Taxpayer response to greater progressivity:
Evidence from personal income tax reform in Uganda

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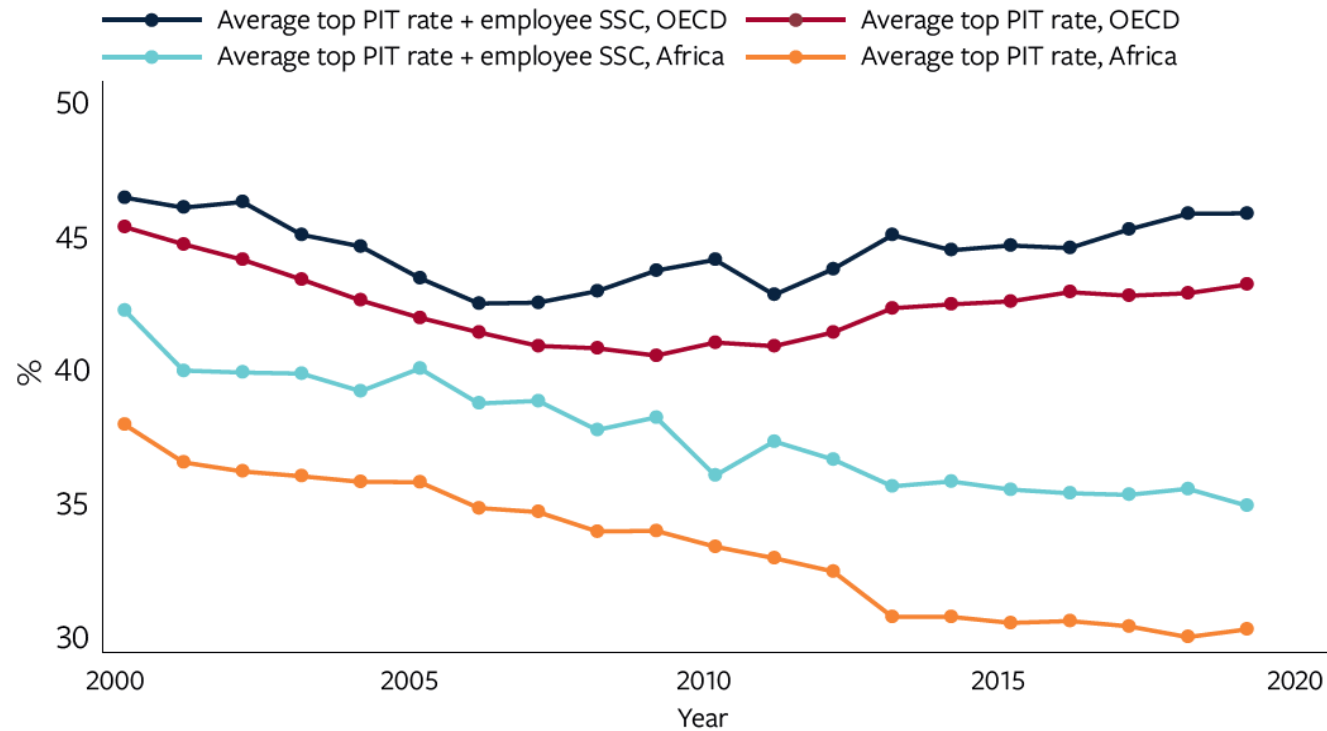Jukka Pirttilä (University of Helsinki, UNU-WIDER)

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Motivation and background

- Personal income tax rates (and revenue) low in SSA countries...

PIT rate comparison

Figure 2 Top marginal PIT and employee SSC rates, 2000–2019, African and OECD countries

Legend:
- Average top PIT rate + employee SSC, OECD
- Average top PIT rate, OECD
- Average top PIT rate + employee SSC, Africa
- Average top PIT rate, Africa

Sources: EITD (forthcoming) and OECD (2021)

Source: McNabb and Granger, 2022

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- ... Whereas income inequality substantial, with very little redistribution taking place by the state

Very limited redistribution

Table 4: Effect of Tax-Benefit Systems on Income Inequality and Poverty

	Inequality (Gini coefficient %)			Poverty (FGT0%)*		
	Disposable income	Market income	Difference	Disposable income	Market income	Difference
South Africa	63.4	73.5	-10.1	13.1	35.2	-22.1
Mozambique	81.8	82.3	-0.4	84.0	83.1	0.9
Zambia	74.7	76.4	-1.8	70.5	69.9	0.6
Ghana	71.0	71.3	-0.3	31.0	30.6	0.4
Ethiopia	84.1	87.9	-3.8	85.5	85.2	0.2
Tanzania	80.5	83.2	-2.7	72.6	72.5	0.1

Notes: * Poverty line = $1.90 per day per person. Source: authors' simulations based on Southmod microsimulation models and associated data: the South African National Income Dynamics Study (2014); the Mozambican Inquérito ao Orçamento Familiar (2008–9); the Zambian Living Conditions Monitoring Survey (2010); the Ghana Living Standards Survey, version 6 (2012–13); Ethiopian Living Standards Measurement Study (2013–14); and the Tanzanian Household Budget Survey (2011–12) data

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Source: Bargain et al. (2021)

Motivation and background

- Personal income tax rates (and revenue) low in SSA countries

- Whereas income inequality substantial, with very little redistribution taking place by the state

- **Would it make sense to raise the tax rates for high-income earners?**

Optimal tax background

- Optimal income tax analysis (Mirrlees 1971 and subsequent work):

- Socially desirable tax rate, (also) at the top:

  – High, if inequality and society's inequality aversion high

  – Low, if taxation reduces the tax base significantly

- => Key to measure how tax base reacts when tax rates are changed

- Little evidence from low-income countries on this

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This paper

- Examines the elasticity of taxable earned income using a tax policy reform in 2012/13 in Uganda

- Focus: consequences of increasing the top tax rate by 10 %-points (from 30 to 40%)

- The impacts of the reform on revenues and inequality

 – Taking into account the behavioural reactions

Motivation and rational for income tax reform

- Bracket creep as PIT had not been adjusted for inflation for a long time

- Aim:

  – Alleviate tax burden on small incomes, while

  – Sustaining tax revenue, therefore

  – Recoup lost tax revenue from top of the distribution.

  → **Increase progressivity of tax schedule**

- A new top tax rate was introduced, on persons earning more than 10 million UGX (2,700 USD) a month

  – Top 1 per cent

The 2012 tax reform

- Came into effect with 2012 fiscal year

- Shifted the whole tax schedule to the right and introduced a new upper threshold

- Changes in different groups:

1. Zero taxpayers: Not taxable

2. To zero taxpayers: MTR from 10 to 0%, ATR to 0%

3. MTR down: MTR from 20 to 10%, ATR down

4. ATR down: MTR unchanged, ATR down

5. Control: MTR unchanged, ATR minor decrease

6. Top taxpayers: MTR 30 to 40%, ATR up
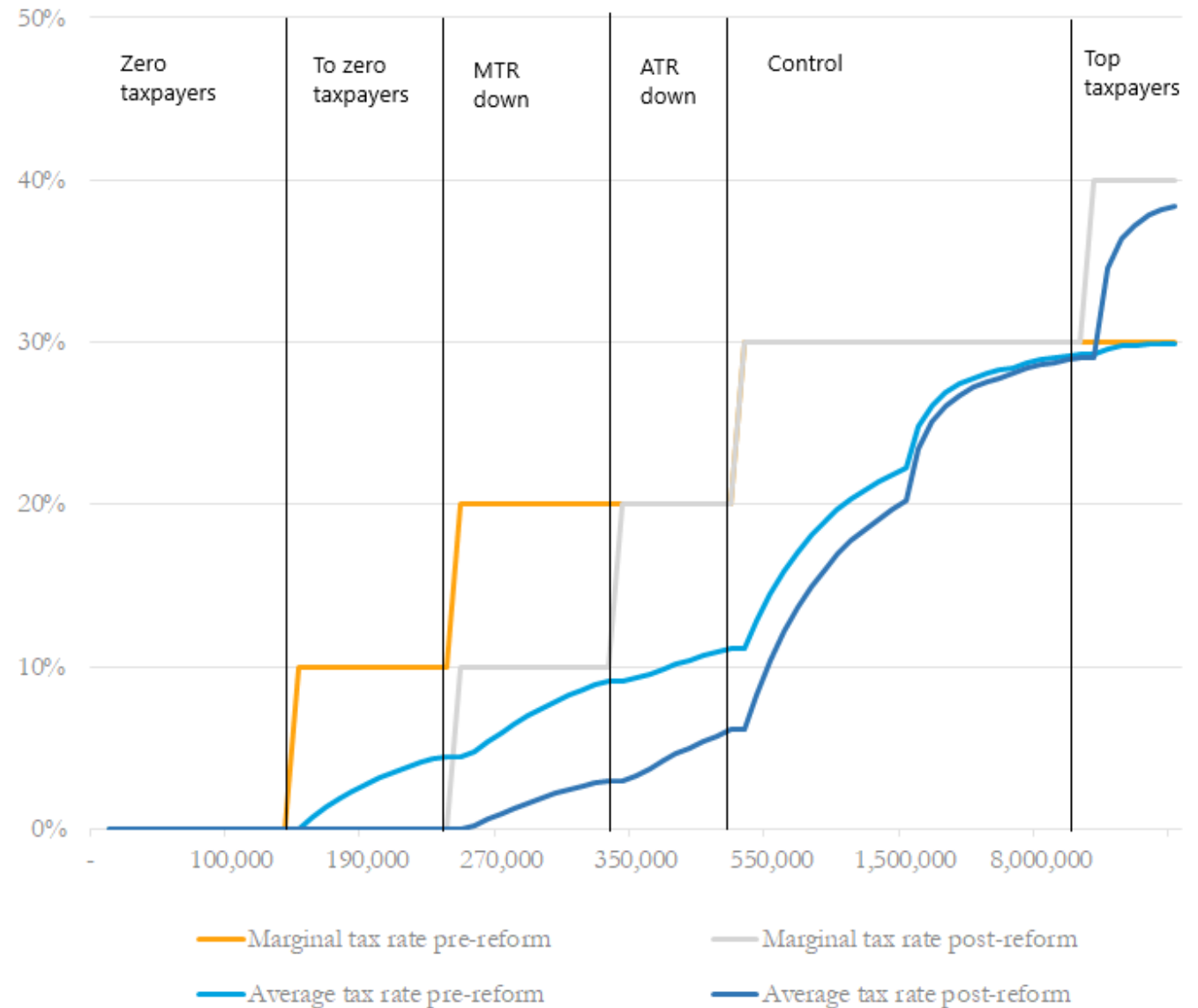
Source: Authors' own representation based on Uganda Income Tax Act.

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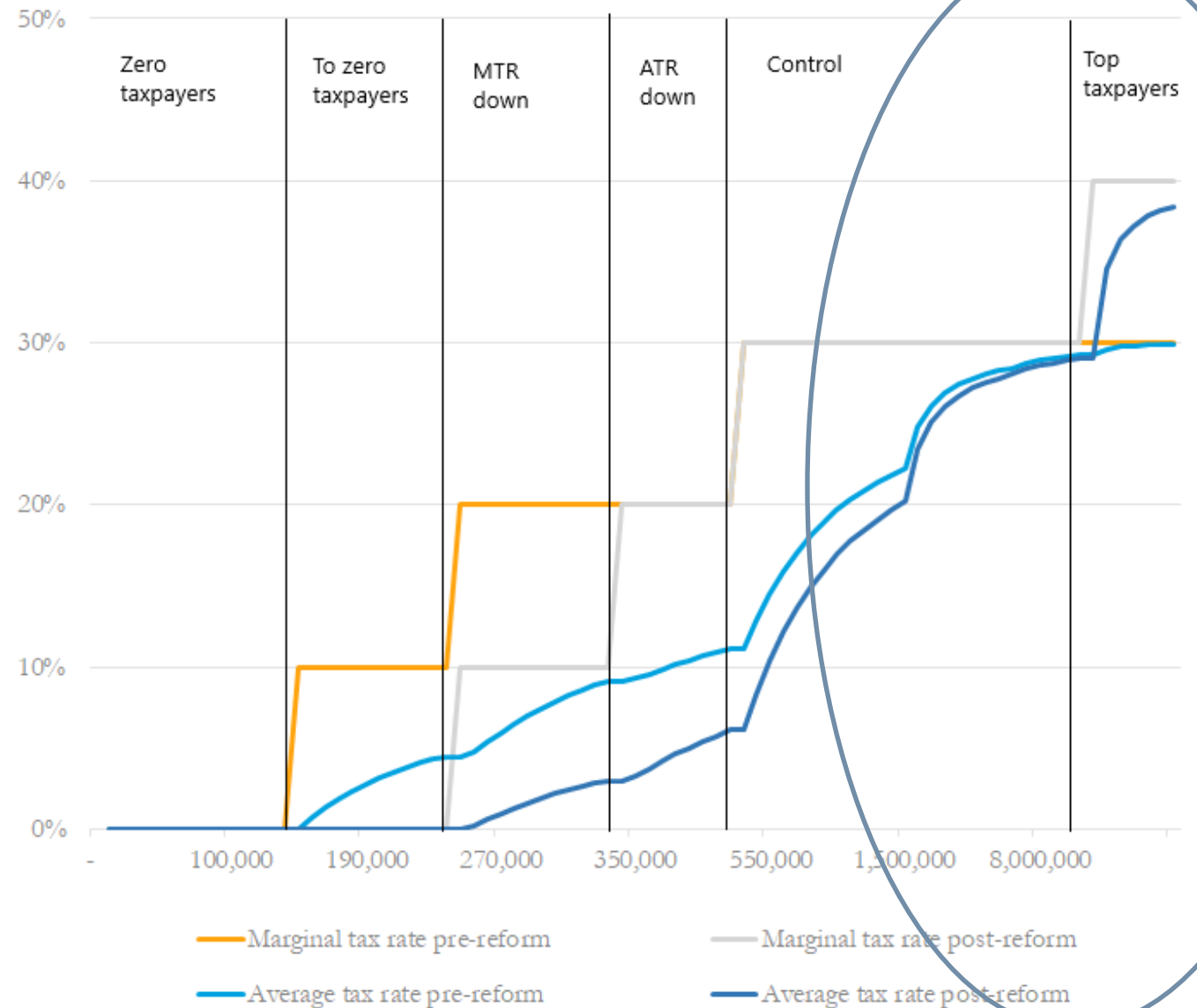
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Data

- Universe of administrative tax data from URA

- monthly PAYE returns as filed by employers on behalf of their employees

- Covering fiscal years 2010/11–2014/15

- Employers hold unique tax identification number (TIN) but not employees
  → cross sectional data for employees
 → panel of employers

Empirical approach: difference-in-differences

- 2012 tax reform:

  – 2010/11-2011/12 pre-reform years, and

  – 2012/13 – 2014/15 post-reform years.

- **Treatment groups**: **Top 1% taxpayers**

- **Control group**: Use group unconcerned by personal income tax schedule changes as control group

  – -> **Next 4%** (p99-p95) OR Next 9% (p90-99)

- Also express empirical results as elasticity of taxable income (ETI):

  – % change in reported earnings / % change in (1-marginal tax rate)

Results

- When using narrow control group (next 4%) & balanced firm panel

  ➢ Decline in treated group incomes, but no statistical significance

- (Impact significant if broader comparison group used)

- Event study plot
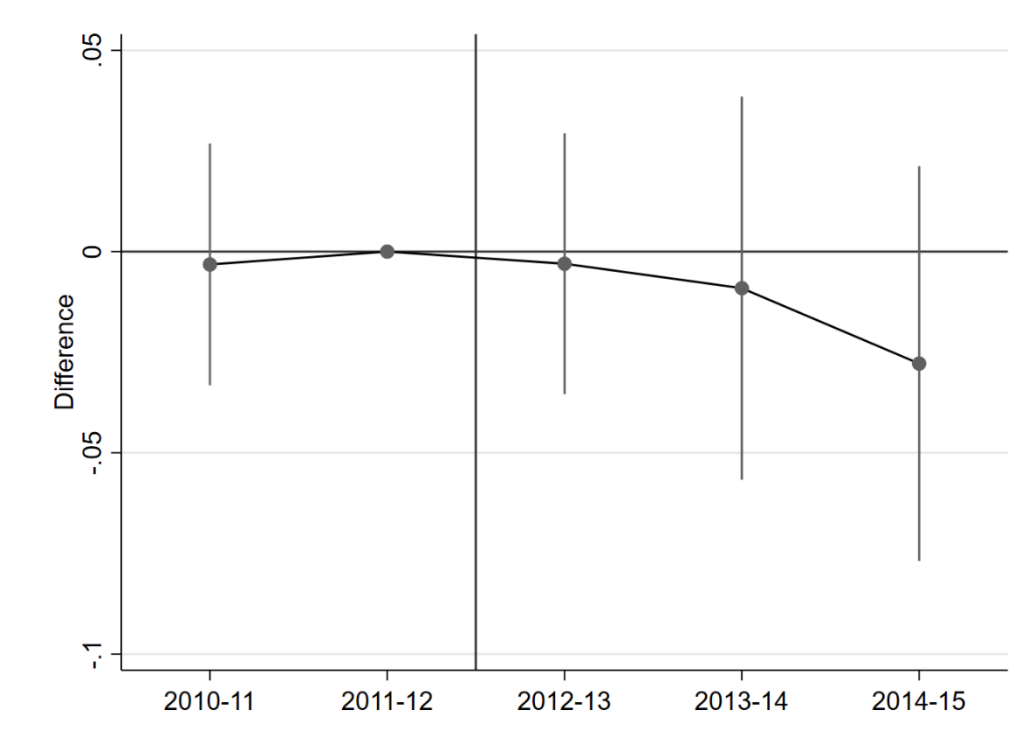
Differences by taxpayer type

- When examining responses by taxpayer types: significant reduction in top incomes among smaller firms

- Sizeable elasticity (0.5-0.7)

- Firms with greatest reduction in top incomes also have larger increase in dividend income

    – Part of the response "income shifting" accross tax bases

Revenue implications

- The hike in the top tax rate leads to a mechanical increase in the revenues from the top group

- An elasticity of 0.5 would imply 12% of the mechanical increase would be lost because of erosion of the tax base

- Revenue-maximizing top tax rate given by

$$\tau^* = \frac{1}{1 + a * e}$$

- With elasticity of 0.5: τ^* = 55%

- After-reform actual tax rate (including indirect taxes, circa 50%)

Inequality implications: Gini coefficient

Before the reform	After, no behav change	After, with behav change
0.635	0.611	0.606

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Summary

- The paper investigated the impact of the 2012 personal income tax reform in Uganda on employees' earnings using a difference-in-differences approach.

- This presentation: top group, but other income levels also considered in the paper

- The preferred approach: not statistically significant reduction in top incomes

- But significant impact among smaller firms (income shifting may be involved)

- The reform led to a slight reduction in inequality and on overall revenue gain

- Results likely relevant for other lower income African economies

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Extra slides

Estimation results: next 4%

	'Top taxpayers'		'Top taxpayers', censored		Top 1–0.5%		Top 0.5%, censored	
	(1) Simple	(2) Weighted	(3) Simple	(4) Weighted	(5) Simple	(6) Weighted	(7) Simple	(8) Weighted
$Treat_i * After_t$	-0.014	-0.125	-0.013	-0.031	-0.017**	-0.015**	-0.025	-0.034
	(0.024)	(0.092)	(0.024)	(0.029)	(0.007)	(0.007)	(0.028)	(0.029)
Year and month dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.680	0.667	0.687	0.738	0.516	0.600	0.745	0.838
Implied elasticity	0.098	0.875	0.090	0.219	0.118**	0.104**	0.174	0.235
	(0.169)	(0.643)	(0.170)	(0.204)	(0.046)	(0.048)	(0.019)	(0.201)
Observations	856,085		856,085		775,366		775,363	
No. of firms	1,800		1,800		1,795		1,791	

Estimation results: next 9%

	'Top taxpayers'		'Top taxpayers', censored		Top 1–0.5%		Top 0.5%, censored	
	(1) Simple	(2) Weighted	(3) Simple	(4) Weighted	(5) Simple	(6) Weighted	(7) Simple	(8) Weighted
$\text{Treat}_i * \text{After}_t$	-0.050**	-0.164*	-0.048**	-0.068**	-0.050***	-0.047***	-0.057***	-0.068***
	(0.023)	(0.093)	(0.023)	(0.029)	(0.002)	(0.002)	(0.004)	(0.013)
Year and month dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.609	0.713	0.611	0.768	0.396	0.509	0.599	0.837
Implied elasticity	0.347**	1.148*	0.339*	0.475**	0.353***	0.327***	0.401***	0.477***
	(0.160)	(0.652)	(0.161)	(0.206)	(0.011)	(0.011)	(0.029)	(0.094)
Observations	1,681,849		1,681,849		1,601,130		1,601,127	
No. of firms	2,294		2,294		2,292		2,289	

Results by firm type

	LTO firms		MTO firms		All other tax offices	
	(1)	(2)	(3)	(4)	(5)	(6)
	Simple	Weighted	Simple	Weighted	Simple	Weighted
Basic:						
$\text{Treat}_i*\text{After}_t$	-0.002	-0.035	-0.014	0.011	-0.073***	-0.108**
	(0.032)	(0.035)	(0.018)	(0.033)	0.025	(0.051)
Year and month dummies	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.691	0.727	0.677	0.747	0.685	0.758
Implied elasticity	0.013	0.242	0.099	-0.076	0.508***	0.756**
	(0.227)	(0.248)	(0.129)	(0.232)	(0.172)	(0.358)
Observations	552,611		159,576		143,898	
No. of firms	576		754		1,475	