EMPLOYMENT AND PRODUCTIVITY EFFECTS OF ROUND-TRIP FDI

SOLOMIYA SHPAK
George Mason University

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National Bank of Ukraine

Kyiv, Ukraine

Motivation

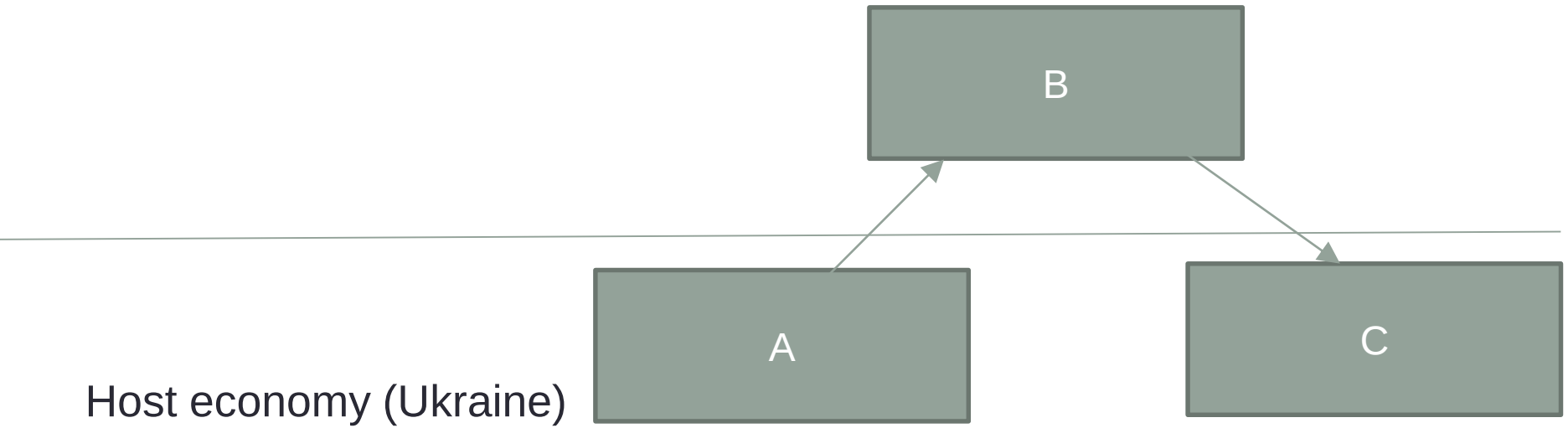
- Foreign direct investment (FDI) is an important component of development strategy for many countries

- Informed by research suggesting that foreign ownership generally increases post-acquisition productivity in developing countries (Arnold and Javorcik, 2009, Petkova, 2008, and Djankov and Hoekman, 2000)

- Channels: superior technology, advanced human resource practices, advanced production methods, international quality standards, market access

…But not all recorded FDI is actually foreign

Routing economy (“transit country”, usually tax haven)



Host economy (Ukraine)

“**Round Trip FDI”:** Local investor owns company A, sends funds to related foreign company B, which invests back local company C.

This small building in the Cayman Islands houses more than 12,000 corporations

Incentives for round-tripping

- Taxes
  - “Tax arbitrage”, special treatment of foreign investors
- Secrecy
  - Conceal the identity of the ultimate investor to avoid predation and expropriation (Panama Papers, Paradise Papers)
  - Proceeds of corruption and money laundering reinvested back in the legalized form (Ledyaeva et al., 2013; Brovkin, 2001)
- Access to better legal system
  - Property rights protections related to investor-state dispute settlements (Boisot and Meyer 2008)
  - Round-trip investor can choose the forum where a dispute with the host country will be settled; domestic investor is automatically subjected to the national court system (Aykut et al, 2017)
- Access to better financial system
  - Access to developed capital markets (Kalotay, 2012): access financing through listing companies in more developed stock exchanges or raising funds in international markets.

Magnitude of Round-Trip FDI

- Very difficult to observe, measure
- OECD estimates **5% of all FDI is round-trip** (OECD, 2017)
- Some guesses for round-trip FDI in developing countries
  - 25-50% in China (Xiao, 2004)
  - 70% in Russia (Aykut et al, 2017)
  - up to 32% in Ukraine (National Bank of Ukraine, 2018)

Implications of RT FDI

- Maybe much of officially recorded FDI is **not real FDI**
  - Neither foreign, nor direct, nor investment
  - Just an ownership change
  - Possible with zero new funds
- RT FDI may have **little or no impact** on firm performance
  - No new technology
  - Same management practices
  - No international quality standards
  - No market access
- Mismeasured FDI is important for central banks analysis of balance of payments and macro policy

Measurement challenges

Round-trip FDI is rarely observed

- Secrecy is one of reasons for round-trip FDI, corporates purposely hide --> hard to track by nature
- Requires data from multiple countries to track long and complicated networks
  - Some attempts using ORBIS data (Garcia-Bernando et al, 2017)
- Recent changes in reporting requirements, but compliance and coverage are still far from universal:
  - BMD4 standards (2008)==>only for OECD countries
  - Other countries have national legislations

Approach in this paper

Study FDI from tax havens as partial proxy for round-trip FDI

- Evidence that round-trip is often channeled through tax havens (Haberly and Wojcik, 2014; Aykut et al., 2017)
- Use case of **Ukraine**: estimate that “up to 32%” of total inward FDI is round-tripped (National Bank of Ukraine, 2017) and most of it comes from Cyprus
- Earle, Gehlbach, Shirikov and Shpak (2019) show for sample of 329 oligarch-owned Ukrainian firms that 70% of round-trip FDI goes via tax havens
- **Exploit universal firm-level panel data with unusual information on source country of FDI**

Does tax haven FDI affect firm performance?

Hypothesis 1: no effect because investor is domestic

Hypothesis 2: effect is positive because of advantages such as property rights protection and access to better financial services

Hypothesis 3: effect is positive because not all tax haven FDI is round-trip – a little might be genuine

Effects in H2 and H3 are likely to be smaller than genuine FDI as round-trip FDI does not bring benefits of technology transfer

Literature: FDI, FDI origin and firm productivity

- FDI and firm productivity
  - Aitken and Harrison (1999), Djankov and Hoekman (2000), Conyon et al (2002), Arnold and Javorcik (2009)
- FDI origin and firm productivity
  - High and Low-Income countries
  - OECD and non-OECD countries (Chen, 2011, Kamal, 2015)
  - US, EU and rest of the world (Girma and Görg, 2007)
  - Country development proxied by relative GDP per capita (Earle, Telegdy, and Antal, 2018)

==> No studies on round-trip FDI

Literature on tax havens

- Implications of tax havens for inequality
  - Zucman, 2013; Alstadseater, Johannesen, and Zucman, 2018
- Loss of corporate tax revenues
  - Crivelli, de Mooij, and Keen, 2015; Cobham and Janský, 2018
- Weak institutions as motivation to hide wealth in tax havens
  - Andersen, Johannesen, Lassen and Paltseva (2018)
- Measurement of FDI: ultimate vs immediate ownership
  - Damgaard, Elkjaer, and Johannesen (2019): “phantom” FDI accounts for 40% of all FDI
- Productivity spillovers by ultimate ownership
  - McGaughey, Raimondos, and La Cour (2018)

==> Most studies on capital flight, hiding wealth, corruption and money laundering; Little attention to round-trip FDI

Preview of results from econometric analysis of firm-level data in Ukraine

- Non-tax haven FDI leads to higher employment (10-29%), LP (10-17%) and TFP (10-11%)
- Tax haven FDI effect is smaller in magnitude
- Possible explanations of positive tax haven effect:
  - Legal motivation: firms become less risk-averse, invest more, raise productivity and employment
  - Financial services motivation: more flexibility in managing capital, access to developed capital markets
  - Not all tax haven FDI is round-trip, some of it might be genuine
- Tax haven FDI effect is lower bound estimate of round-trip FDI effect

Identification Problem

- One cannot observe what would happen to the performance of foreign acquired firm had it stayed domestic
- “Cherry picking” by foreign investors: selection based on observable and time-invariant unobservable characteristics and growth trajectories
- “Cherry picking” by tax haven investors: larger and more productive firms are more valuable, more likely to be protected from expropriation

➔post-acquisition performance might be result of selection rather than the change in ownership per se

Methodology

Focus on initially domestic firms (domestic in first year of the data):

- Initially foreign firms are very different from acquired firms, no ownership change observed
- Acquisitions are more likely to be round-trip

- Outcomes for initially domestic firms:
  - Get acquired by investors from tax haven countries (3,507 firms)
  - Get acquired by investors from non-tax haven countries (8,092 firms)
  - Stay domestic (304, 857 firms)

==> In total, 10,926 acquisitions, much larger number than in most FDI studies

Methodology

- Ordinary least squares
  - Benchmark: possible upward bias in OLS
  - Full set of industry-year interactions controls for specific shocks, price mismeasurement
- Fixed effect estimation
  - Addresses selection on observables and time-invariant unobservables
- Fixed effects + Firm specific trends
  - Additionally accounts for firm specific random trends (random growth model (Wooldridge, 2010))
- Propensity score matching with difference-in-differences
  - Multiple treatment framework (TH, NTH) => MNL
  - Treatment and control group are similar in observables

Methodology

$$Y_{it} = \beta_1 TH_{it-1} + \beta_2 NTH_{it-1} + D_{jt}\gamma_{jt} + w_t\alpha_i + \varepsilon_{it,}$$

- *Y*: Employment, Labor Productivity (LP), Total Factor Productivity (TFP)
- *TH:* =1 if firm *i* has **tax haven foreign** owner
- *NTH:* =1 if firm *i* has **non-tax haven foreign** owner
- D_{jt} is a vector of industry-year interactions
- α_i is firm fixed effects
- w_t is vector of time variables: =1 for FE and (1,t) for FE&FT

TFP Estimation

$$Y_{jit} = f_j(K_{ijt}, L_{ijt}) + \theta_{jt} + u_{ijt}$$

- *i*: firms, *j*: 2-digit NACE industries (56), *t*: years (1999-2013)
- *Y* – sales, *K* – capital, *L* – employment
- θ_{jt} – industry-year fixed effects
- Assume unrestricted Cobb-Douglas production function f_j by 2-digit industry (in logged terms)
- TFP is measured as the residual from this equation
- In practice, run in 1-step
- Material cost: only available until 2010 for the universe of firms, use as robustness check

Data: Sources

- **Universal Ukrainian enterprise data**
  - Enterprise performance statement (EPS) and balance sheet (BS) for 1999-2013
- **Foreign direct investment (FDI) form (10-zez)**
  - Includes all firms with at least one foreign (>=10%) owner
  - Investors grouped by country and currency, no names or ids
  - Quarterly reporting

Data: Variables

Economic variables

- **Revenue** = net sales after indirect taxes (from EPS if not in BS)
- **Employment** = average number of enlisted employees
- **Capital** = average book-value of capital stock
- All nominal variables are converted to 2009 prices using GDP deflators

Ownership variables

- **Foreign=1** if positive foreign share in any quarter
- **Tax haven=1** if foreign and FDI comes from tax haven country
- **Non-tax haven=1** if foreign and FDI comes from country other than tax haven

Identifying tax haven countries

- Ukrainian government issued list of tax havens
  - First approved in 2000, the latest one published in 2011
  - Regulates transfer pricing
  - 51 countries and territories
- Alternative list: Hines and Rice (1994) – robustness check
  - 98% of firms classified as tax haven according to government list are also classified as tax haven according to Hines and Rice (1994)
  - 93% of firms classified as tax haven according to Hines and Rice (1994) are also tax haven according to government list

Data: Sample

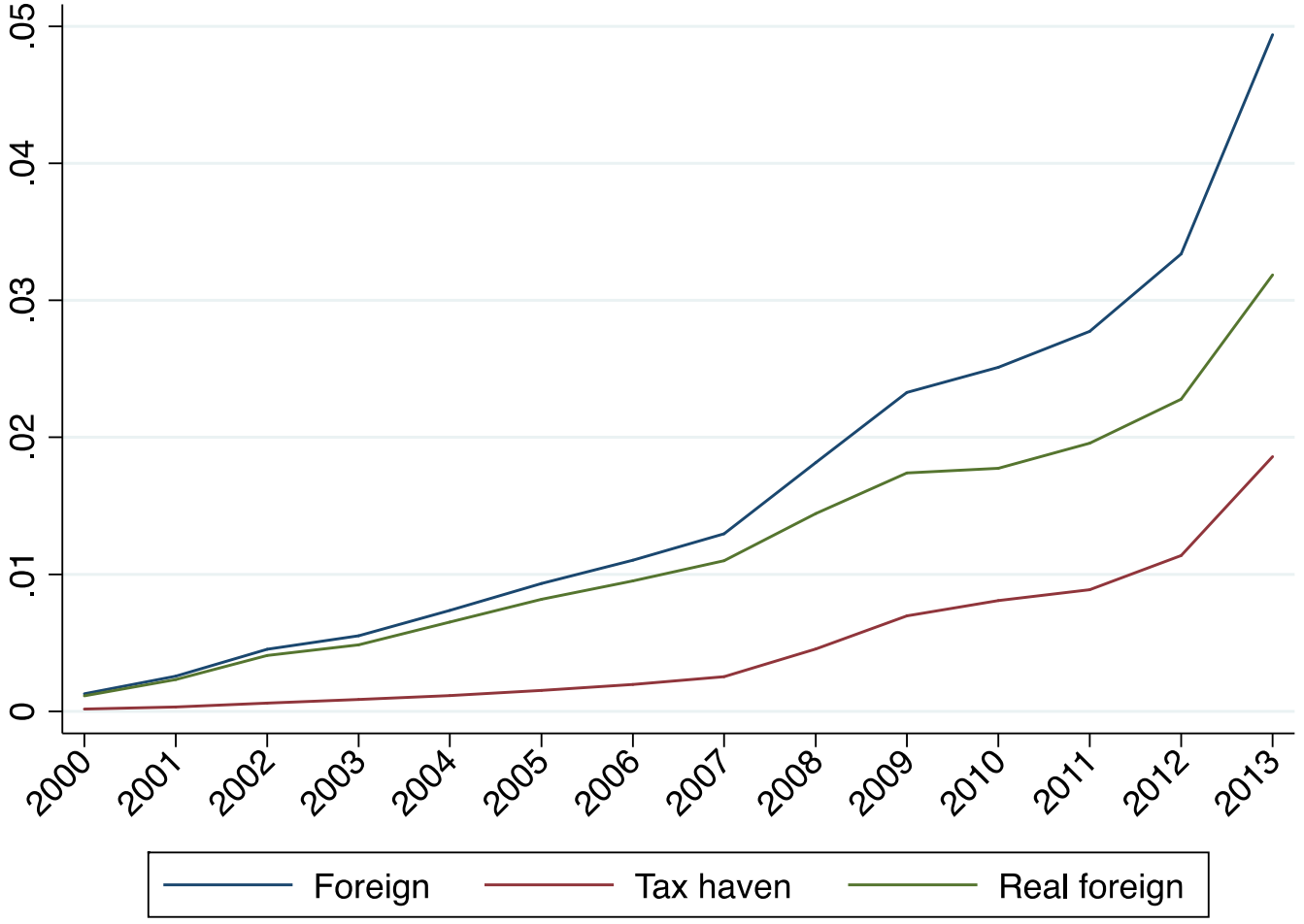
- Initially domestic firms
- 2-digit NACE industries with at least 1 foreign firm
- Firm-years with non-missing employment, capital and sales variables
- Final sample:
  - 10,926 foreign acquisitions: tax haven (8,092) and other foreign (3,507)
  - 315,783 firms
  - 2,475,279 firm-years
  - 56 2-digit NACE industries

Investor countries with the largest number of firms in the sample

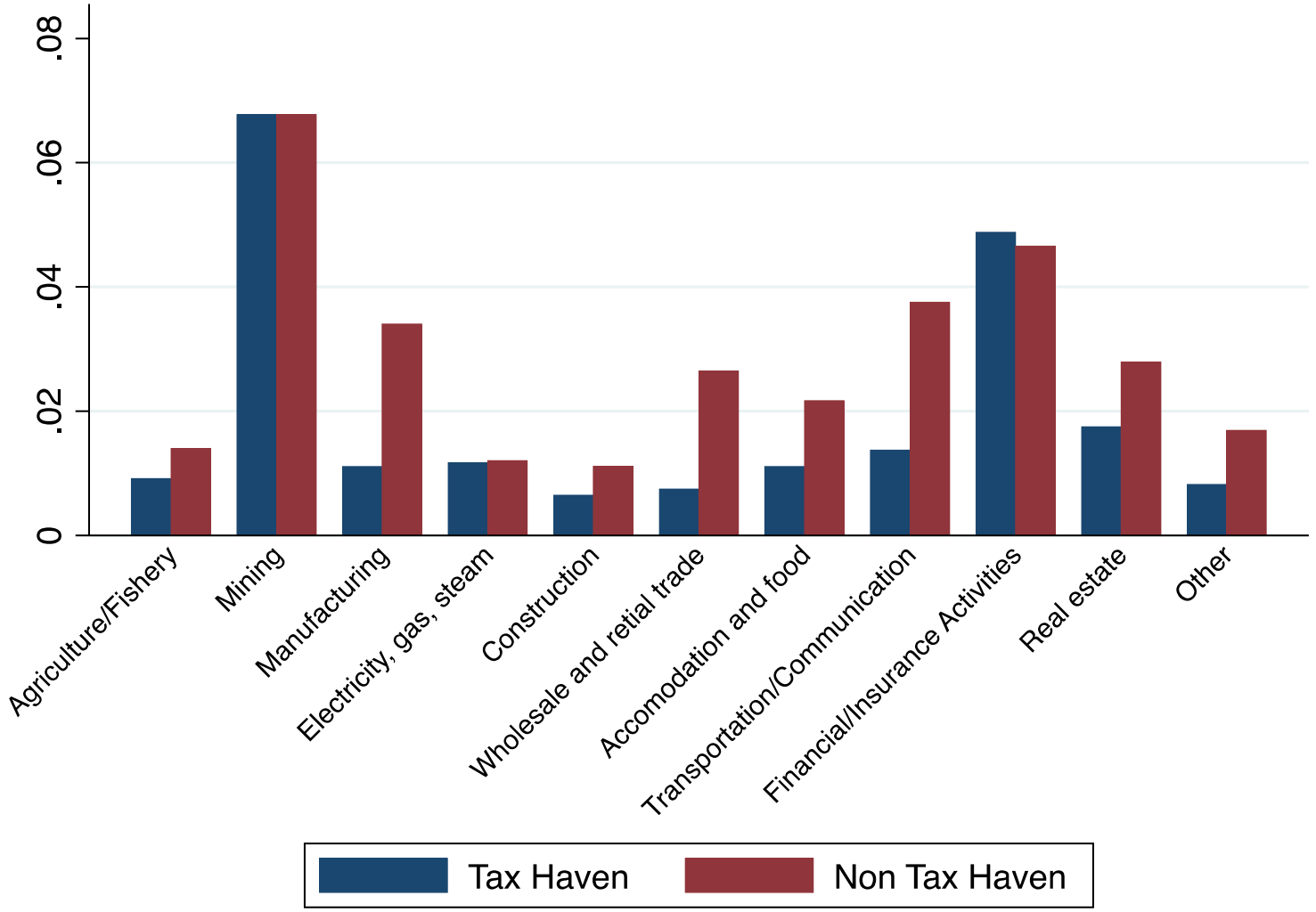
	Number of firms	Share of the foreign firms
Cyprus	2660	0.243
Russia	2082	0.191
UK	868	0.079
USA	791	0.072
Germany	627	0.057
BVI	579	0.053
Poland	567	0.052
Netherlands	412	0.038
Turkey	285	0.026
Austria	260	0.024
Switzerland	225	0.021
Czech Republic	198	0.018
Belize	188	0.017
Panama	180	0.016

6 tax haven countries account for 33% of all foreign acquisitions

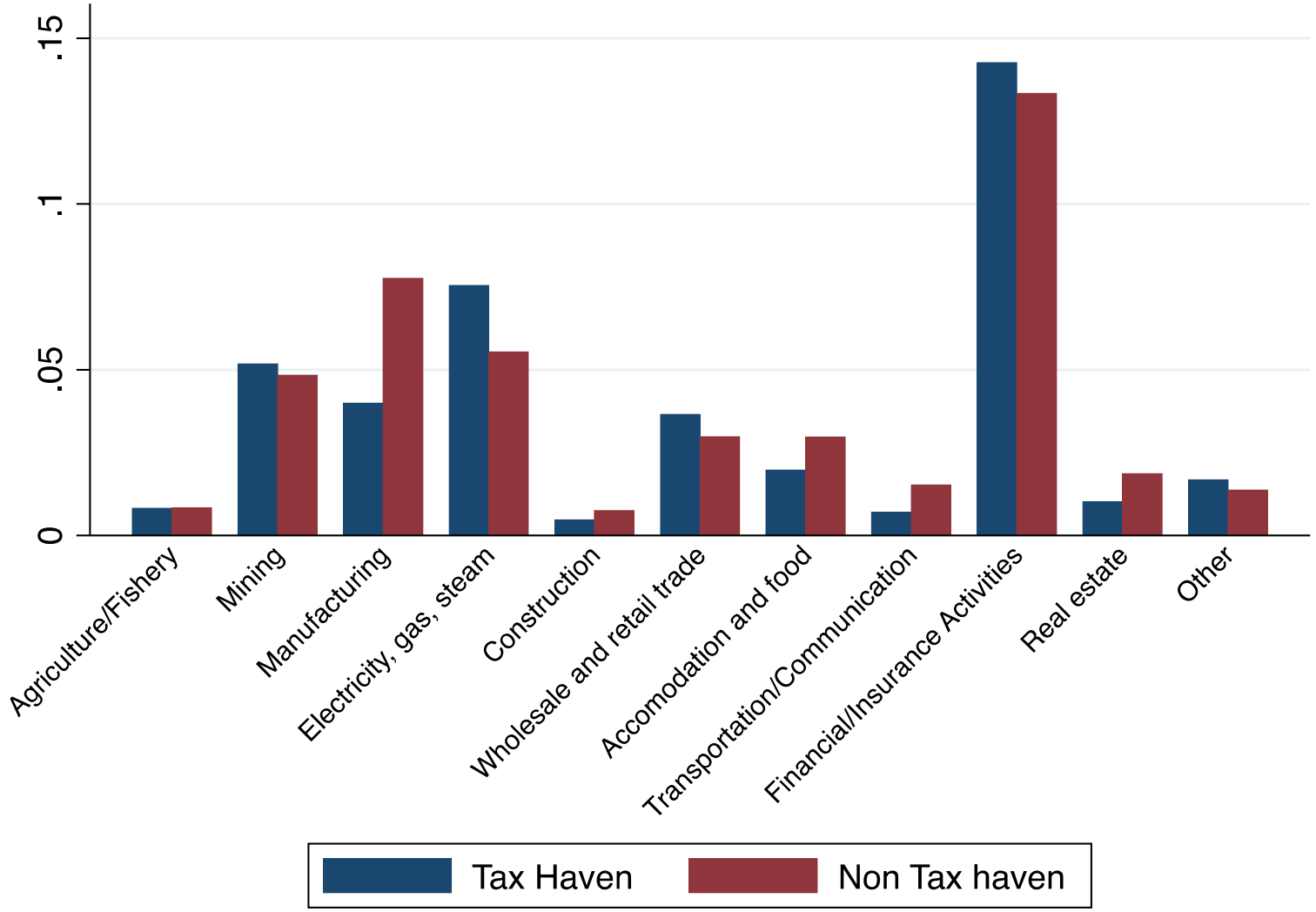
Share of Foreign Firms in Sample by Year



Share of Firms by Sector accounted by TH and NTH Firms



Share of Sector Employment accounted by TH and NTH firms



Summary Statistics on Main Variables

	Always Domestic	Ever Foreign	Ever Non Tax Haven Foreign	Ever Tax Haven Foreign
Employment	41	156	139	300
Sales	6,871	67,792	51,923	126,541
Total assets	3,107	17,925	15,290	38,195
Labor productivity	349	1,005	736	1,652
Number of firms	304,857	10,926	8,092	3,507
Number of firm-years	2,384,204	91,075	68,367	29,831

Multinomial Logit Model of Foreign Acquisitions

	Tax Haven	Non-Tax Haven
Kyiv	1.328**	0.703**
	(0.140)	(0.074)
Volynska	0.779**	-0.139
	(0.202)	(0.139)
Dnipropetrovska	0.732**	-0.361**
	(0.151)	(0.091)
Odeska	0.449**	-0.028
	(0.163)	(0.093)
Kharkivska	0.381*	-0.113
	(0.159)	(0.089)
Zakarpatska	-0.343	0.931**
	(0.320)	(0.102)
Lvivska	0.100	0.399**
	(0.180)	(0.087)

Multinomial Logit Model of Foreign Acquisitions

	Tax haven	Non-tax haven
Log Emp t-1	0.471**	0.177**
	(0.016)	(0.011)
Log Emp t-1/t-2	0.251**	0.555**
	(0.039)	(0.023)
Log Emp t-2/t-3	0.147**	0.428**
	(0.044)	(0.028)
Log Emp t-3/t-4	0.267**	0.451**
	(0.047)	(0.032)
Log TFP t-1	0.151**	0.140**
	(0.02)	(0.011)
Log TFP t-1/t-2	0.076*	0.135**
	(0.036)	(0.019)
Log TFP t-2/t-3	-0.040	0.088**
	(0.042)	(0.022)
Log TFP t-3/t-4	0.131**	0.092**
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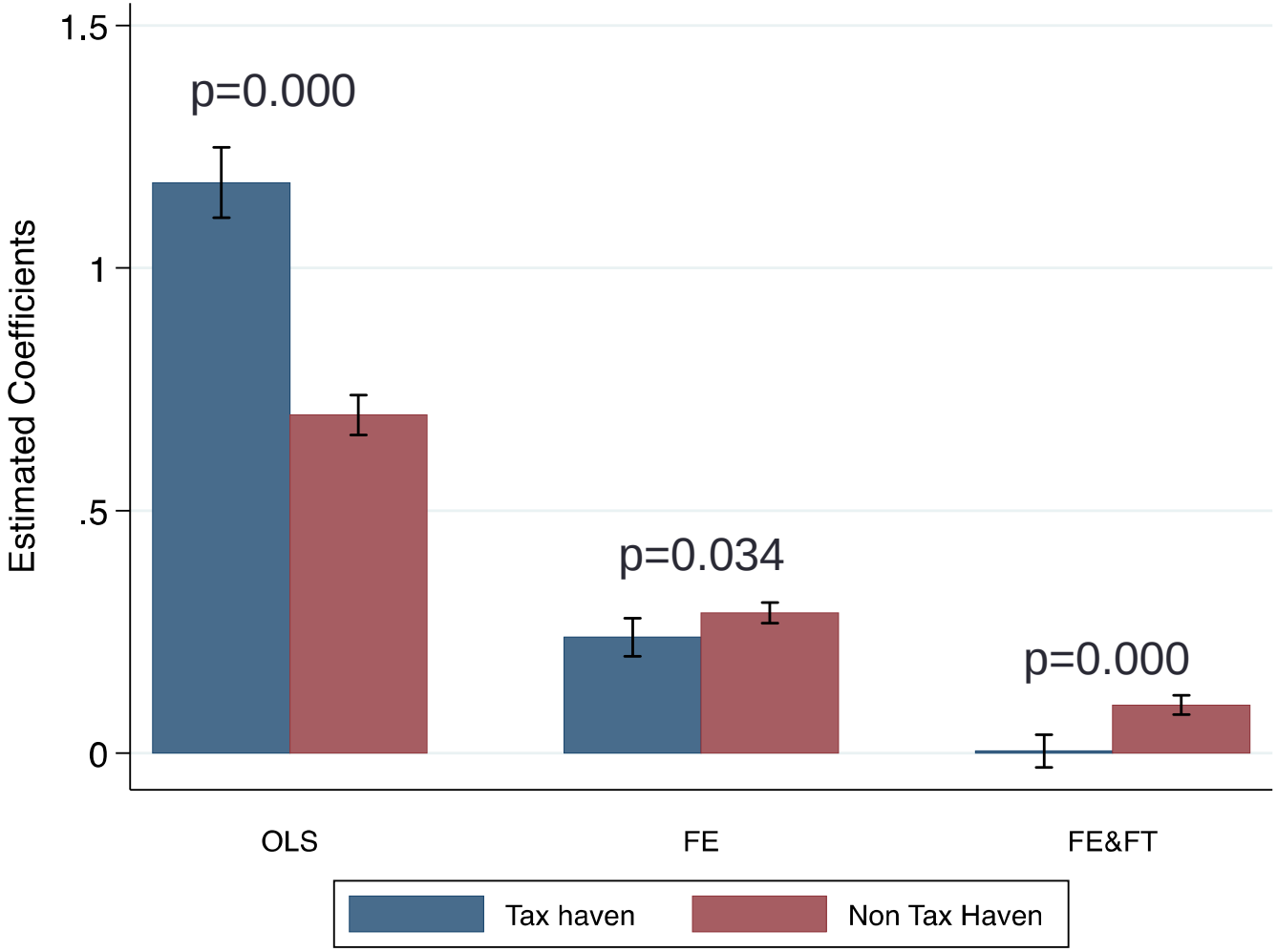
Multinomial Logit Model of Foreign Acquisitions

	Tax Haven	Non-Tax Haven
Metal Ore Mining (13)	2.261**	1.338
	(0.492)	(1.034)
Real Estate Operations (70)	0.905**	0.343**
	(0.096)	(0.090)
Coal, Lignite and Peat Mining (10)	0.834**	-0.872
	(0.268)	(0.720)
Financial Intermediation (65)	0.816**	0.505**
	(0.195)	(0.194)
Postal services and telecommunications (64)	0.487*	0.313
	(0.201)	(0.181)

Multinomial Logit Model of Foreign Acquisitions

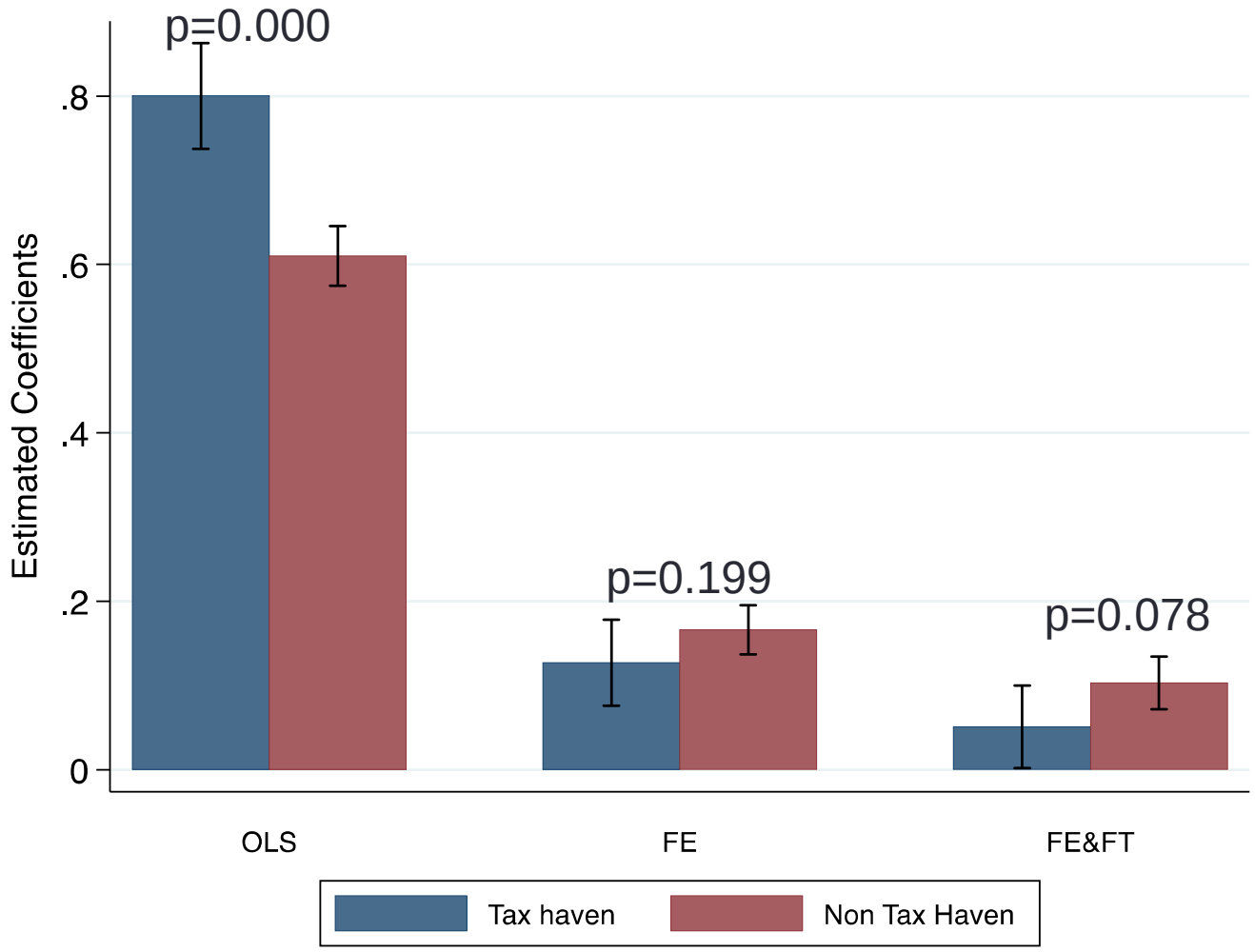
	Tax Haven	Non-Tax Haven
Oil and Gas Extraction (11)	2.472**	2.893**
	(0.377)	(0.293)
Other Mining (sand, stone, gravel) (14)	1.446**	1.631**
	(0.217)	(0.171)
Rental and Leasing Services (71)	1.180**	1.387**
	(0.212)	(0.154)
Insurance (66)	0.916**	1.167**
	(0.228)	(0.188)
Primary Metal Manufacturing (27)	0.631*	1.447**
	(0.286)	(0.201)

Estimated Employment Effects



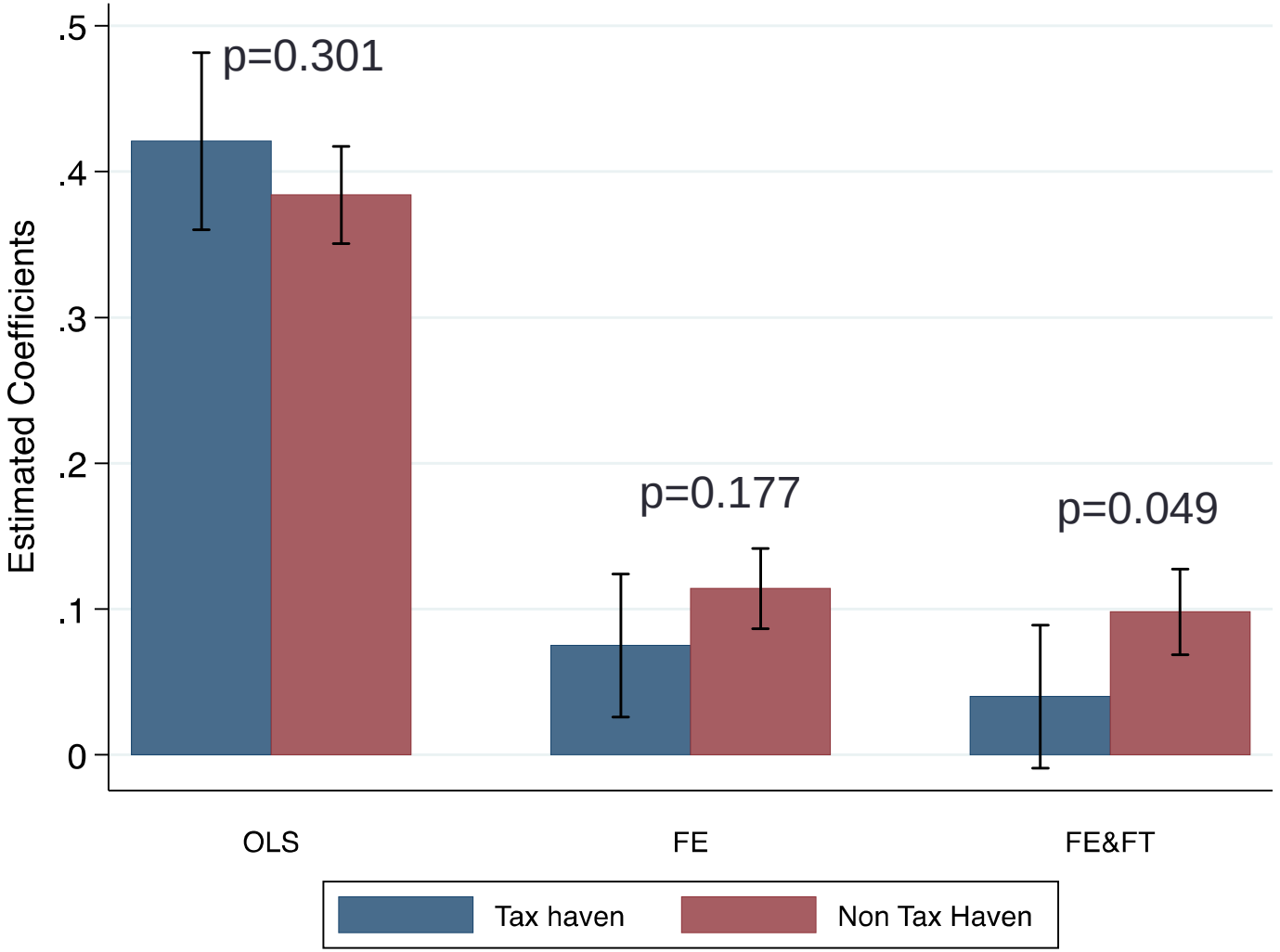
95% Confidence intervals; P-values for H_0: $\beta_{TH} = \beta_{NTH}$

Estimated Labor Productivity Effects



95% Confidence intervals; P-values for H_0: $\beta_{TH} = \beta_{NTH}$

Estimated TFP Effects

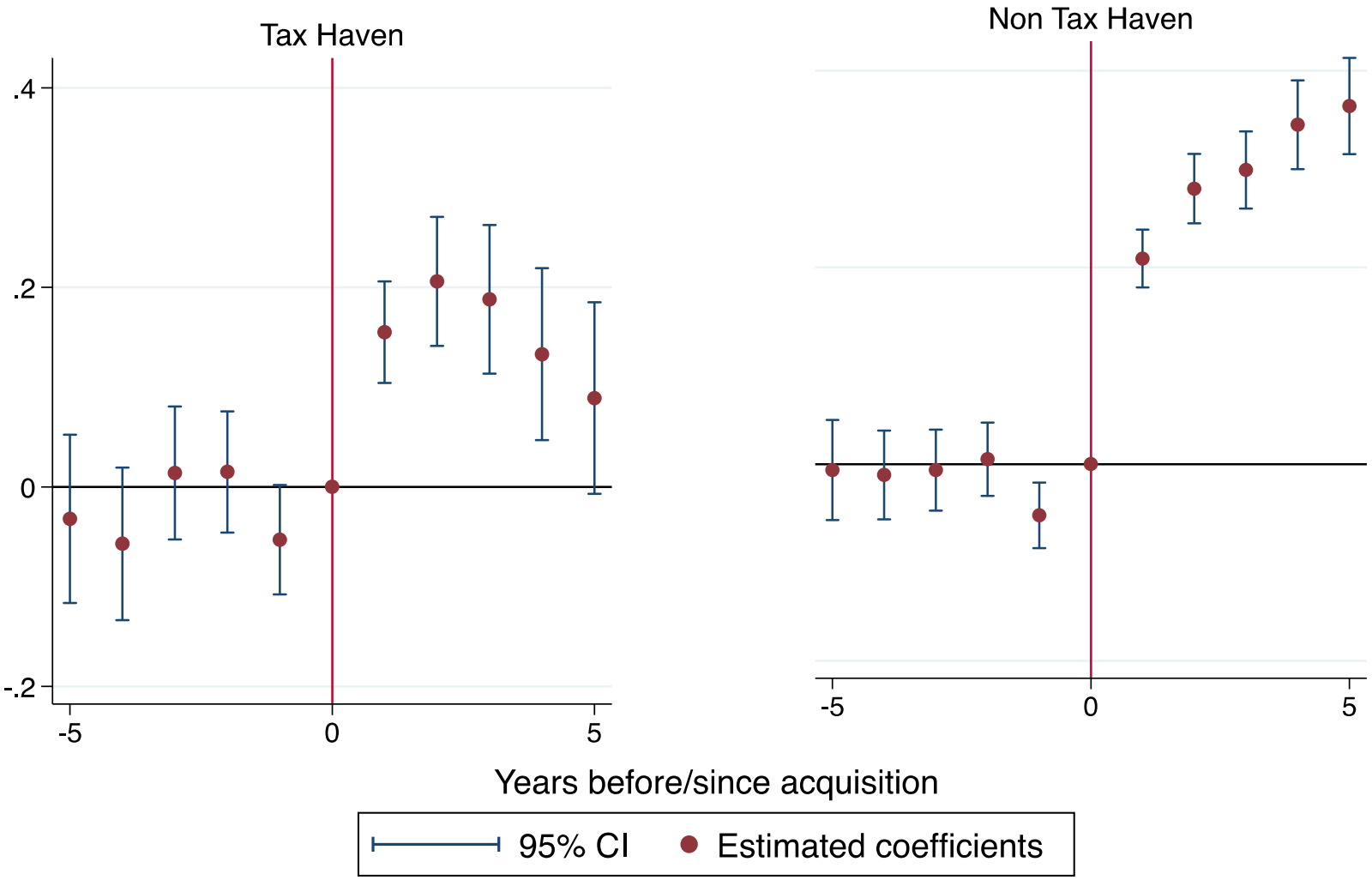


99% Confidence intervals; P-values for H_0: $\beta_{TH} = \beta_{NTH}$

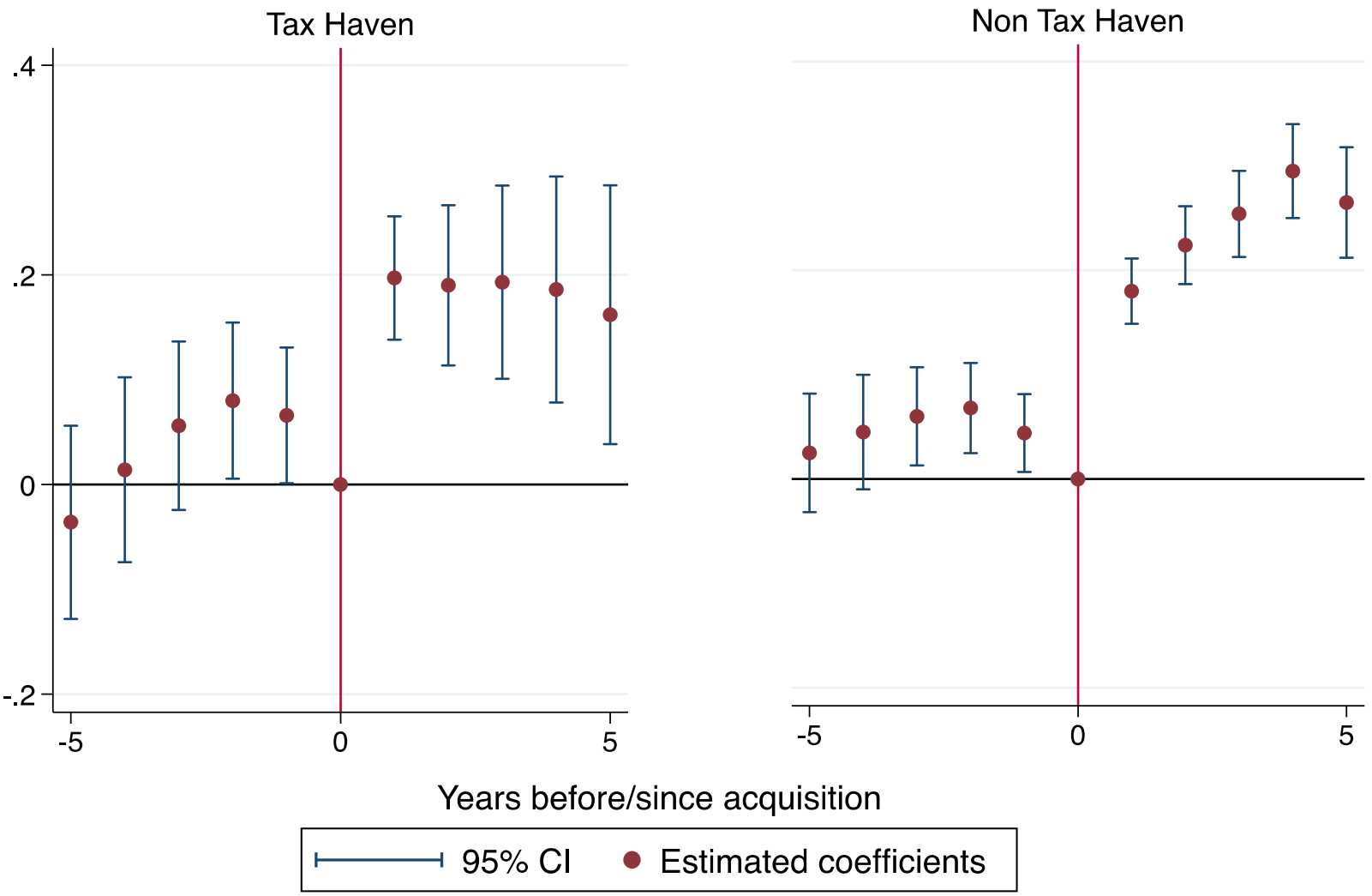
Propensity score matching

- Estimate **multinominal logits for each dependent variable**: DV=0 if always domestic, DV=1 if tax haven in acquisition year, DV=2 if non tax haven in acquisition year
- Match on employment, LP, TFP levels and growth up to 4 years pre-acquisition; industry, year, region, age and age^2
- Exact match on 2-digit industry and year
- Keep control firms with PS lying within a 5 percent bandwidth of that of the matched acquired firm (robustness with 10 percent)
- Estimate weighted regressions with matched group FE (using kernel weights)
- Reduces # of firms from 315,783 to 195,695 (EMP), 201,148(LP) and 178, 120(TFP)

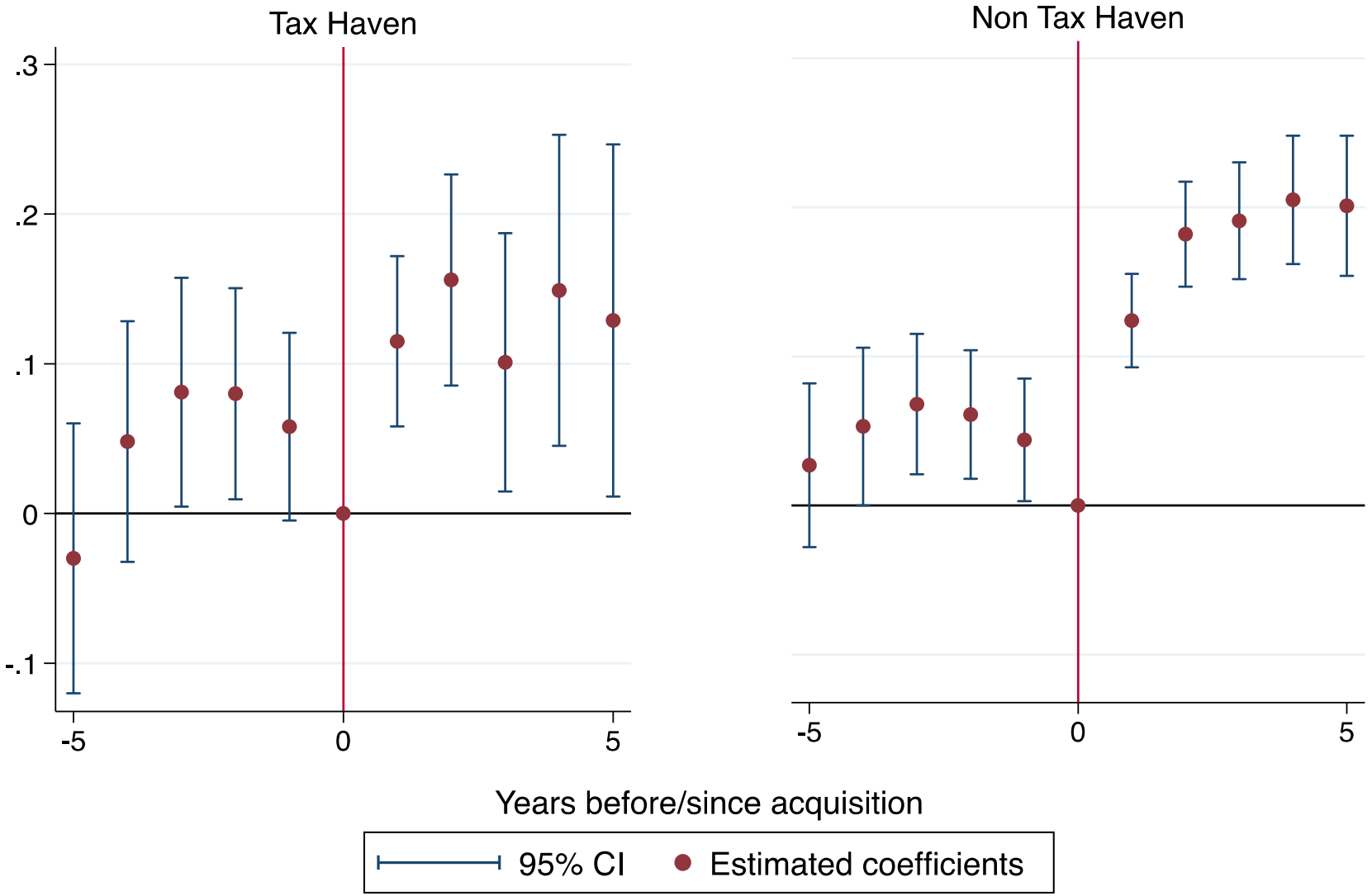
Matched sample: Pre- and Post-trends for Employment



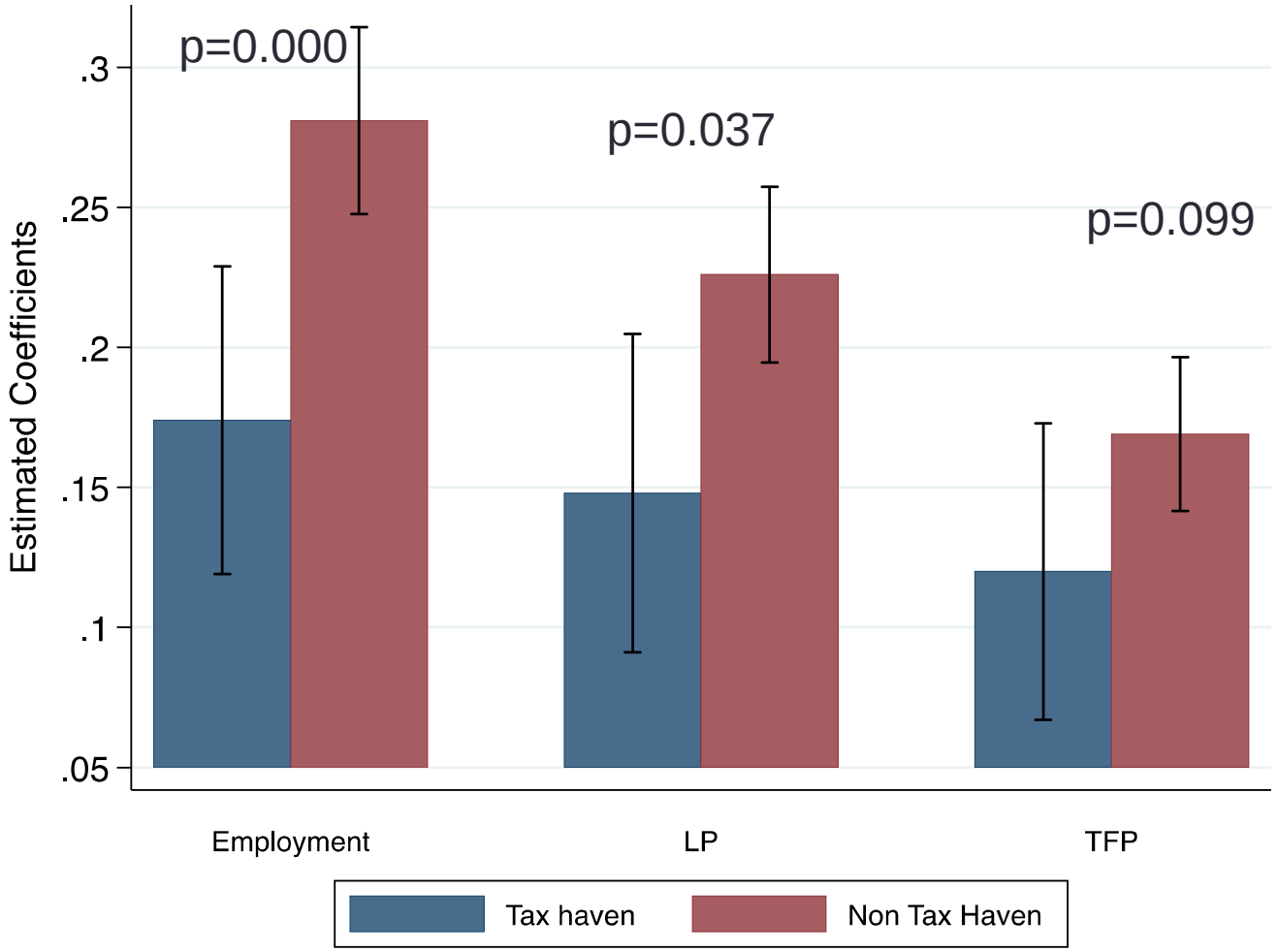
Matched sample: Pre- and Post-trends for Labor Productivity



Matched sample: Pre- and Post-trends for TFP



Estimated Effects: Matched Sample (5% bandwidth)



99% Confidence intervals; P-values for H_0: $\beta_{TH} = \beta_{NTH}$

Estimated Effects: Matched Sample (10% bandwidth)

Alternative explanation: investor country income?

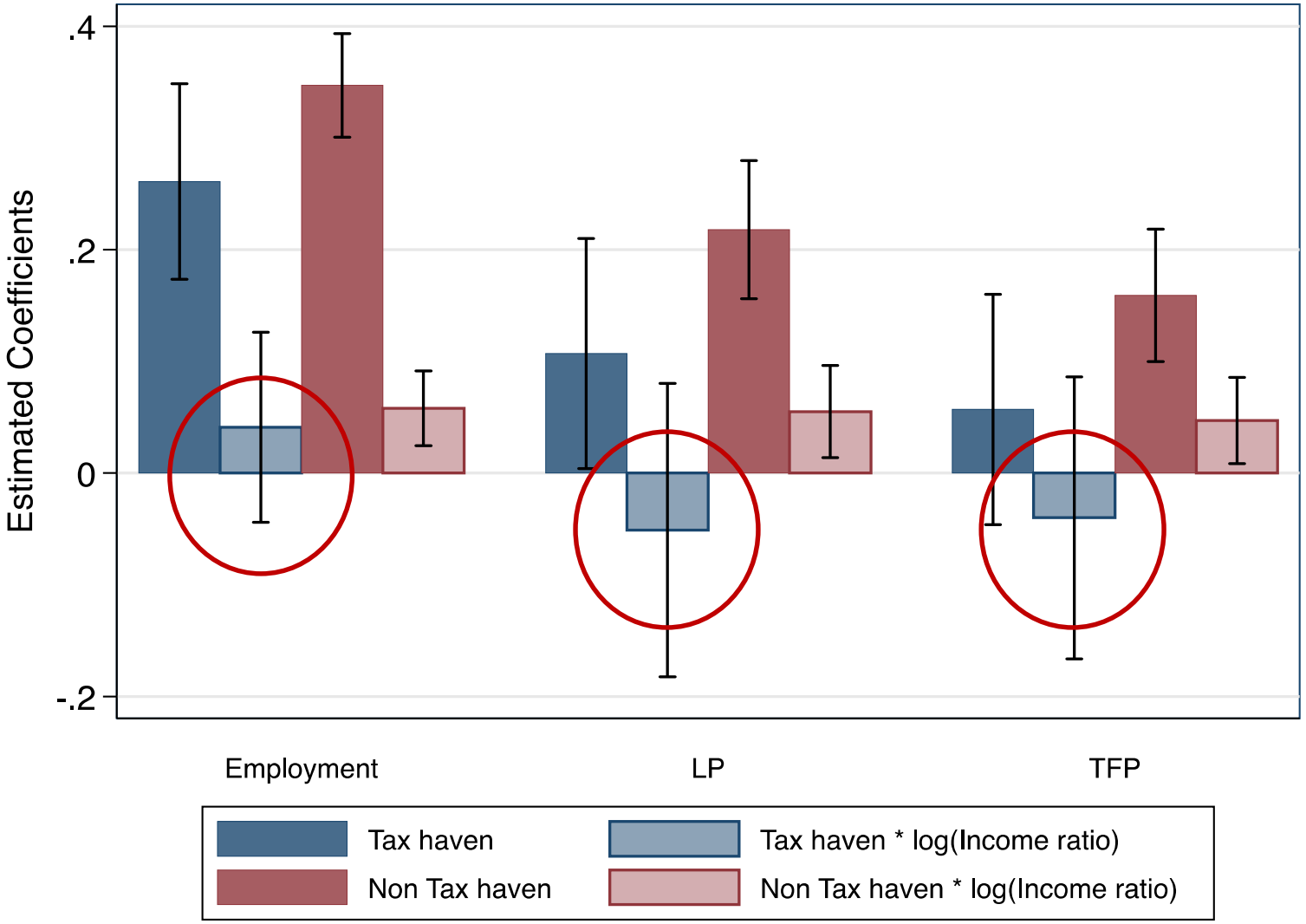
- Real FDI might be better if it comes from countries closer to technological frontier
- Investors from more developed countries may bring more advanced technology/organizational capital

Example:

- GDP per capita in Czech Republic (non-tax haven) and Cyprus (tax haven) were 40% of the US GDP per capita in 2010 and 2002, respectively
- Do we expect the same effect from both countries?
- **Test**: interact foreign dummies with income ratio of source country relative to US in acquisition year:

$$Ln\left[\frac{GDPcti}{GDPusti}\right]$$

Source country GDP doesn't matter if FDI comes from tax havens



Risk of expropriation

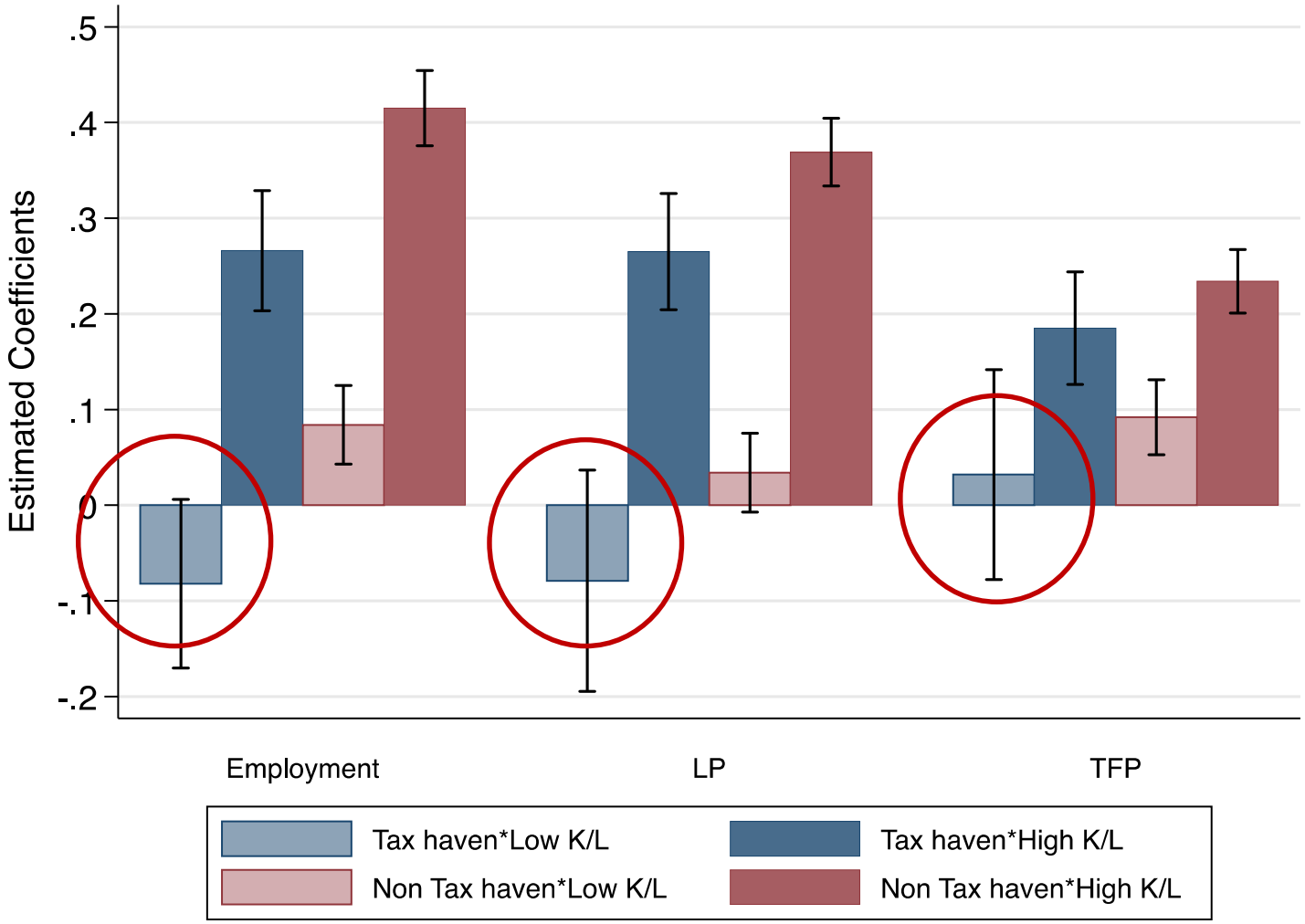
- Property rights protection
  - In industries with higher expropriation risk, having tax haven owner is more valuable than in industries with lower expropriation risk
- Selection
  - In industries sensitive to expropriation, tax haven FDI is more likely to represent round-trip FDI
- Use expropriation sensitivity index (Durnev and Guriev, 2011)
- Varies by 2-digit NACE industry, ranges from 0 to 1
  - Most sensitive industries: oil and gas extraction (1), petroleum refining (0.614)
  - Least sensitive industries: education (0), security and commodity brokers (0.063), forestry (0.117)
  - Normalized index is used

Risk of expropriation

	(1)	(2)	(3)
	EMP	LP	TFP
Tax Haven	0.142**	0.180**	0.149**
	(0.028)	(0.030)	(0.028)
Tax Haven*Expropriation	0.101**	-0.046*	-0.065**
	(0.020)	(0.019)	(0.017)
Non-Tax Haven	0.274**	0.236**	0.182**
	(0.017)	(0.016)	(0.015)
Non-Tax Haven*Expropriation	0.039**	-0.008	-0.011
	(0.013)	(0.011)	(0.011)
Observations	23,245,883	21,912,453	19,467,353
R-squared	0.490	0.423	0.302

Sd(expropriation)=0.098

Estimated Effects by Capital Intensity



Robustness: Alternative tax haven definition (Hines and Rice, 1994)

	(1)	(2)	(3)	(4)	(5)	(6)
	Employment		LP		TFP	
	FE	FE&FT	FE	FE&FT	FE	FE&FT
Tax Haven	0.260**	0.011	0.133**	0.057*	0.080**	0.048*
	(0.020)	(0.016)	(0.025)	(0.024)	(0.024)	(0.024)
Non-Tax Haven	0.284**	0.098**	0.168**	0.104**	0.115**	0.097**
	(0.012)	(0.010)	(0.015)	(0.016)	(0.015)	(0.016)
R-squared	0.157	0.046	0.070	0.082	0.394	0.290

Additionally includes: Jordan, Lebanon, Luxembourg, Macao, St. Martin, Switzerland
Excludes: Costa Rica, Dominican Republic, Mauritius, Montenegro, Nauru, Aruba, Niue, Puerto Rico, Seychelles, Virgin Islands

Conclusions

- Non-tax haven FDI leads to higher employment (10-29%), LP (10-17%) and TFP (10-11%)
- Tax haven FDI effect is smaller in magnitude
- Possible explanations of positive tax haven effect:
  - Legal motivation: firms become less risk-averse, invest more, raise productivity and employment
  - Financial services motivation: more flexibility in managing capital, access to developed capital markets
  - Not all tax haven FDI is round-trip, some of it might be genuine
- Tax haven FDI effect is lower bound estimate of round-trip FDI effect

Policy Implications

- Create favorable conditions to attract genuine FDI
- Mismeasurement of FDI
  - Round-tripping => no net inflow
  - Balance of payment indicators
  - IMF conditionality
- Improving measurement of FDI:
  - Beneficial ownership data
  - OECD Benchmark Definition of Foreign Direct Investment (4th edition): require reporting of FDI by ultimate ownership

Related and future research

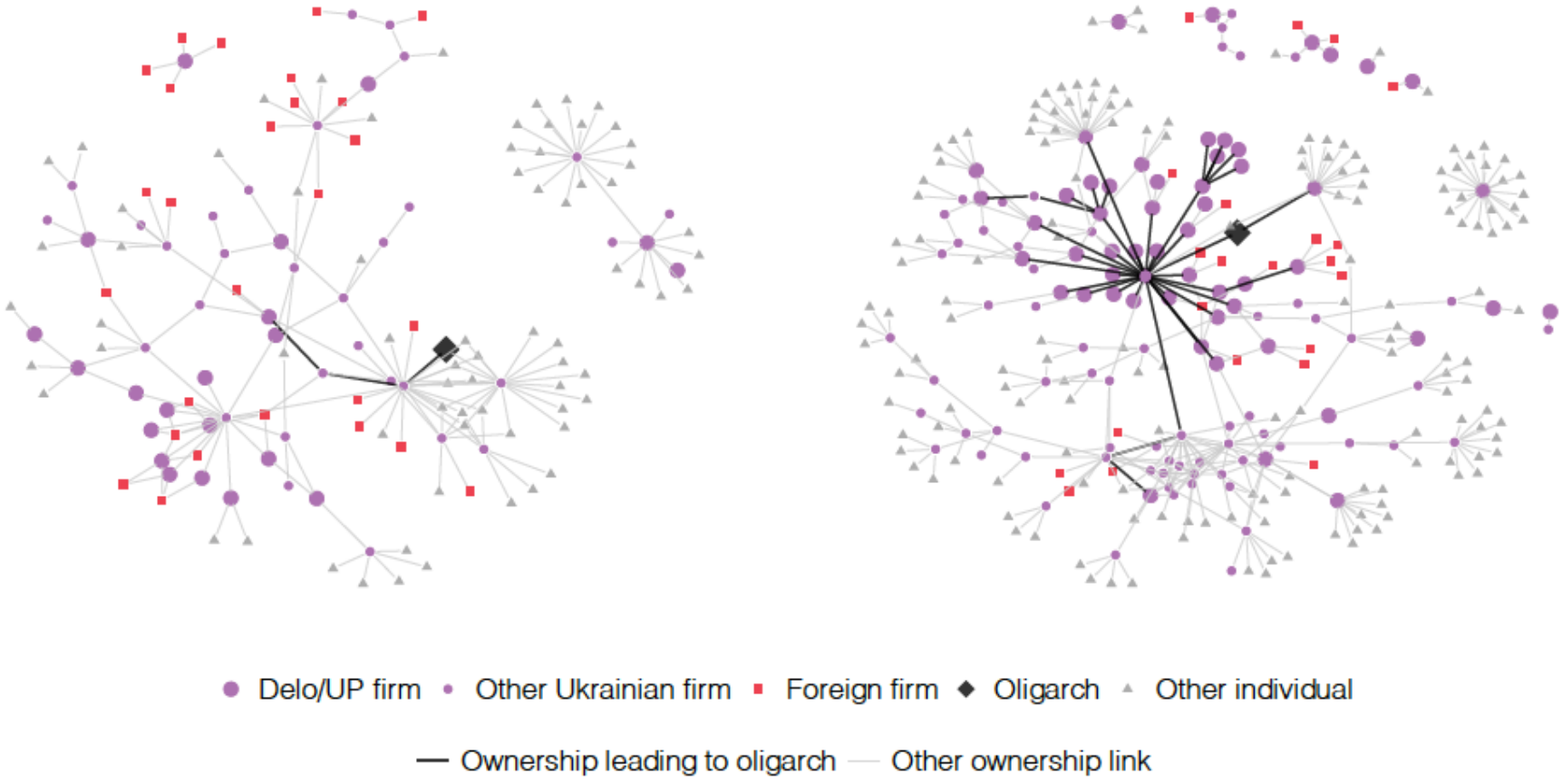
- Earle, Gehlbach, Shirikov and Shpak (2019):
  - Obfuscation of oligarch-connected firms and political connections

Earle, Gehlbach, Shirikov and Shpak (2019):

- We study ownership patterns of Ukrainian oligarchs just before and after Orange Revolution

- Using data from investigative journalists and firm registries, we:
  - identify and characterize ownership chains of > 300 key enterprises
  - compare ownership patterns of oligarchs more ("Blue") or less (“Orange") connected to incumbent regime in 2004
  - examine changes in ownership patterns after unexpected political turnover of Orange Revolution

Earle, Gehlbach, Shirikov and Shpak (2019):



Ownership networks in 2004 for UkrPromInvest (Petro Poroshenko) and System Capital Management (Rinat Akhmetov), respectively.

Earle, Gehlbach, Shirikov and Shpak (2019):

- We find:
  - Orange oligarchs more likely to obfuscate ownership before Orange Revolution
  - Blue oligarchs turn to offshore entities to obfuscate ownership after Orange Revolution
- Importance of obfuscated ownership as strategy to prevent predation in environment of poor protection of property rights

Related and future research

- Earle, Gehlbach, Shirikov and Shpak (2019):
  - Obfuscation of oligarch-connected firms and political connections
- Future research:
  - Determinants of obfuscation such as firm size, expropriation risk, share of tangible assets
  - Use Cyprus registry and beneficial ownership data to identify cases of round-trip FDI
  - Utilize new data on electronic declaration of public officials to study political connections and firm performance
- Access to NBU data:
  - 1, 2 PB Forms (files #1P, #2P) «Bank's/enterprise's report about financial transactions with nonresident»
  - Data on FDI loans obtained from nonresidents (Form №503, file #6A)
  - Credit register: use bank ownership to identify cases of round-trip FDI

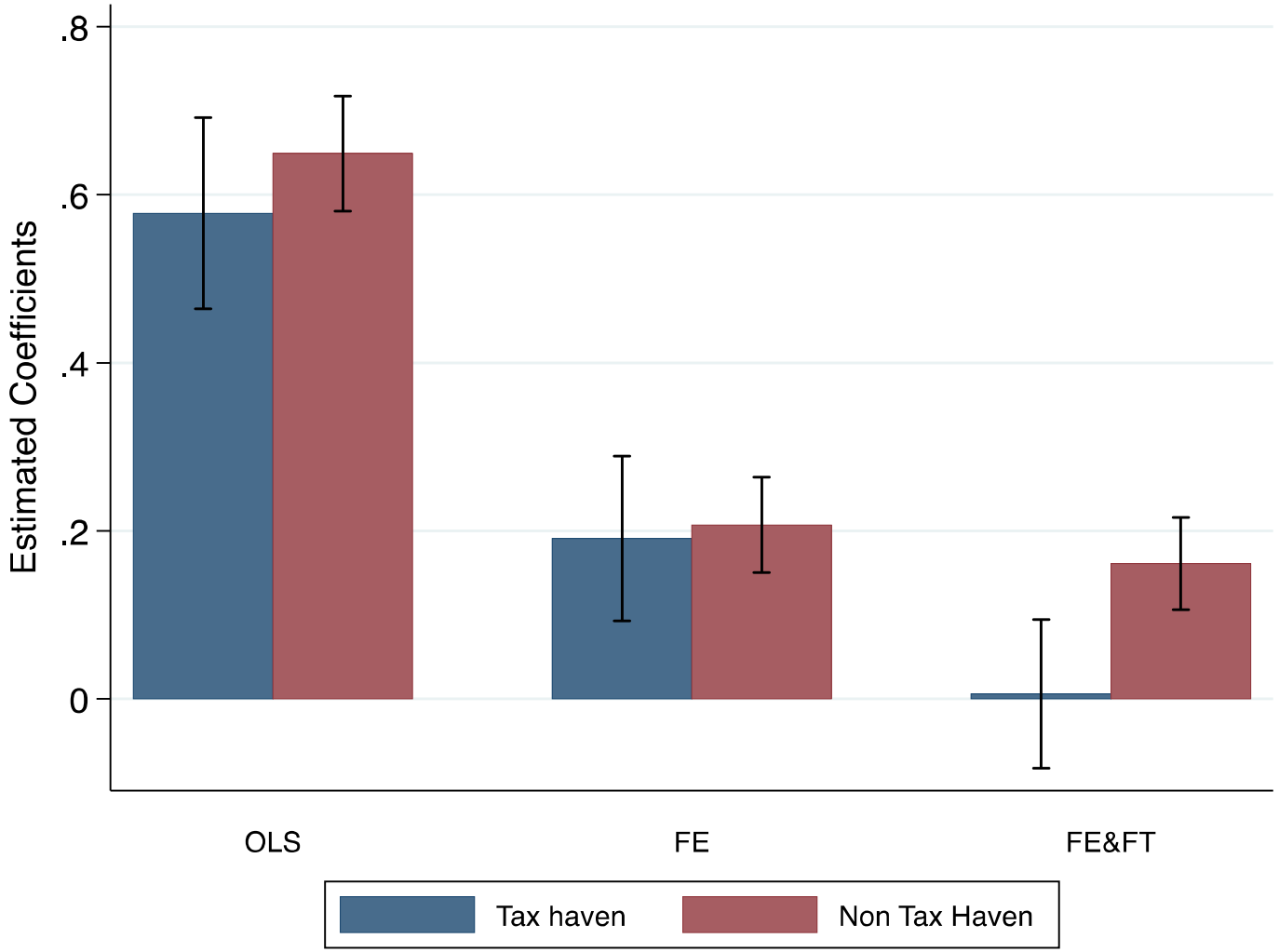
Thank you!

Additional slides

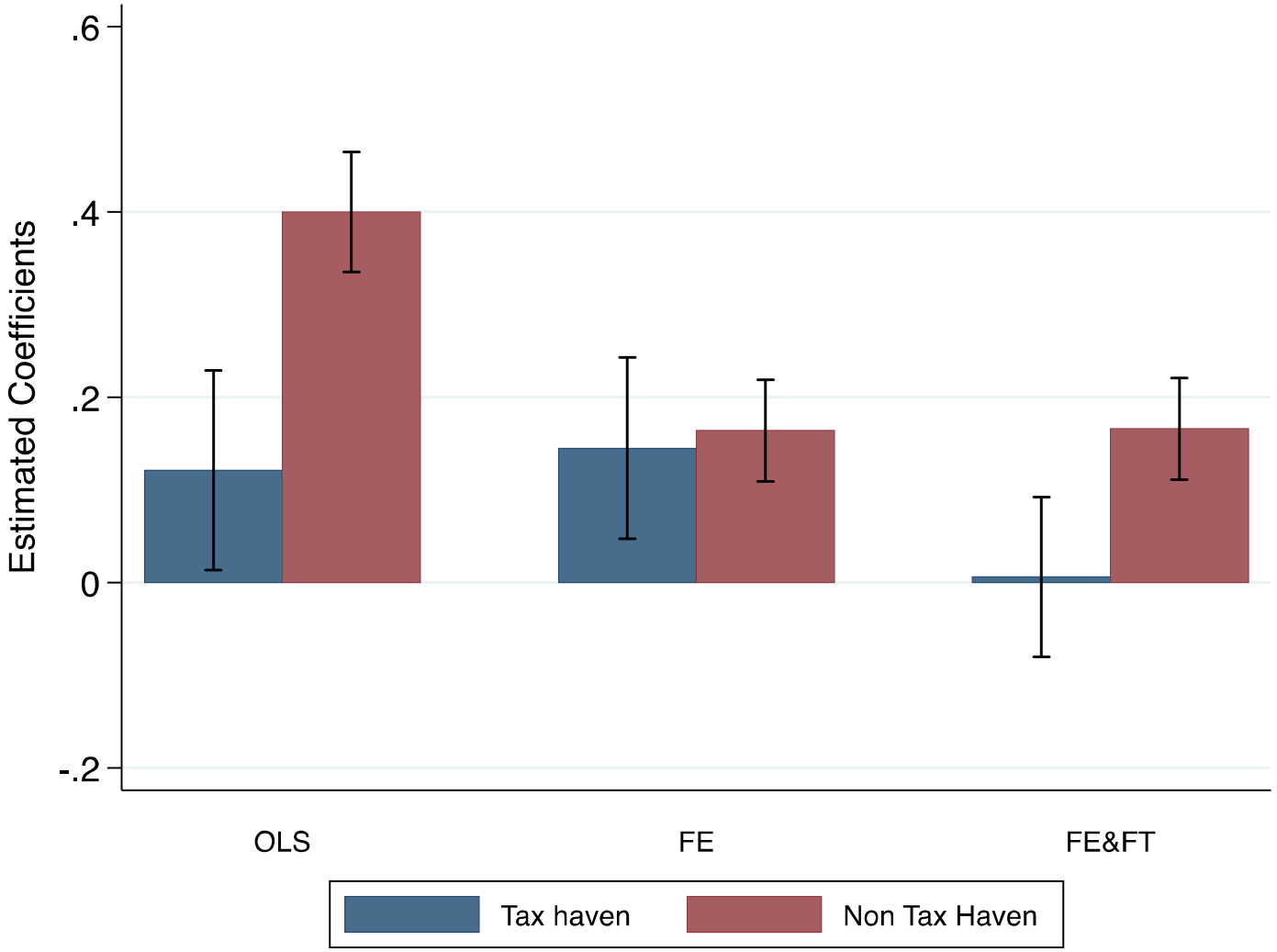
Number of Acquisitions by Year (Flow)

Year	Tax haven	Real foreign
1999	29	182
2000	30	252
2001	61	429
2002	89	363
2003	91	576
2004	131	609
2005	144	604
2006	207	755
2007	605	1212
2008	542	957
2009	357	530
2010	234	684
2011	534	820
2012	1462	2159

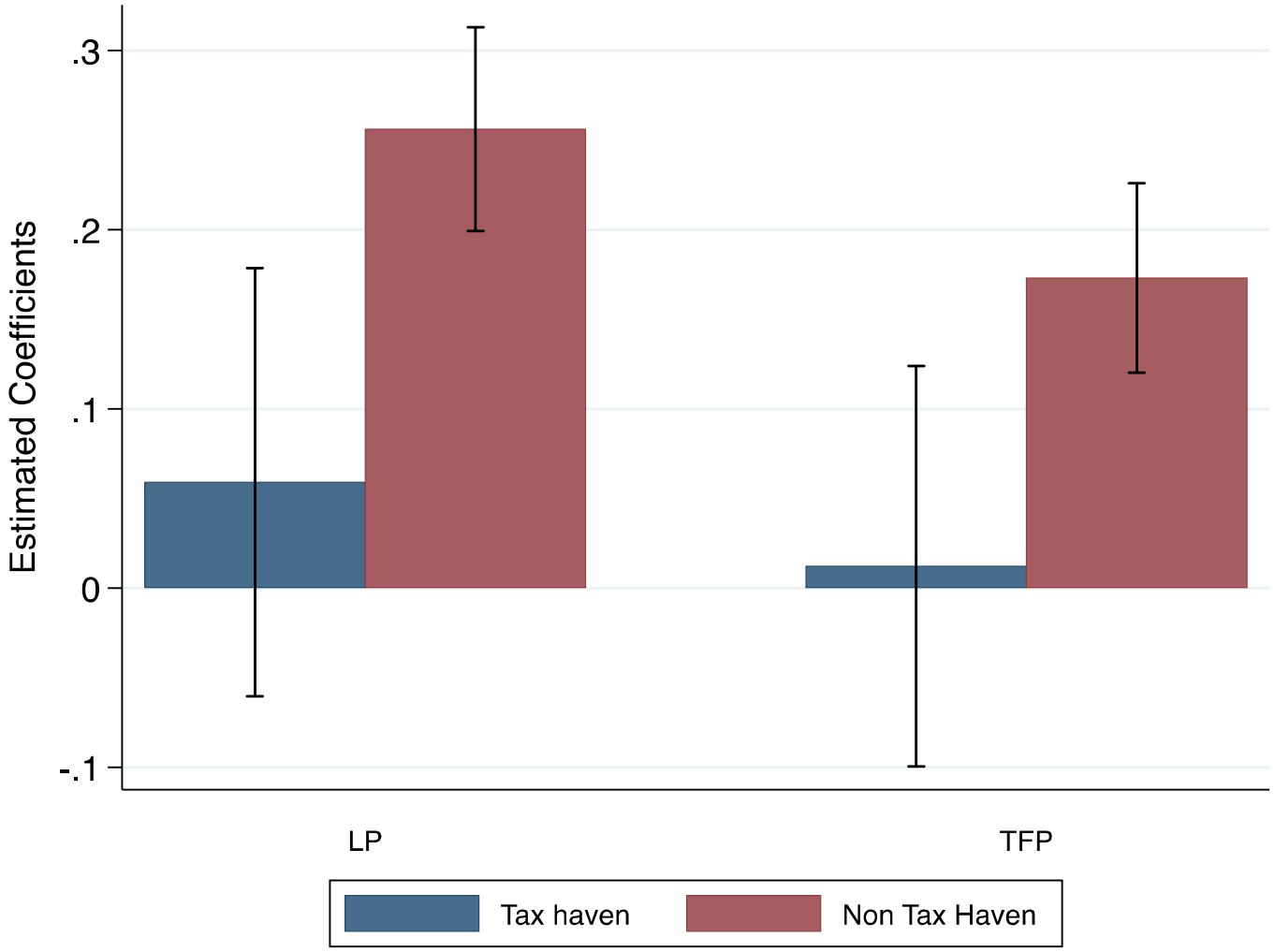
Estimated Effect: Manufacturing, LP



Estimated Effect: Manufacturing, TFP



Estimated Effect: Manufacturing, matched sample

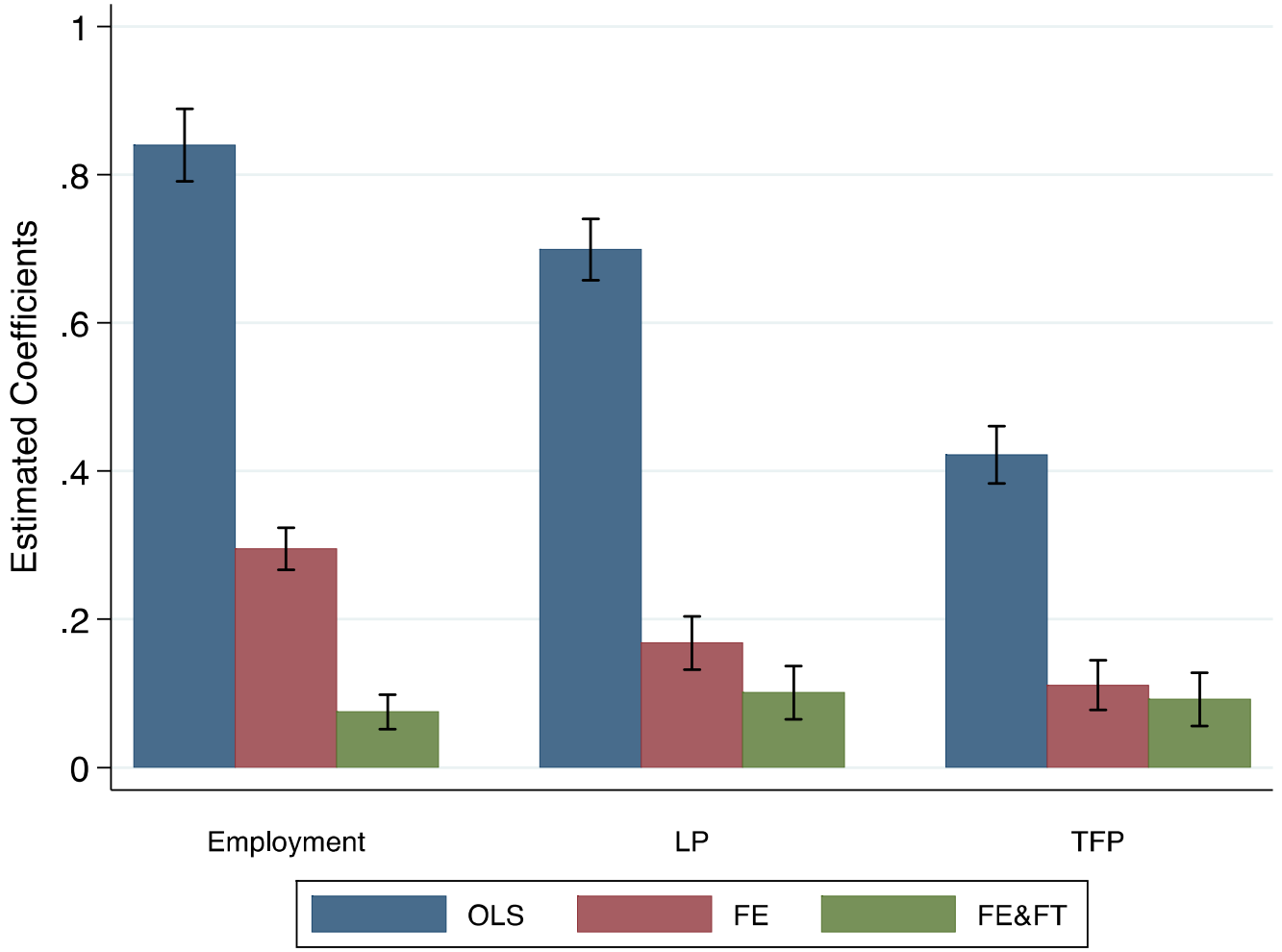


What is FDI?

- **Foreign direct investment (FDI)** is a category of investment that reflects the objective of establishing a lasting interest by a resident enterprise in one economy (*direct investor*) in an enterprise (*direct investment enterprise*) that is resident in an economy other than that of the direct investor (OECD, 2008)

- An ownership of at least 10% of the voting power of the enterprise is regarded as the necessary evidence that the investor has sufficient influence to have an effective voice in its management.

Employment and Productivity Effects of Foreign Acquisitions



99% Confidence intervals

Special purpose entities (OECD definition)

SPEs are formally registered legal entities, where:

- ultimate owners are not residents of the territory of incorporation
- few or no employees
- little or no production in the host economy
- little or no physical presence
- most assets and liabilities are vis-à-vis non-residents
- the core business of the enterprise consists of group financing or holding activities

Example: Foreign Direct Investment from Cyprus

Ukrainian National Statistics:

- Cyprus FDI to Ukraine was almost USD 9 billion in 2010

Cyprus National Statistics

- Cyprus FDI to Ukraine in 2010 was USD 163 million
- Difference? Cyprus statistics excludes Special Purpose Entities

FDI round-tripping (Ukraine-Cyprus-Ukraine)

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FDI round-tripping (Ukraine-Cyprus-Ukraine)

FDI trans-shipping (Russia-Cyprus-Ukraine)

OECD: Russian investment in Ukraine was at least 3 times as large as the official data suggested at the end of 2014