QuickPay
Accelerating Payments to Small Businesses

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PRELIMINARY

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Introduction

Research question

- Effect of corporate liquidity on employment
  - Lack of access to liquidity might push financially constrained firms to forgo positive NPV projects
- Why do we care?
  - Effect of financing frictions on employment
  - Effects of policy targeting small businesses

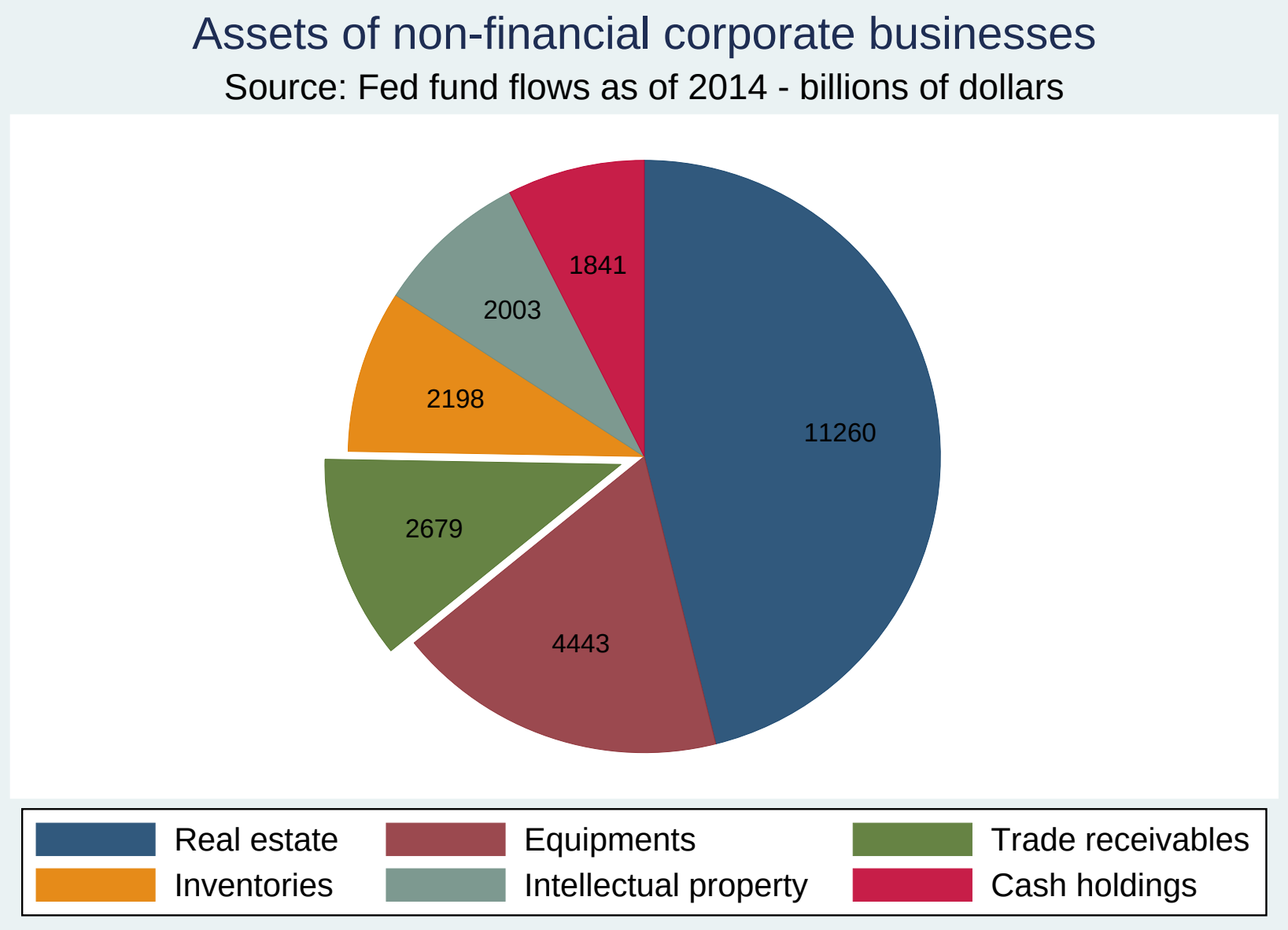
Introduction

Empirical challenges

- Measuring firm liquidity
  - Correlated with growth opportunities
  - Correlated with efficiency
- Evaluating the effect of liquidity shocks or stimulus policy
  - Building a reasonable control group
  - Confounding macro factors

Introduction

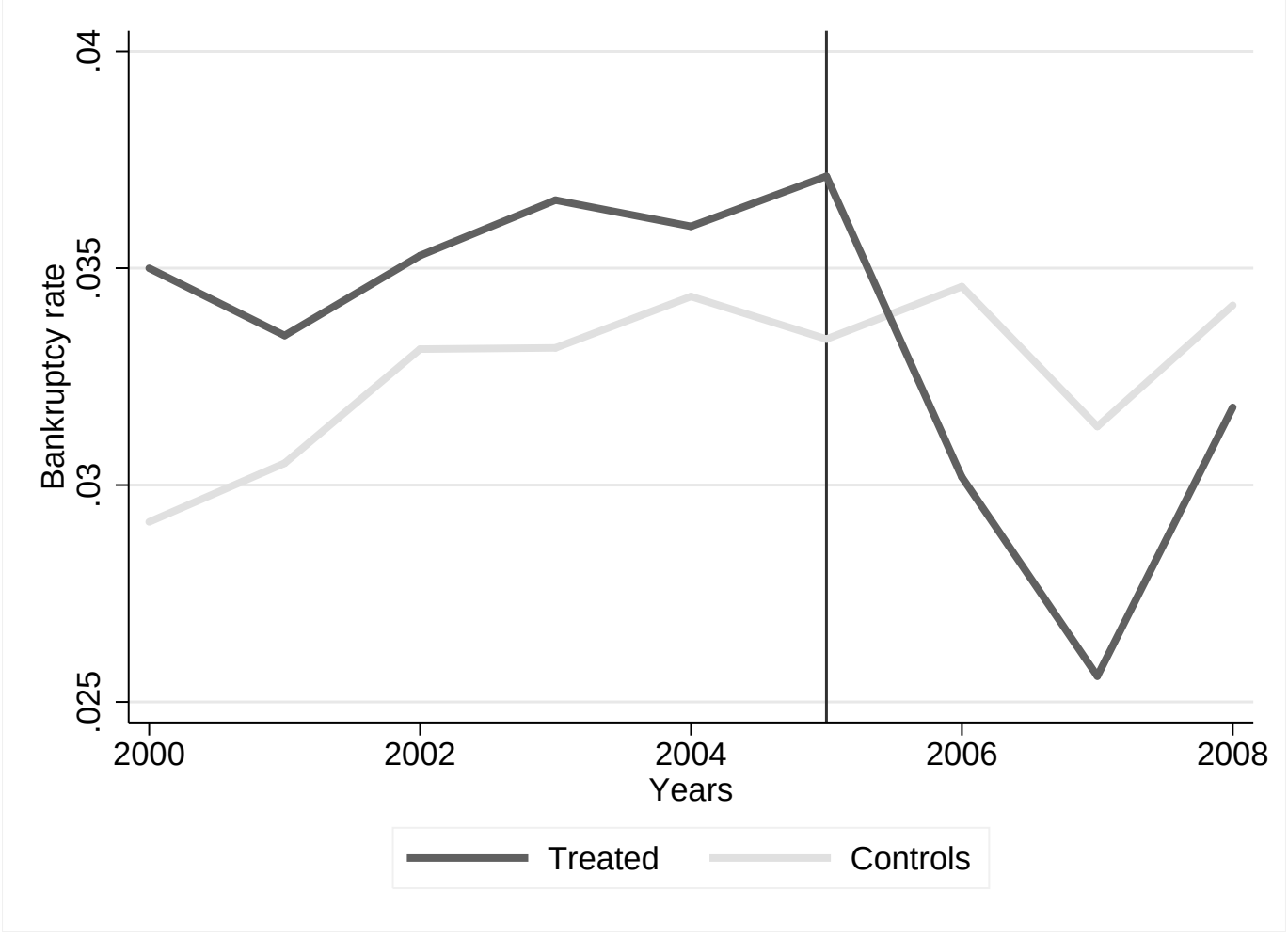
Trade credit



Introduction

Trade credit

Effect of a restriction on trade credit on bankruptcy rates
Source: Barrot (2015)



Introduction

QuickPay



President Obama introduces **QuickPay**

"Today I'm ordering all federal agencies to make sure those small-business owners get paid a lot faster than they do now. In many cases, it will be twice as fast. So that puts more money in their pockets quicker, which means they can hire folks quicker"

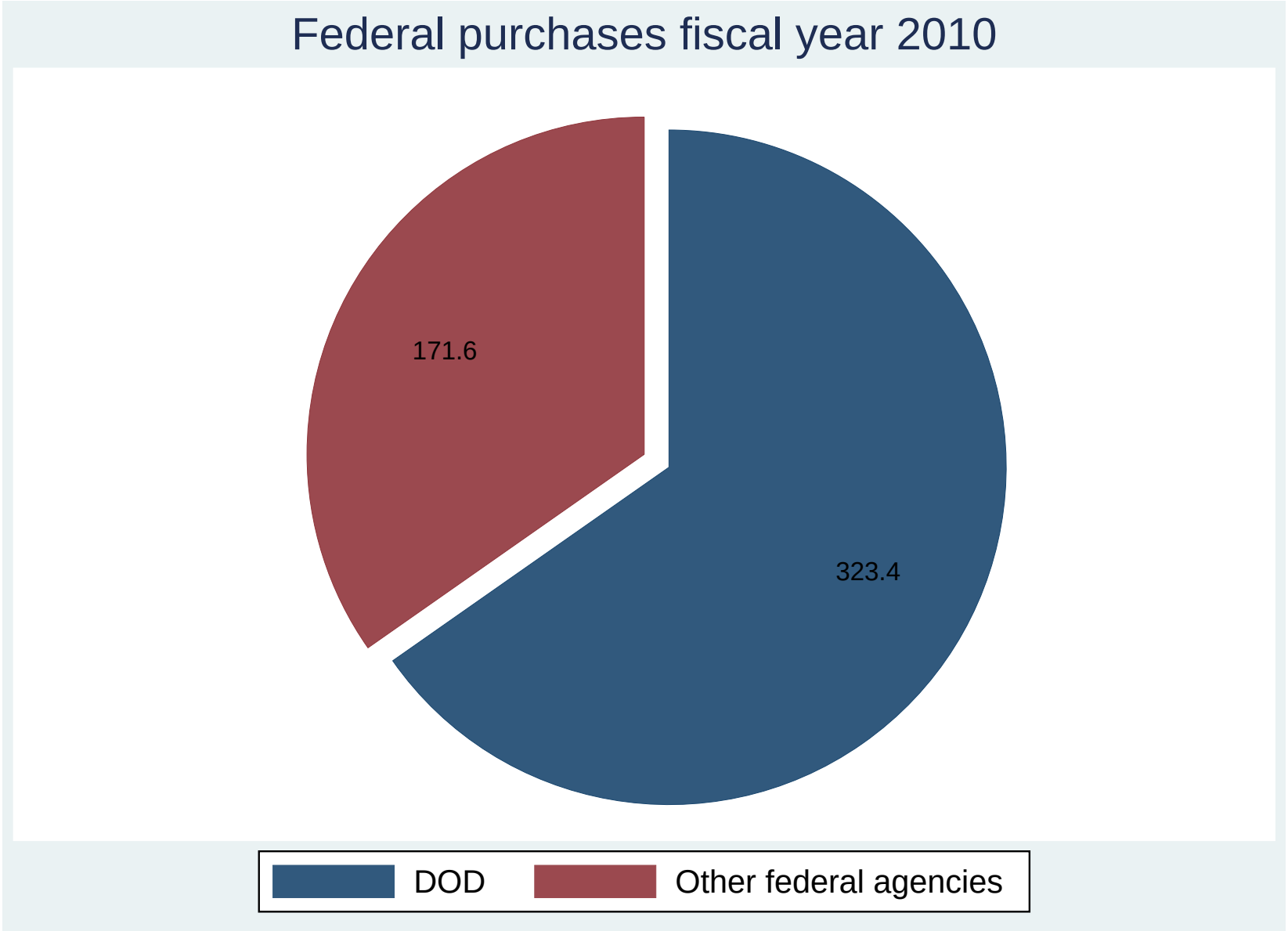
Introduction

Department of Defense (DOD)



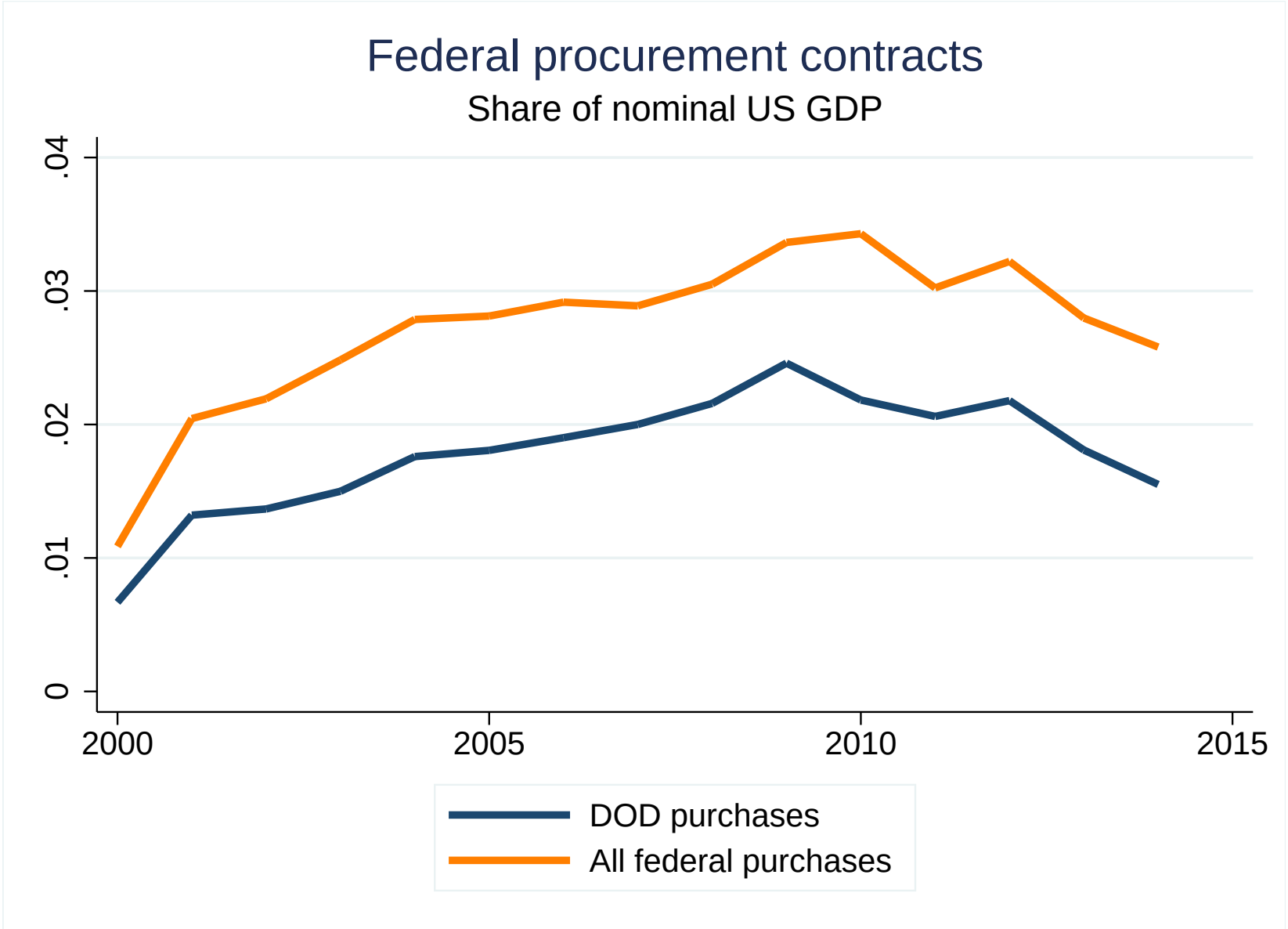
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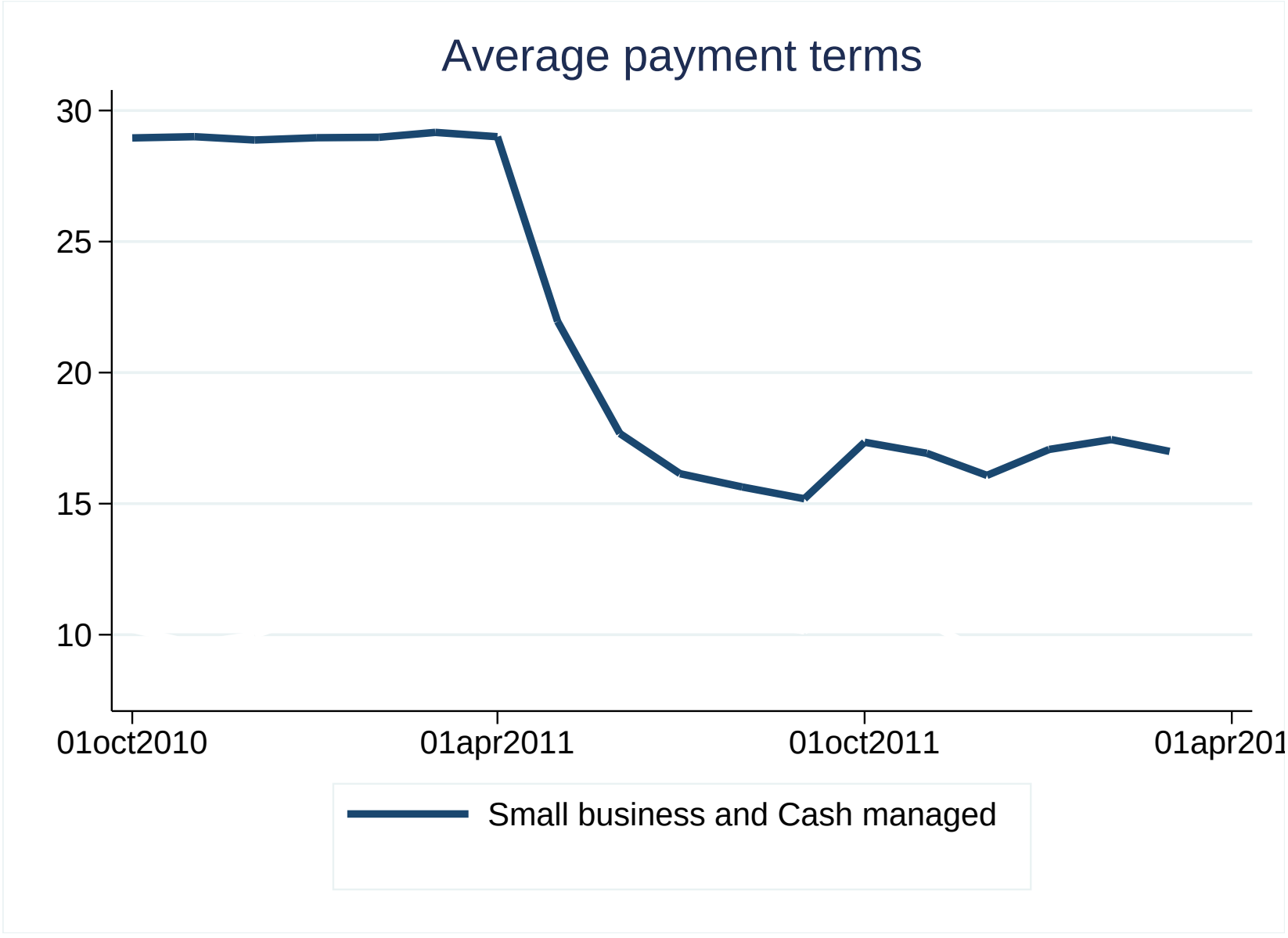
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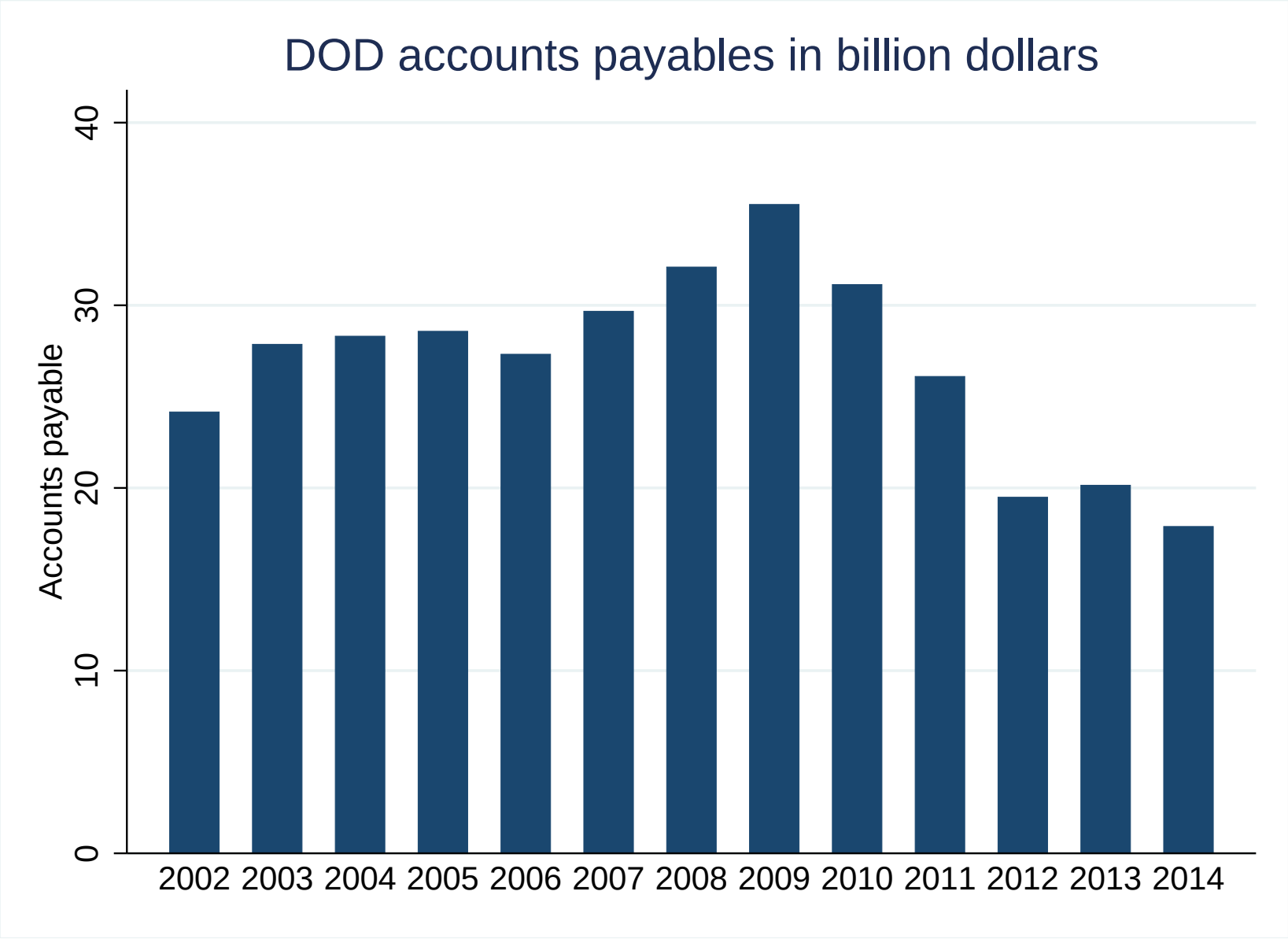
Introduction

Department of Defense (DOD)



Introduction

Department of Defense (DOD)



Introduction

Preliminary findings

- Increase in payrolls
  - 20 cents additional payrolls per accelerated $1
- 3/4 of the effect comes from increase in employment
  - Hirings go up, no change in separations
- 1/4 of the effect comes from increase in wages
  - Mostly for new hires
  - No obvious change in workforce composition

Introduction

Related literature

- Financing frictions and employment
  - Sharpe 1994, Benmelech et al 2012, Bakke and Whited 2012, Greenstone and Mas 2012, Chodorow-Reich 2014, Schoeffer 2015, Chaney et al 2015
- The implicit cost of trade credit provision
  - Murfin and Njoroge 2015, Barrot 2015
- Federal intervention in recent financial crisis
  - Dobridge 2015, Mahon and Zwick 2015

Empirical design

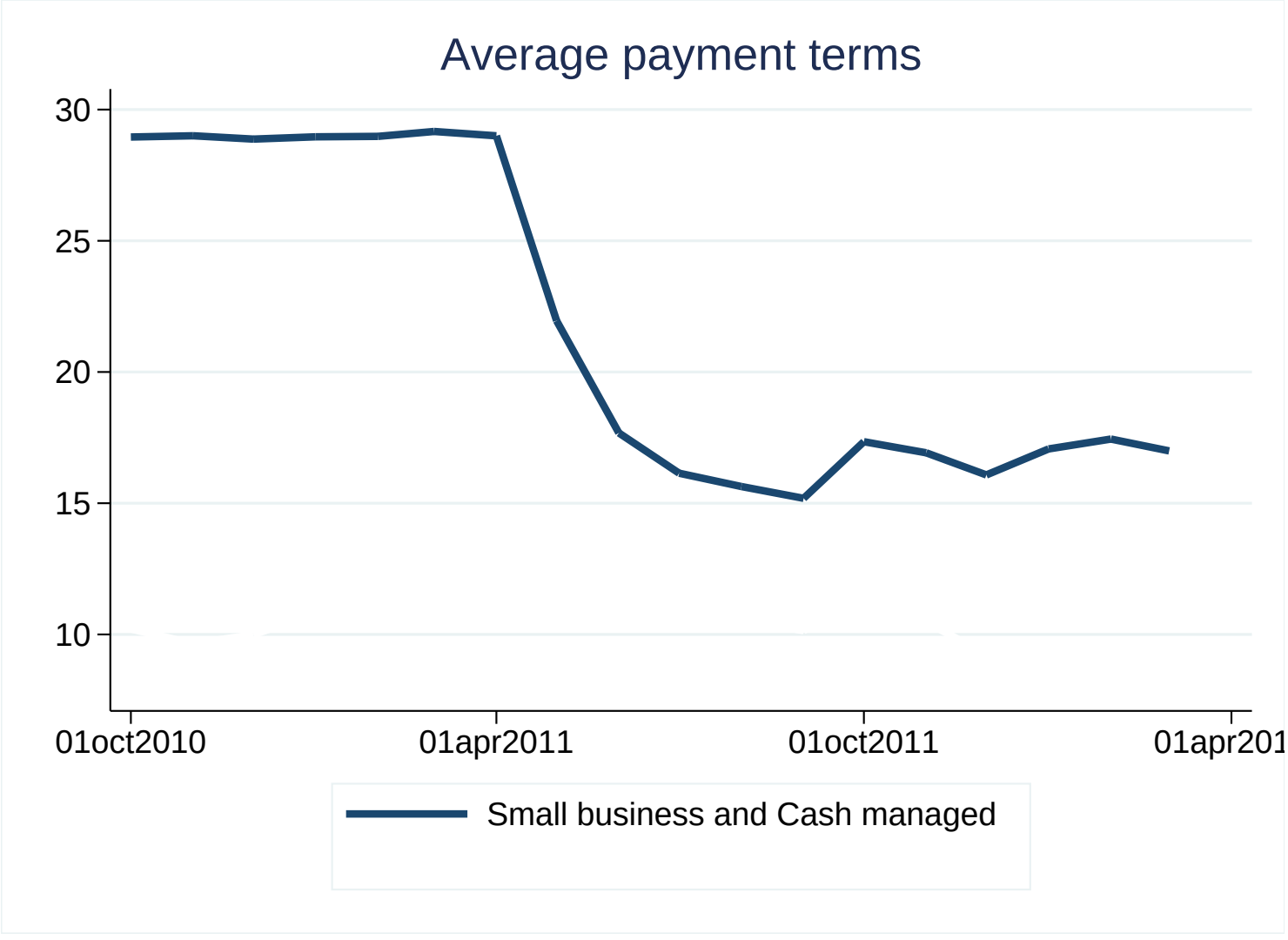
Data

- Invoice level data 2010Q4-2014Q3 from MOCAS (DOD)
  - Dollar amount, payment term, payment type
- Federal Procurement Data System
  - Contract level information (zip code)
- County business patterns (LBD)
  - Annual county $\times$ 2 digit NAICS establishments, employment
- Quarterly Workforce Indicators (LEHD)
  - Quarterly county $\times$ 2 digit NAICS payrolls, employment (hirings and separations), earnings

Empirical design

Control group

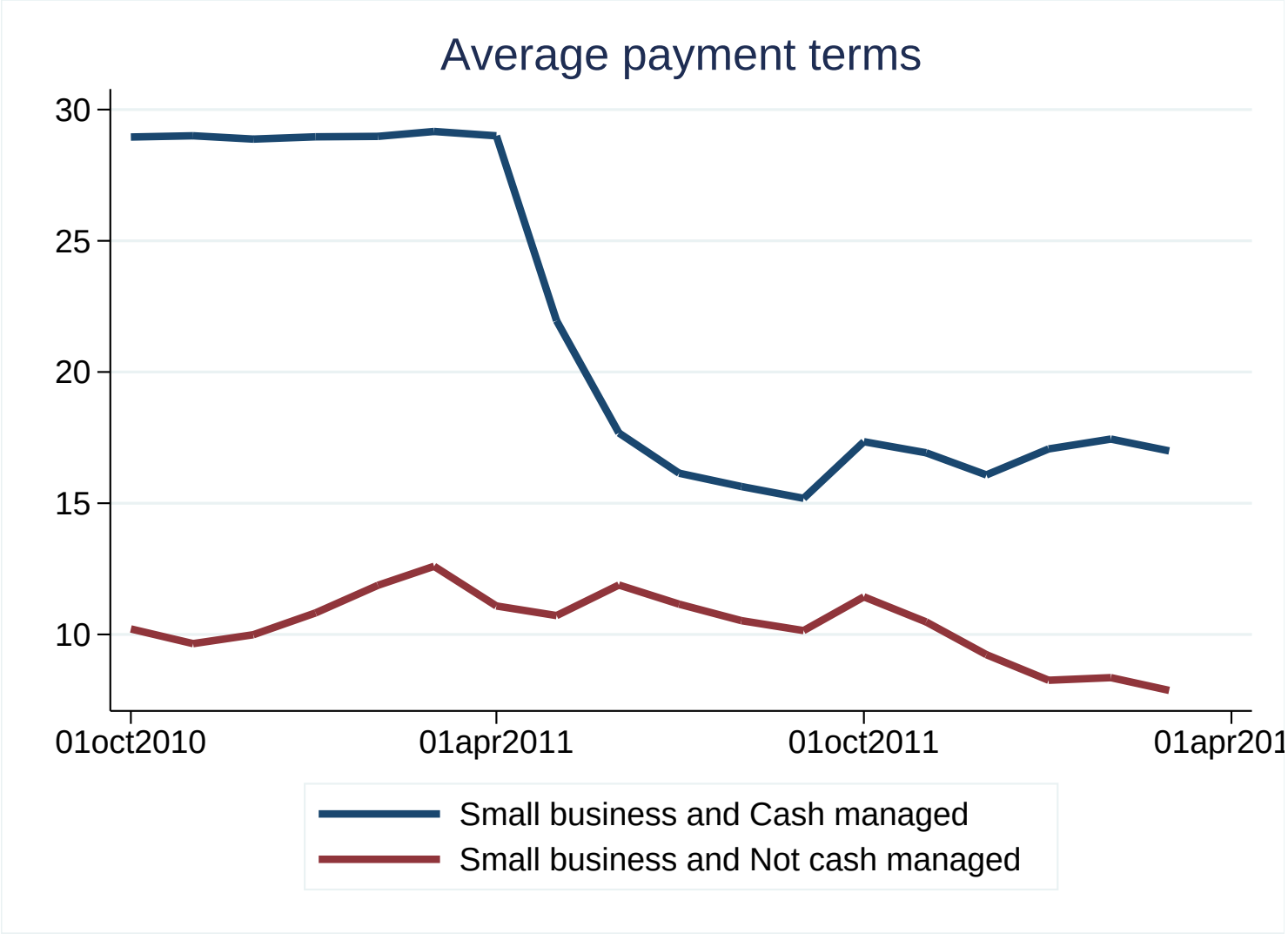
What control group?



Empirical design

Control group

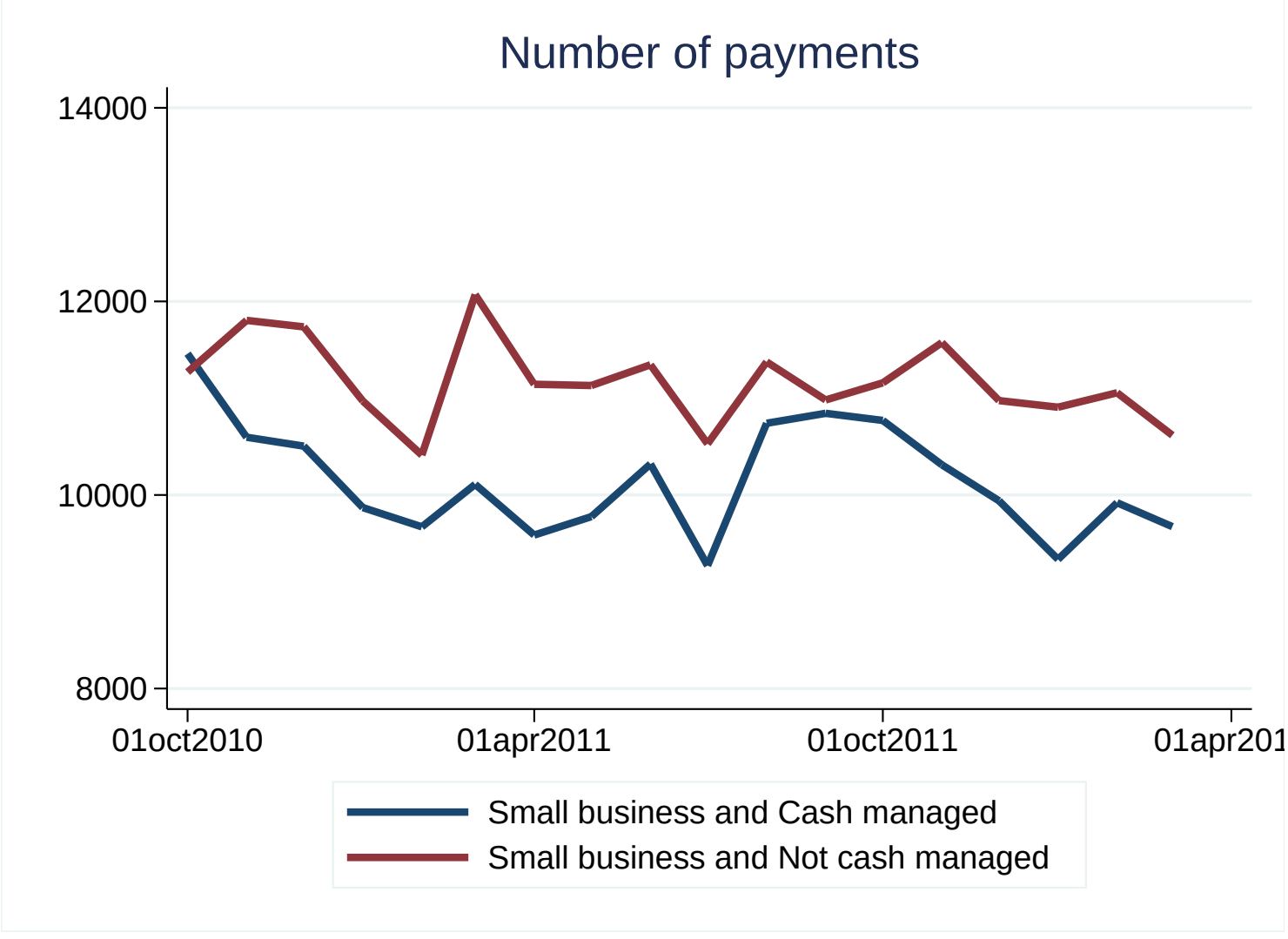
Payment type: cash management versus contract financing



Empirical design

Control group

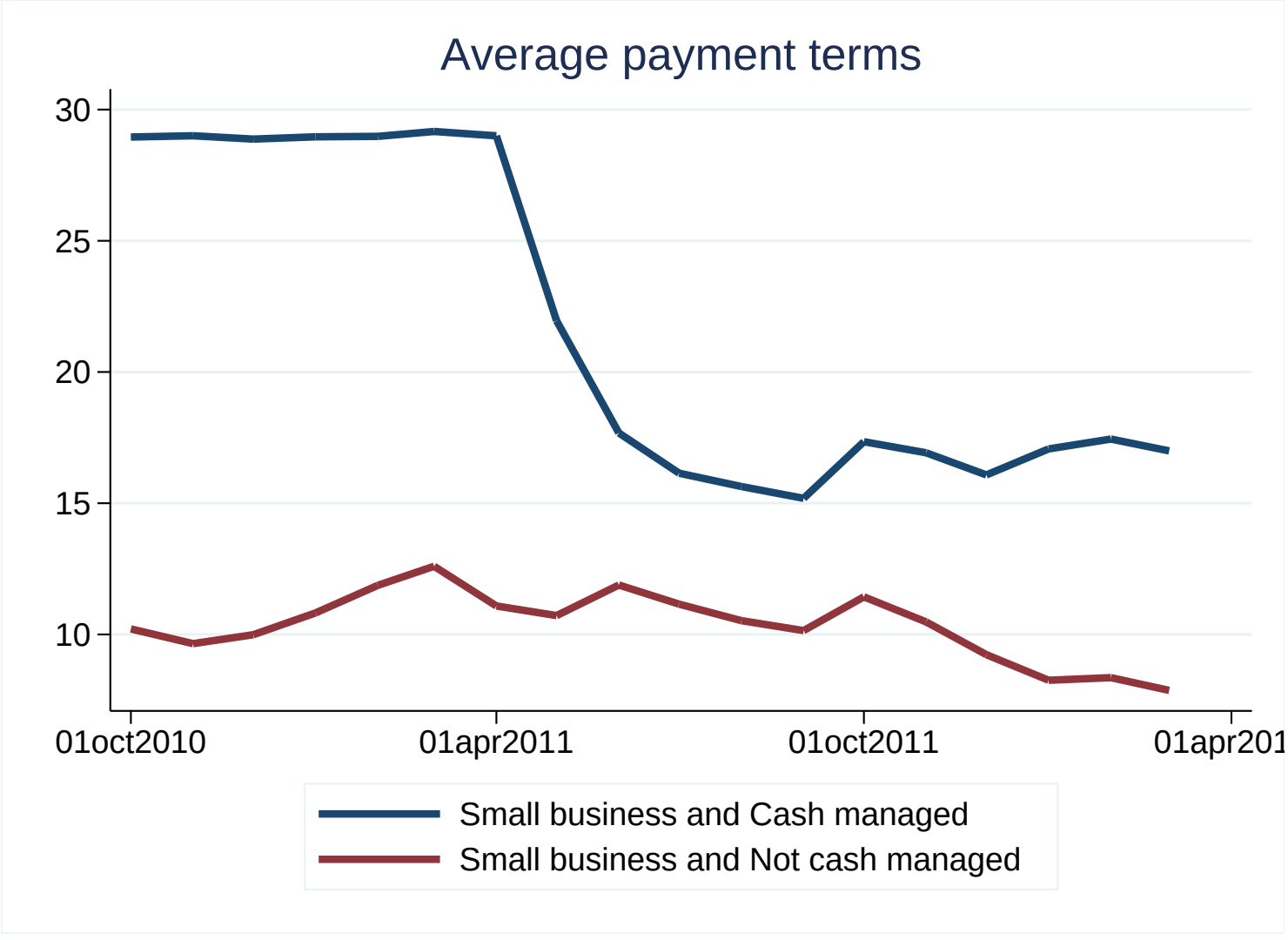
Payment type: cash management versus contract financing



Empirical design

Control group

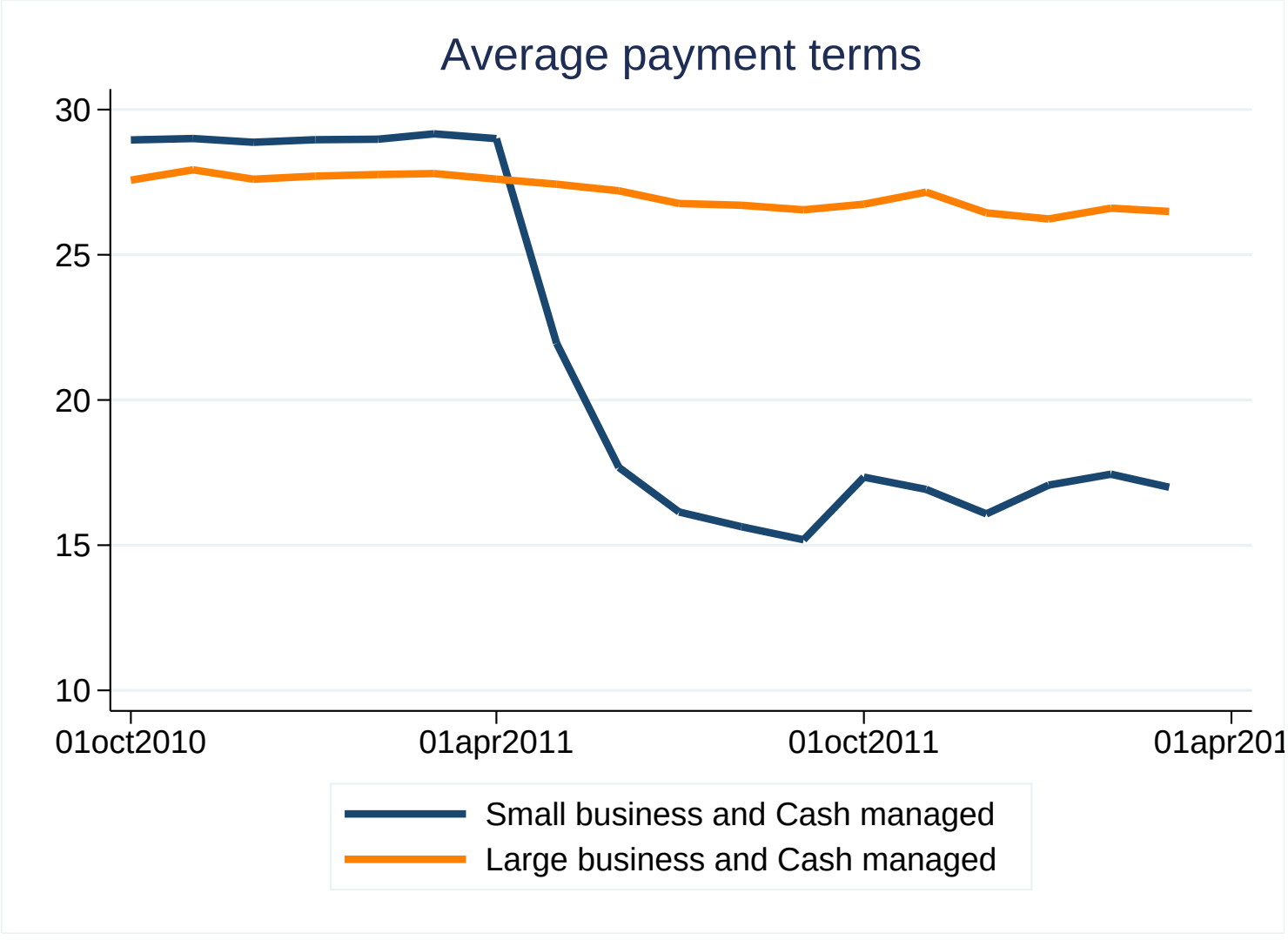
Payment type: cash management versus contract financing



Empirical design

Control group

Contractor size: large versus small



Empirical design

Identification strategy

- Difference in difference estimation (2010-2013)

$$\Delta Y_{i,j,t-4,t} = \alpha_0 + \alpha_1 . Post . Treat_{i,j} + \alpha_2 Post . X_{i,j} + \gamma_{i,j} + \eta_t + \epsilon_{i,j,t}$$

- $Treat_{i,j} = \frac{\$Accelerated_{i,j}}{Payroll_{i,j}}$ measured in 2010Q4-2011Q1
- $X_{i,j}$: initial controls:
  - Ratio of \$Paid to payroll in 2010Q4-2011Q1
  - Unemployment, correlation with US employment, amount of government contracts, log employment, log average wage, log average establishment size, log share of small establishments.

Empirical design

Summary statistics

	Mean	Sd	p5	p95
small × $ cash ($ treated)	0.014	0.050	0.000	0.069
small × $ financing	0.009	0.040	0.000	0.036
large × $ cash	0.062	0.228	0.000	0.277
large × $ financing	0.060	0.225	0.000	0.326
$ paid	0.171	0.531	0.000	0.851
$ treated over $ paid	0.280	0.397	0.000	1.000
Average payment days	1.146	3.511	0.000	6.294
Unemployment rate	8.826	2.597	5.200	13.900
Correlation with aggregate employment	0.243	0.283	-0.243	0.683
Log total employment	7.850	1.829	4.543	10.594
Average establishment size	2.734	0.865	1.369	4.137
Log average wage	8.167	0.335	7.615	8.704
Share of small establishments	0.986	0.025	0.940	1.000

Empirical design

Summary statistics

	$ treated			
	Mean	Sd	p5	p95
Accommodation	0.000	0.000	0.000	0.000
Administrative and support	0.009	0.035	0.000	0.044
Agriculture	0.000	.	0.000	0.000
Arts	0.001	0.001	0.000	0.001
Construction	0.006	0.044	0.000	0.008
Education	0.023	0.081	0.000	0.306
Finance	0.000	.	0.000	0.000
Health care	0.018	0.051	0.000	0.125
Information	0.015	0.044	0.000	0.079
Manufacturing	0.022	0.065	0.000	0.126
Other services	0.004	0.026	0.000	0.010
Professional services	0.010	0.038	0.000	0.050
Real estate	0.002	0.008	0.000	0.003
Retail	0.000	0.002	0.000	0.003
Utilities	0.000	0.000	0.000	0.001
Wholesale	0.004	0.026	0.000	0.012
Total	0.014	0.050	0.000	0.069

Preliminary findings

First stage

Average payment terms drop by 9 days

	Average payment terms			
$t-1 \times$ \$ treated	0.4	0.4	0.4	0.7
	(0.72)	(0.72)	(0.72)	(0.65)
$[t, t+3] \times$ \$ treated	-7.5***	-7.1***	-7.0***	-7.5***
	(1.53)	(1.61)	(1.61)	(1.54)
$[t+4, t+7] \times$ \$ treated	-8.8***	-8.4***	-8.0***	-8.2***
	(1.93)	(1.98)	(1.99)	(1.78)
County $\times$ sector FE	Yes	Yes	Yes	Yes
Year Quarter FE	Yes	Yes	Yes	Yes
Post $\times$ Controls	No	Yes	Yes	Yes
Sector $\times$ Year Quarter FE	No	No	Yes	No
County $\times$ Year FE	No	No	No	Yes
Observations	31693	31693	31693	31693
R^2	0.923	0.923	0.924	0.946

Preliminary findings

Baseline

Payrolls increase by 20 cents for each accelerated dollar

	Payroll growth			
post × $ treated	0.206**	0.219**	0.241**	0.224**
	(0.089)	(0.095)	(0.096)	(0.097)
County × sector FE	Yes	Yes	Yes	Yes
Year Quarter FE	Yes	Yes	Yes	Yes
Post × Controls	No	Yes	Yes	Yes
Sector × Year Quarter FE	No	No	Yes	No
County × Year FE	No	No	No	Yes
Observations	673342	673342	673342	673342
R^2	0.173	0.175	0.183	0.208

Preliminary findings

Dynamics

No prior trends

	Payroll growth			
$t-1 \times$ \$ treated	0.032	0.032	-0.116	0.040
	(0.096)	(0.096)	(0.094)	(0.095)
$[t, t+3] \times$ \$ treated	0.170*	0.183*	0.171*	0.206**
	(0.092)	(0.097)	(0.099)	(0.093)
$[t+4, t+7] \times$ \$ treated	0.251**	0.264**	0.283**	0.251**
	(0.105)	(0.110)	(0.110)	(0.119)
County $\times$ sector FE	Yes	Yes	Yes	Yes
Year Quarter FE	Yes	Yes	Yes	Yes
Post $\times$ Controls	No	Yes	Yes	Yes
Sector $\times$ Year Quarter FE	No	No	Yes	No
County $\times$ Year FE	No	No	No	Yes
Observations	673342	673342	673342	673342
R^2	0.173	0.175	0.183	0.208

Preliminary findings

Dynamics

No prior trends

	Payroll growth			
$t-1$	0.033	0.032	-0.116	0.040
	(0.096)	(0.096)	(0.094)	(0.095)
$t+1$	0.003	0.016	-0.025	0.038
	(0.092)	(0.094)	(0.096)	(0.083)
$t+2$	0.158	0.170	0.149	0.195*
	(0.112)	(0.113)	(0.118)	(0.108)
$t+3$	0.183	0.195	0.217*	0.219*
	(0.118)	(0.124)	(0.125)	(0.122)
$t+4$	0.336**	0.350**	0.344**	0.372***
	(0.131)	(0.139)	(0.138)	(0.141)
$t+5$	0.342**	0.356**	0.368**	0.341**
	(0.153)	(0.158)	(0.160)	(0.167)
$t+6$	0.267**	0.280**	0.314**	0.264**
	(0.123)	(0.129)	(0.130)	(0.134)
$t+7$	0.205*	0.218*	0.228**	0.208*
	(0.103)	(0.109)	(0.112)	(0.116)
$t+8$	0.188*	0.202*	0.221**	0.189
	(0.104)	(0.104)	(0.103)	(0.116)
Observations	673342	673342	673342	673342
R^2	0.173	0.175	0.183	0.208

Preliminary findings

Placebo

Not driven by small businesses or cash payments

	Payroll growth			
post × small × $ cash	0.191**	0.201**	0.222**	0.202**
	(0.085)	(0.092)	(0.093)	(0.094)
post × small × $ financing	0.030	0.079	0.079	0.091
	(0.104)	(0.117)	(0.119)	(0.123)
post × large × $ cash	0.023	0.020	0.018	0.016
	(0.019)	(0.018)	(0.019)	(0.019)
post × large × $ financing	-0.028*	-0.021	-0.019	-0.016
	(0.016)	(0.016)	(0.017)	(0.017)
County × sector FE	Yes	Yes	Yes	Yes
Year Quarter FE	Yes	Yes	Yes	Yes
Post × Controls	No	Yes	Yes	Yes
Sector × Year Quarter FE	No	No	Yes	No
County × Year FE	No	No	No	Yes
Observations	673342	673342	673342	673342
R^2	0.173	0.175	0.183	0.208

Preliminary findings

Employment

3/4 of payroll growth comes from an increase in employment

	Employment growth			
post × $ treated	0.202**	0.149*	0.145*	0.156**
	(0.076)	(0.078)	(0.078)	(0.079)
County × sector FE	Yes	Yes	Yes	Yes
Year Quarter FE	Yes	Yes	Yes	Yes
Post × Controls	No	Yes	Yes	Yes
Sector × Year Quarter FE	No	No	Yes	No
County × Year FE	No	No	No	Yes
Observations	673440	673440	673440	673440
R^2	0.168	0.171	0.180	0.206

Preliminary findings

Hirings

Increase in hirings

	Hirings			
post × $ treated	0.161**	0.161**	0.161**	0.156**
	(0.063)	(0.066)	(0.066)	(0.070)
County × sector FE	Yes	Yes	Yes	Yes
Year Quarter FE	Yes	Yes	Yes	Yes
Post × Controls	No	Yes	Yes	Yes
Sector × Year Quarter FE	No	No	Yes	No
County × Year FE	No	No	No	Yes
Observations	523080	523080	523080	523080
R^2	0.725	0.726	0.733	0.745

Preliminary findings

Separations

No change in separations

	Separations			
post × $ treated	-0.045	0.014	0.019	-0.011
	(0.043)	(0.045)	(0.043)	(0.046)
County × sector FE	Yes	Yes	Yes	Yes
Year Quarter FE	Yes	Yes	Yes	Yes s
Post × Controls	No	Yes	Yes	Yes
Sector × Year Quarter FE	No	No	Yes	No
County × Year FE	No	No	No	Yes
Observations	526893	526893	526893	526893
R^2	0.837	0.837	0.843	0.848

Preliminary findings

Wages

1/4 of payroll growth comes from an increase in wages

	Earnings growth			
post × $ treated	0.003	0.065*	0.091**	0.064
	(0.038)	(0.039)	(0.039)	(0.041)
County × sector FE	Yes	Yes	Yes	Yes
Year Quarter FE	Yes	Yes	Yes	Yes
Post × Controls	No	Yes	Yes	Yes
Sector × Year Quarter FE	No	No	Yes	No
County × Year FE	No	No	No	Yes
Observations	673342	673342	673342	673342
R^2	0.135	0.136	0.142	0.166

Preliminary findings

Wages

Payroll growth seems to come from new hires

	Earnings growth, new hires			
post × $ treated	0.097	0.183	0.205*	0.116
	(0.122)	(0.116)	(0.117)	(0.123)
County × sector FE	Yes	Yes	Yes	Yes
Year Quarter FE	Yes	Yes	Yes	Yes
Post × Controls	No	Yes	Yes	Yes
Sector × Year Quarter FE	No	No	Yes	No
County × Year FE	No	No	No	Yes
Observations	623470	623470	623470	623470
R^2	0.101	0.101	0.103	0.121

Preliminary findings

Level of education

Payroll growth concentrated in average education levels

	Contribution to payroll growth			
	Less than high school	High school	Some college	Bachelor
post × $ treated	0.030***	0.056**	0.083***	0.065***
	(0.010)	(0.025)	(0.028)	(0.022)
County × sector FE	Yes	Yes	Yes	Yes
Year Quarter FE	Yes	Yes	Yes	Yes
Post × Controls	No	Yes	Yes	Yes
Sector × Year Quarter FE	Yes	Yes	Yes	Yes
Observations	583697	654947	655052	624978
R^2	0.193	0.184	0.176	0.156

Preliminary findings

Level of education

Employment growth concentrated in average education levels

	Contribution to employment growth			
	Less than high school	High school	Some college	Bachelor
post × $ treated	0.025***	0.042**	0.050**	0.036***
	(0.008)	(0.020)	(0.020)	(0.011)
County × sector FE	Yes	Yes	Yes	Yes
Year Quarter FE	Yes	Yes	Yes	Yes
Post × Controls	No	Yes	Yes	Yes
Sector × Year Quarter FE	Yes	Yes	Yes	Yes
Observations	590950	655205	655245	627277
R^2	0.183	0.175	0.169	0.170

Conclusion

Next steps

- Heterogeneous treatment effects
- Temporary versus permanent shocks
- ...