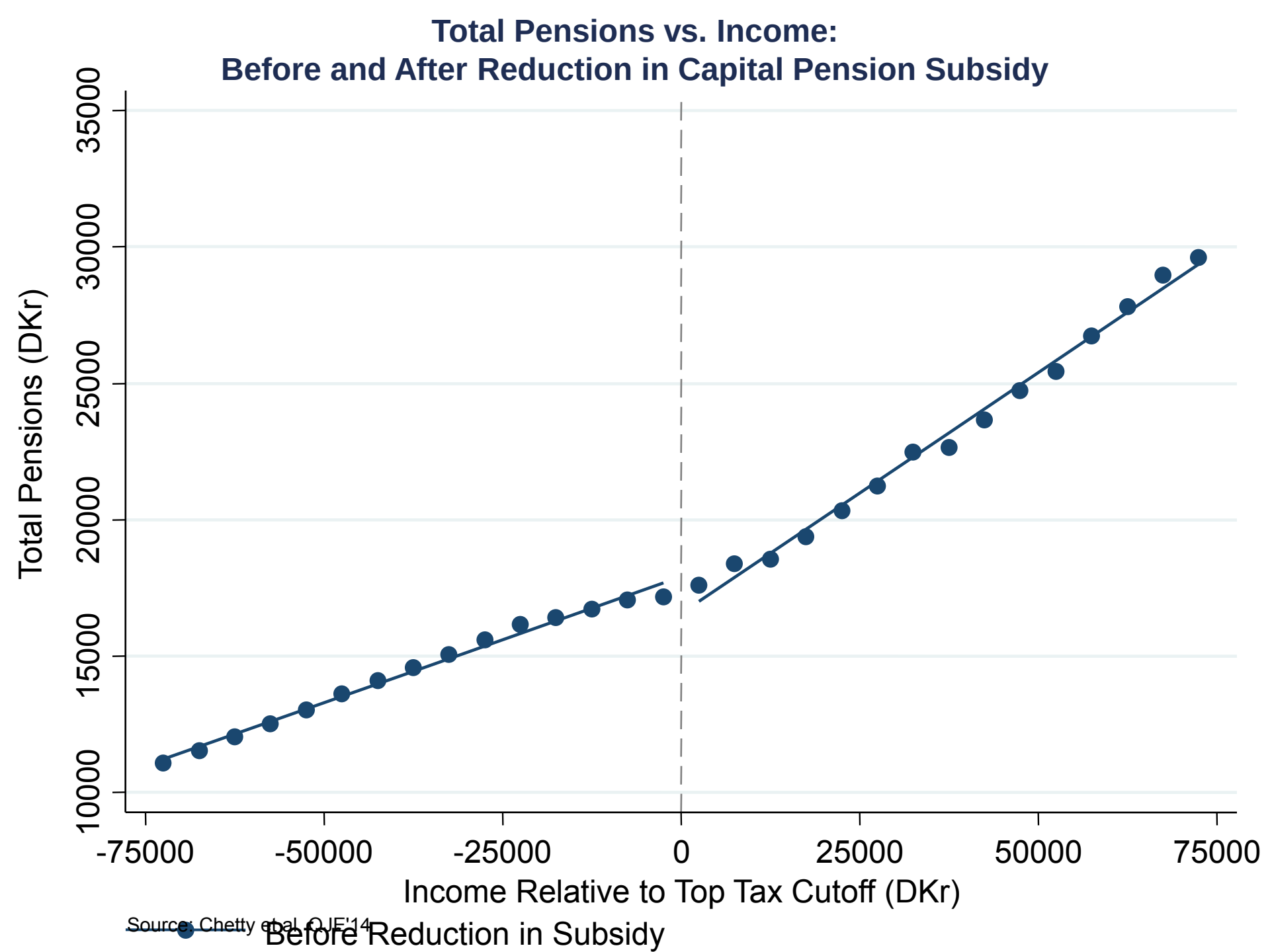
Source: Duflo et al. QJE'06

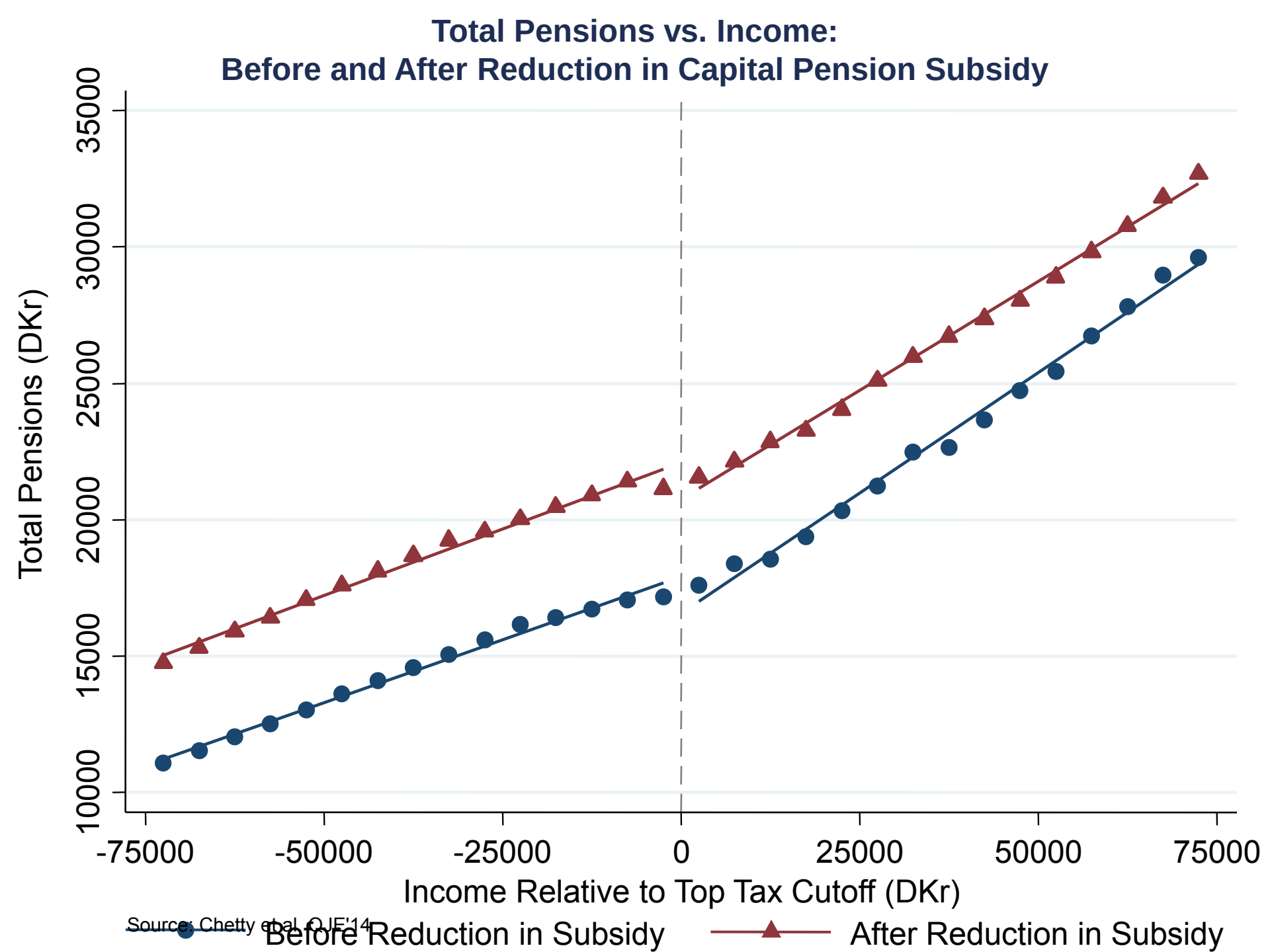

Impact of 1999 Capital Pension Subsidy Reduction On Capital Pension Contribs.
Capital Pension Contribution (DKr)
0
5000
10000
15000
-75000
-50000
-25000
0
25000
50000
75000
Income Relative to Top Tax Cutoff (DKr)
1996
1997
1998
1999
2000
2001
Source: Chetty et al. QJE'14

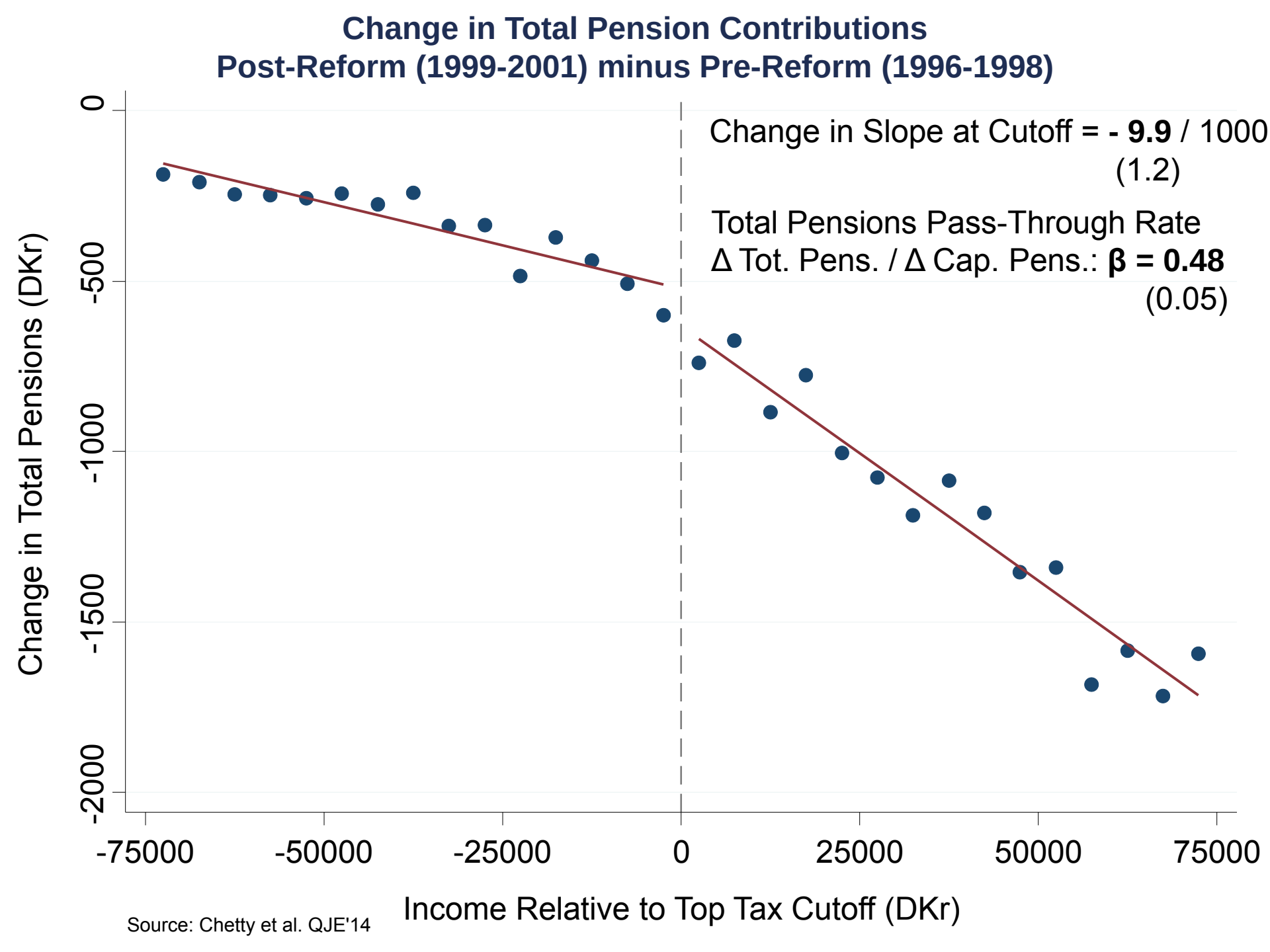
Impact of Capital Pension Subsidy Reduction On Total Pension Contributions

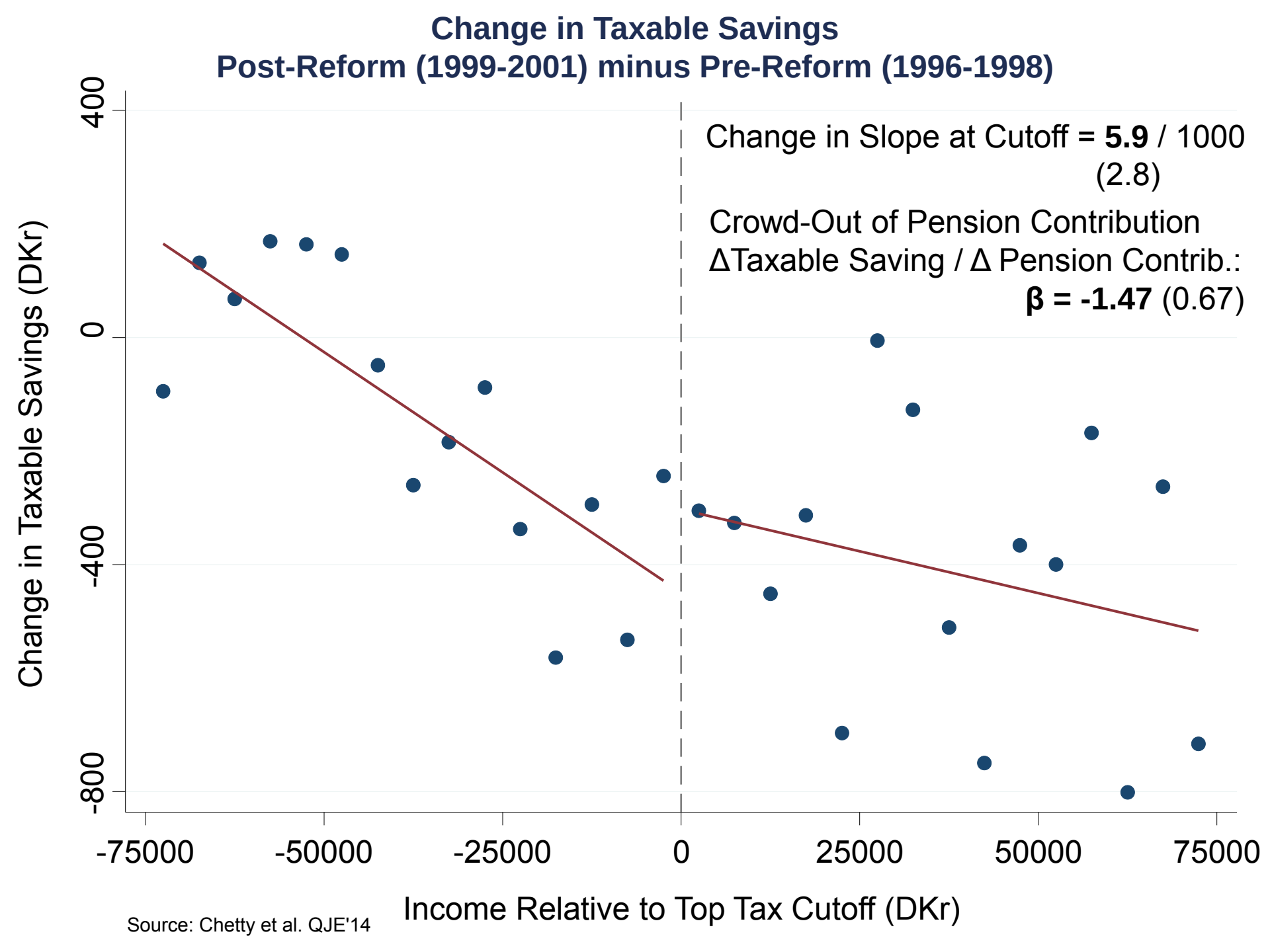


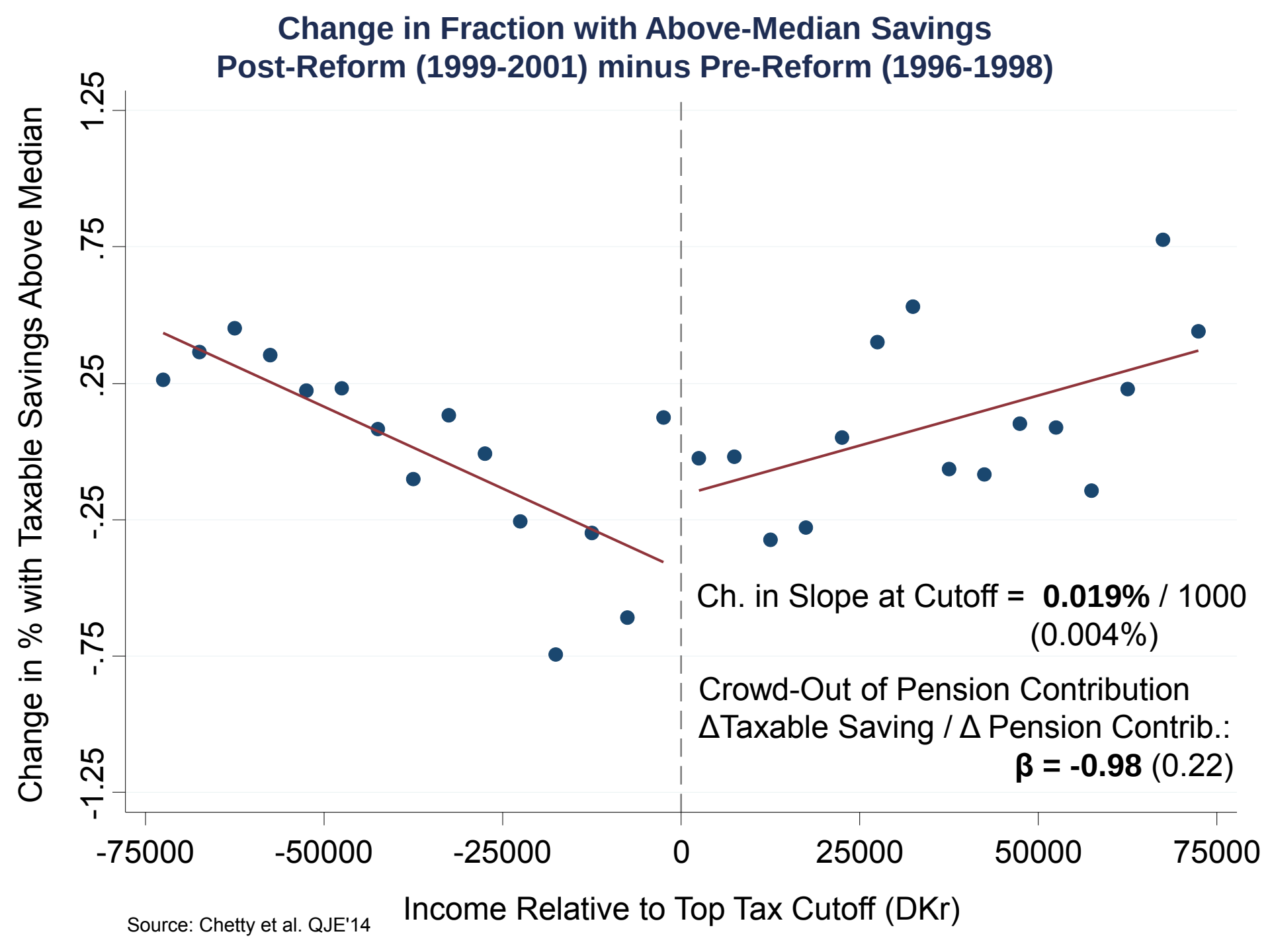
Source: Chetty et al. QJE'14


Total Pensions vs. Income:
Before and After Reduction in Capital Pension Subsidy
Total Pensions (DKr)
10000
15000
20000
25000
30000
35000
-75000
-50000
-25000
0
25000
50000
75000
Income Relative to Top Tax Cutoff (DKr)
Source: Chetty et al. QJE'14
Before Reduction in Subsidy


Total Pensions vs. Income:
Before and After Reduction in Capital Pension Subsidy
Total Pensions (DKr)
10000
15000
20000
25000
30000
35000
-75000
-50000
-25000
0
25000
50000
75000
Income Relative to Top Tax Cutoff (DKr)
Source: Chetty et al. QJE'14
Before Reduction in Subsidy
After Reduction in Subsidy


Change in Total Pension Contributions
Post-Reform (1999-2001) minus Pre-Reform (1996-1998)
Change in Slope at Cutoff = - 9.9 / 1000
(1.2)
Total Pensions Pass-Through Rate
Δ Tot. Pens. / Δ Cap. Pens.: β = 0.48
(0.05)
Change in Total Pensions (DKr)
0
-500
-1000
-1500
-2000
-75000
-50000
-25000
0
25000
50000
75000
Income Relative to Top Tax Cutoff (DKr)
Source: Chetty et al. QJE'14


Change in Taxable Savings
Post-Reform (1999-2001) minus Pre-Reform (1996-1998)
Change in Slope at Cutoff = 5.9 / 1000
(2.8)
Crowd-Out of Pension Contribution
ΔTaxable Saving / Δ Pension Contrib.:
β = -1.47 (0.67)
Change in Taxable Savings (DKr)
400
0
-400
-800
-75000
-50000
-25000
0
25000
50000
75000
Income Relative to Top Tax Cutoff (DKr)
Source: Chetty et al. QJE'14


Change in Fraction with Above-Median Savings
Post-Reform (1999-2001) minus Pre-Reform (1996-1998)
Change in % with Taxable Savings Above Median
1.25
.75
.25
-.25
-.75
-1.25
-75000
-50000
-25000
0
25000
50000
75000
Income Relative to Top Tax Cutoff (DKr)
Ch. in Slope at Cutoff = 0.019% / 1000
(0.004%)
Crowd-Out of Pension Contribution
ΔTaxable Saving / Δ Pension Contrib.:
β = -0.98 (0.22)
Source: Chetty et al. QJE'14

Crowd-Out Estimates

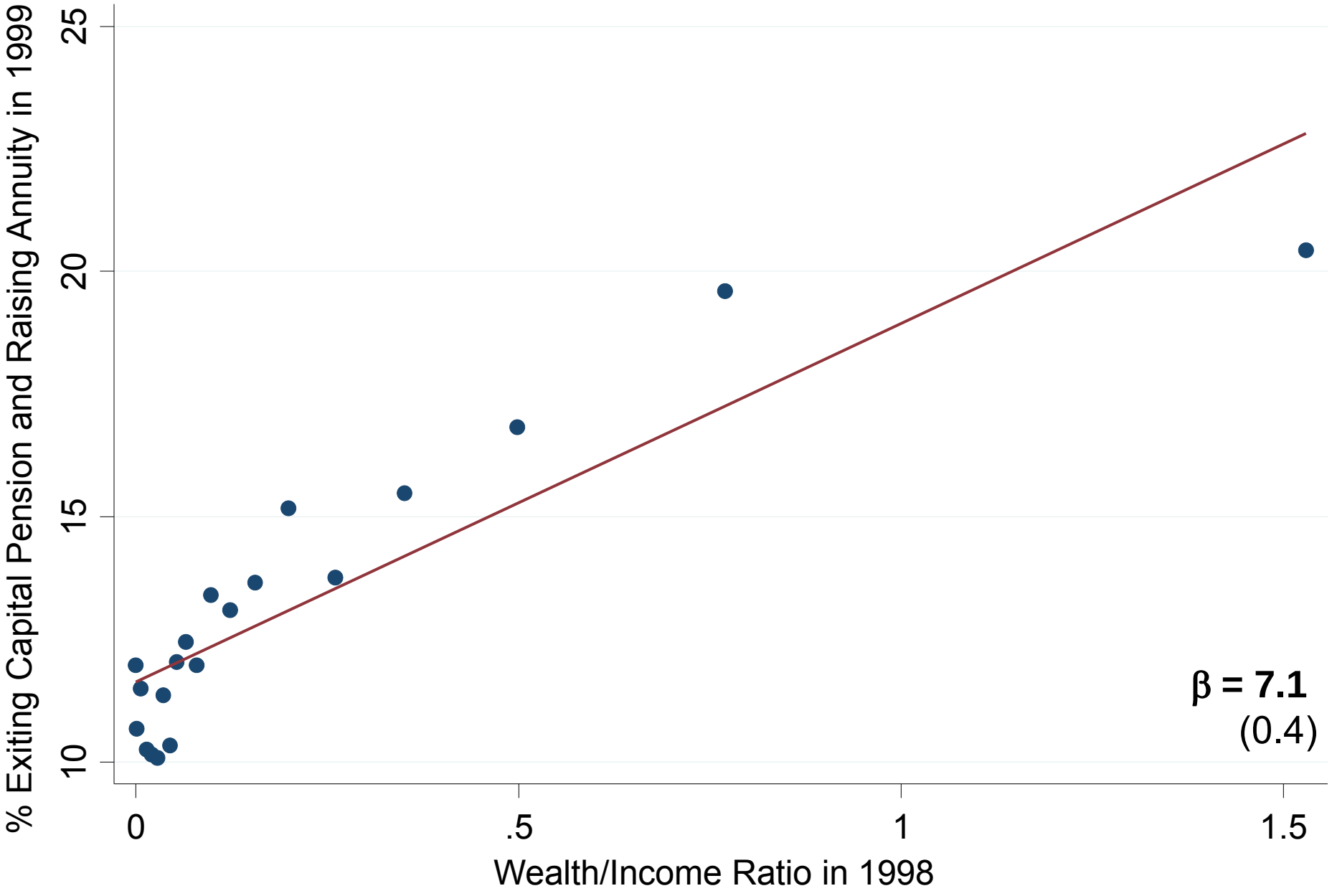
- Consider impacts of a DKR 1000 increase in pre-tax income
  - **DKR 10.0** less contributed to retirement accounts when subsidy fell
  - MTR of 60% → disposable income rises by 0.4 x 10.0 = **DKR 4.0**
  - **DKR 3.92** of this is deposited in taxable savings
  - **DKR 0.08** is consumed → net saving falls by DKR 0.08

→ 98% of the increase in pension contributions due to subsidies is financed by offsetting reductions in savings in taxable accounts

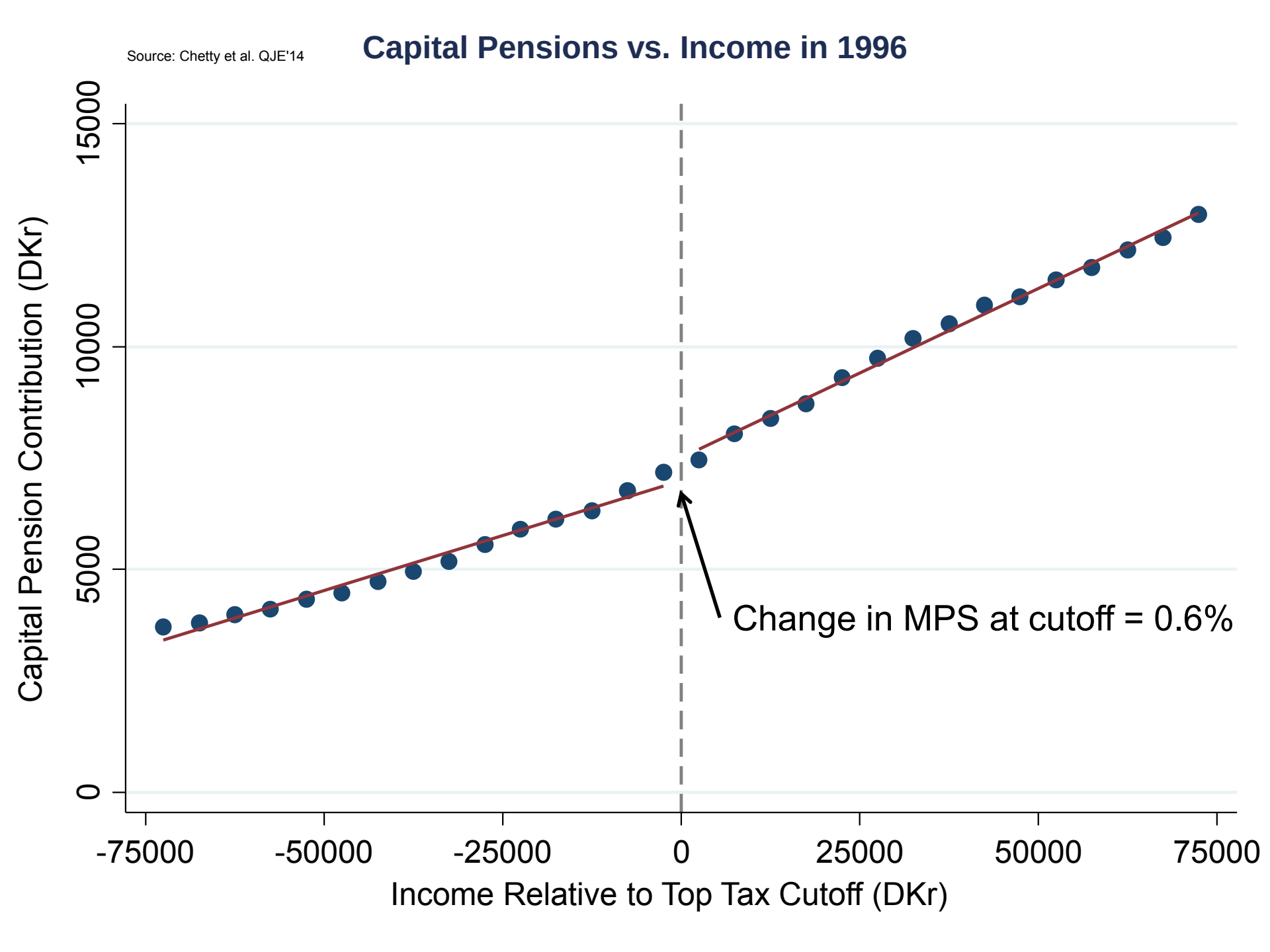
- Based on this estimate, we calculate that each DKr 1 of tax expenditure on subsidies raises total saving by less than 1 cent

Source: Chetty et al. QJE'14

Heterogeneity in Response to Capital Pension Subsidy by Wealth/Income Ratio

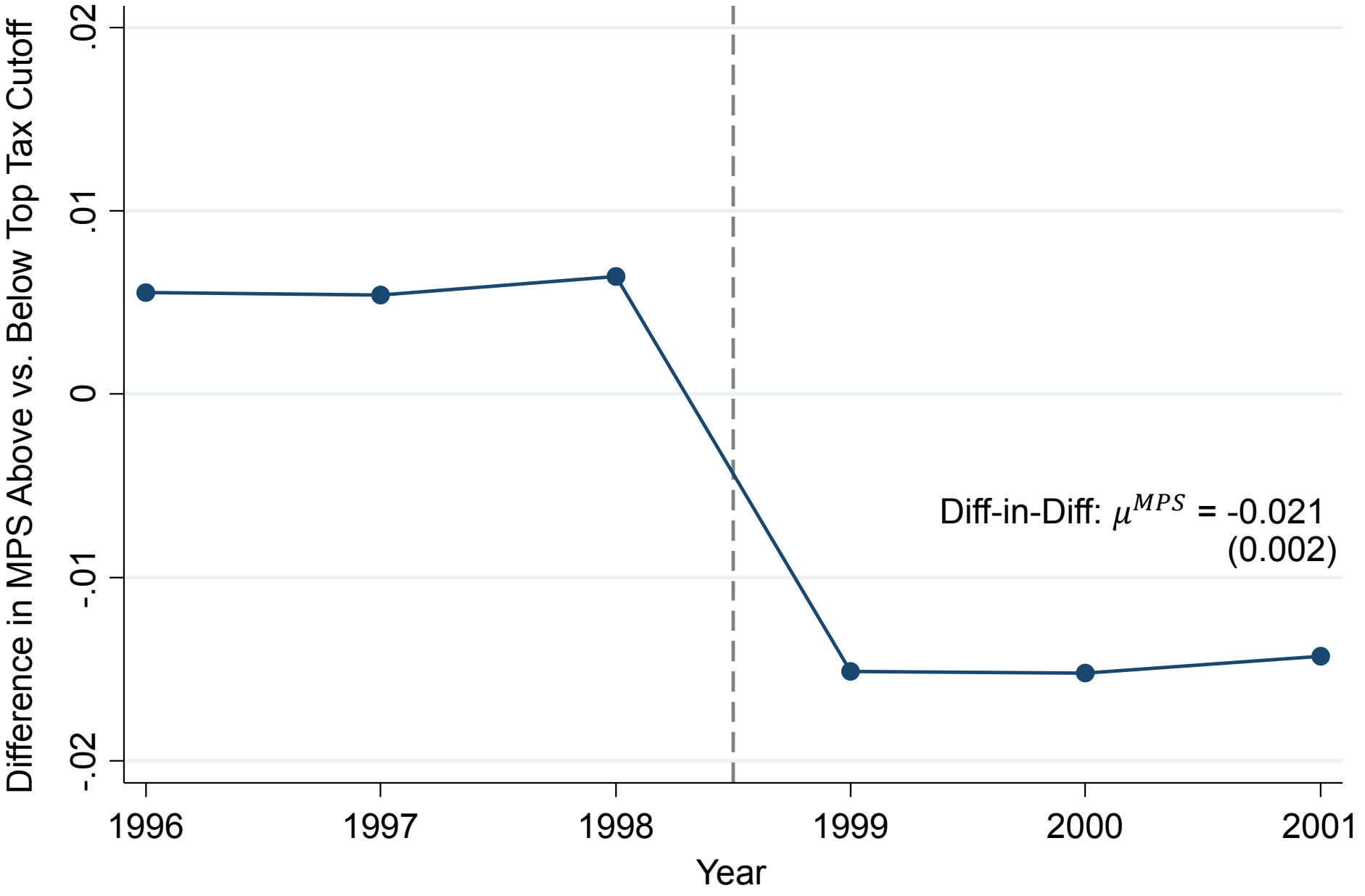


Source: Chetty et al. QJE'14


Source: Chetty et al. QJE'14
Capital Pensions vs. Income in 1996
Capital Pension Contribution (DKr)
0
5000
10000
15000
-75000
-50000
-25000
0
25000
50000
75000
Income Relative to Top Tax Cutoff (DKr)
Change in MPS at cutoff = 0.6%

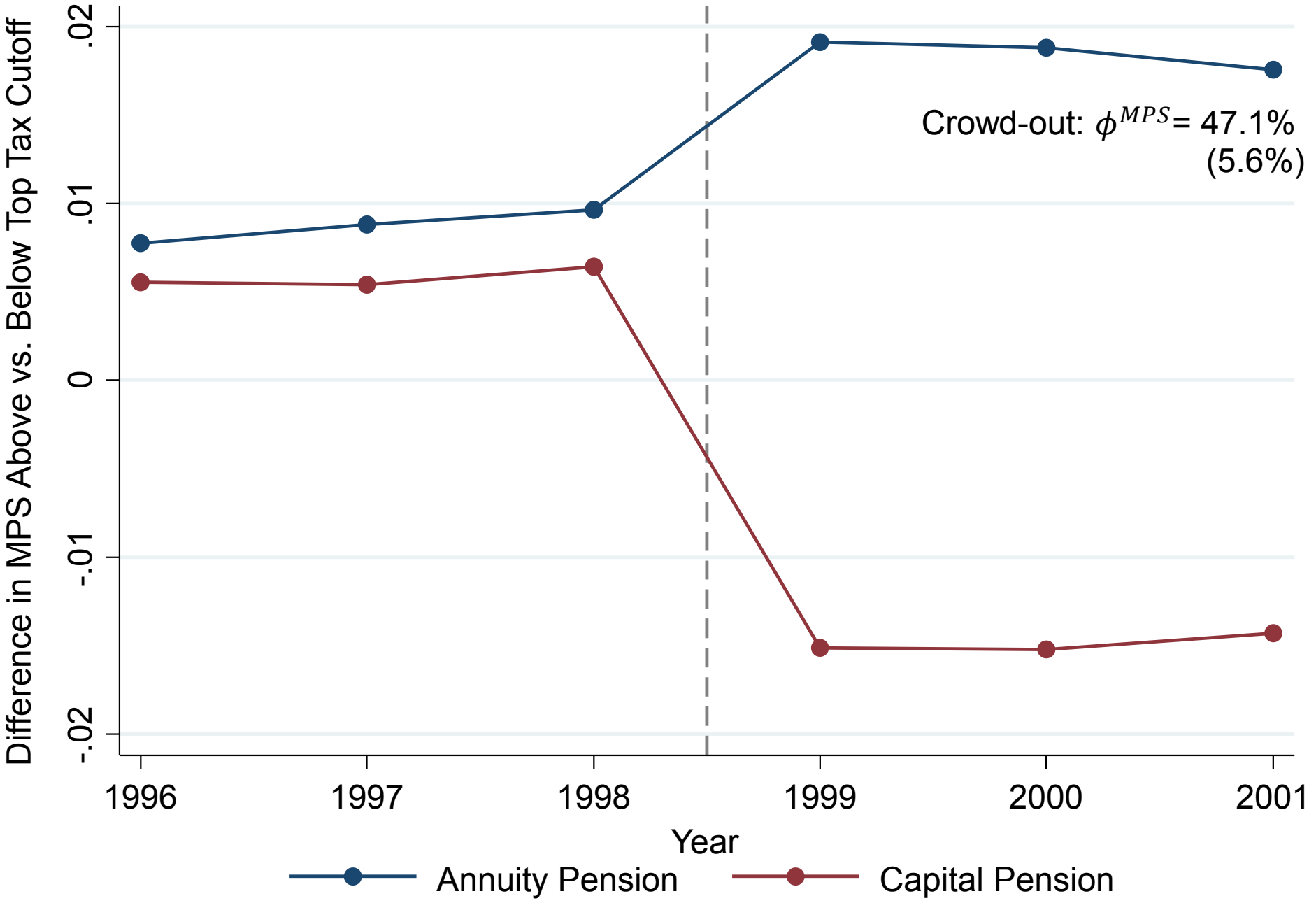
Change in Marginal Propensity to Save in Annuity vs. Capital Accounts at Top Tax Cutoff by Year

Source: Chetty et al. QJE'14



Change in Marginal Propensity to Save in Annuity vs. Capital Accounts at Top Tax Cutoff by Year

Source: Chetty et al. QJE'14



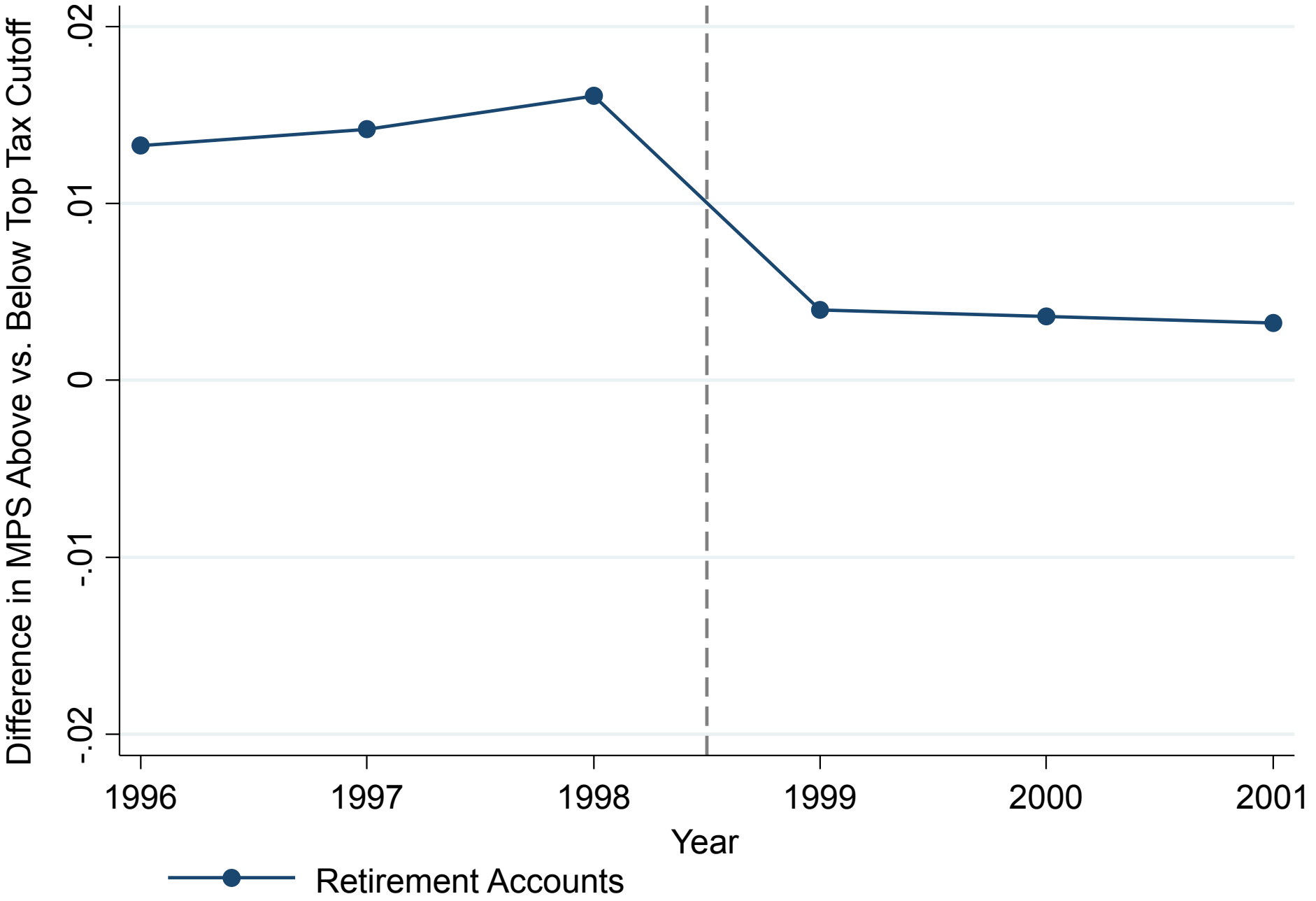
Shifting from Retirement to Taxable Savings

Source: Chetty et al. QJE'14

- Use change in capital pension subsidy as an instrument for *total* pension contributions
  - $1 reduction in capital pensions → 45 cent reduction in total pensions
  - Does this 45 cents go into consumption or saving in taxable accounts?

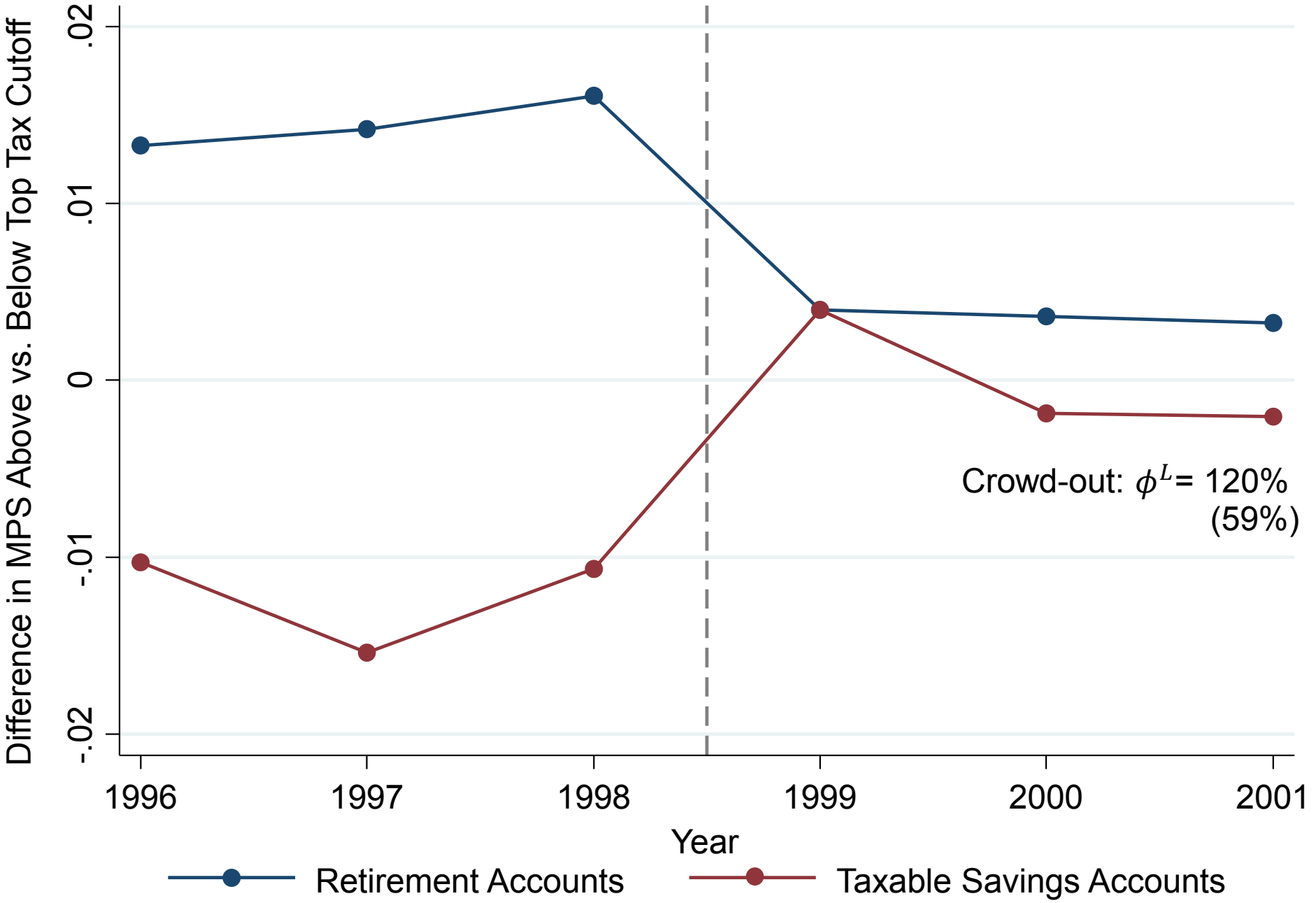
Change in Marginal Propensity to Save in Retirement vs. Non-Retirement Accounts at Top Tax Cutoff by Year

Source: Chetty et al. QJE'14



Change in Marginal Propensity to Save in Retirement vs. Non-Retirement Accounts at Top Tax Cutoff by Year

Source: Chetty et al. QJE'14



Source: Chetty et al. QJE'14

Estimates of Crowd-out Induced by Subsidy Change Based on Changes in Marginal Propensity to Save

	Annuity Contrib.	Total Pension Contrib.	Taxable Saving	Trimmed Taxable Saving	Taxable Saving Threshold
	(1)	(2)	(3)	(4)	(5)
Capital Pension Contrib.	-0.471 (0.056)	0.529 (0.056)			
Total Pension Contrib.			-1.200 (0.588)	-0.984 (0.267)	-0.994 (0.215)
No. of Obs.	7,026,187	7,026,187	7,026,187	7,026,187	7,026,187