Session 1. Identifying Corporation Tax Avoidance

Moderator:	***Eric Toder*** *Tax Policy Center*
Using IRS Data to Identify Income Shifting Firms	***Lisa De Simone*** *Stanford University*
Income Shifting by U.S. Multinational Corporations	***Amy Dunbar*** *University of Connecticut*
The Economic Effects of Special Purpose Entities on Corporate Tax Avoidance	***Petro Lisowsky*** *University of Illinois at Urbana-Champaign*
Discussants:	***Tim Dowd*** *Joint Committee on Taxation staff* ***Eric Toder*** *Tax Policy Center*

Using IRS Data to Identify Income Shifting Firms

Lisa De Simone
Stanford Graduate School of Business

June 21, 2017

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STANFORD GRADUATE SCHOOL OF BUSINESS

Overview

What

- Measure the likelihood that a U.S. multinational entity (MNE) shifts income out of the U.S. using intercompany transactions with foreign subsidiaries

Why

- Increased international attention on income shifting: important to understand (i) magnitude, (ii) what types of firms shift income out of the U.S., and (iii) consequences
- Identifying income shifting is difficult
- Findings could inform potential cost/benefit of proposed tax reform that would alter income shifting incentives

How

- Measure net outbound intercompany transfers using Form 5471 Schedule M
- Develop a prediction model of net outbound shifting
- Examine audit outcomes of net outbound firms and firms that shift more out (or less in) than expected

Key Results

Likelihood of net outbound income shifting via intercompany transactions

- Positively associated with tax haven operations, high tech industry membership, tax incentives, R&D, and foreign profitability
- Negatively associated with high percentage of foreign sales, gross profits, size, and capital expenditures
- Holdout sample tests to validate model

“Aggressive” income shifting

- Defined as having a positive residual in a continuous OLS model: shift more out (or less in) than expected (i.e., exhibit a higher continuous net outbound amount than expected)
- Positively correlated with net outbound income shifting
- On average, 45% of sample firm-years shift more out (or less in) than predicted

Likelihood of audit

- Net outbound or aggressive income shifters are *not* more likely to be audited

Predicting Net Outbound Income Shifting via Inter-Company Transactions

Factors	Why?	Proxies
Intangible intensity	Easy to migrate IP; Allows for royalties and other IC payments	R&D, Advertising, SG&A, Capitalized intangibles, Capex
Unique offerings	Greater latitude in setting prices for IC transactions	GP%, High-tech industry membership
Global footprint	Support for presence of economic activity abroad	% Foreign sales, Dom/for ROS, Dom/For growth, Haven operations
Tax incentives	Incentive to shift to lower-tax jurisdictions	Foreign effective tax rate differential (lagged)
Debt	Alternative tax shields	Leverage, Interest
Tax Planning	Ability to expend resources to shift effectively	Size, BigN auditor

Sample

Firm-years in IRS Business Returns Transaction File 2005-2014	**351,843**
Less:	
Observations without a matched Form 5471M	(306,379)
Observations with zero or missing Compustat *SALE*	(32,624)
Observations in a financial industry	(125)
Observations missing required data for estimation	(5,633)
Observations where *FTR* outside [-1,1]	(500)
Sample used for net outbound income shifting likelihood model	6,582
Less:	
Unable to match to IRS Audit Information Management System	(2,260)
Sample used for audit likelihood model	4,322

Descriptive Statistics by Net Outbound Income Shifting

		OutShifter = 1 (n = 2,414)		OutShifter = 0 (n = 4,168)		Differences			
	Variable	Mean	Median	Mean	Median	Mean		Median	
	OutShift	0.074	0.033	(0.057)	(0.026)	0.131	***	0.059	***
	Sales	6,078	964.9	5,623	1,533	455.3		(568.1)	***
	Pre-tax Income	576.7	52.65	630.5	98.88	(53.84)		(46.22)	***
	ETR	0.215	0.238	0.249	0.281	(0.034)	***	(0.043)	***
Intangible Intensity	R&D	0.075	0.024	0.051	0.014	0.024	***	0.011	***
Intangible Intensity	AD	0.009	-	0.012	-	(0.003)	***	0.000	
Intangible Intensity	SG&A	0.293	0.236	0.271	0.225	0.022	***	0.011	
Intangible Intensity	Intangibles	0.033	-	0.031	-	0.003		0.000	
Intangible Intensity	Capex	0.041	0.026	0.052	0.028	(0.012)	***	(0.001)	**
Unique Offerings	GP%	0.418	0.380	0.422	0.389	(0.005)		(0.009)	
Unique Offerings	HighTech	0.401	-	0.255	-	0.146	***	0.000	
Global Footprint	ForeignSales%	0.402	0.380	0.424	0.417	(0.023)	***	(0.037)	***
Global Footprint	FROS	0.034	0.021	0.037	0.028	(0.003)	*	(0.006)	***
Global Footprint	DROS	0.009	0.024	0.022	0.035	(0.013)	***	(0.012)	***
Global Footprint	FSalesGrowth	0.196	0.095	0.165	0.086	0.031	***	0.009	**
Global Footprint	DSalesGrowth	0.106	0.067	0.090	0.058	0.016	***	0.009	***
Global Footprint	HasHaven	0.809	1.000	0.807	1.000	0.002		0.000	
Tax Incentive	Lag_FTR	0.144	0.146	0.115	0.108	0.029	***	0.038	***
Debt	Leverage	0.190	0.052	0.232	0.102	(0.043)	***	(0.050)	***
Debt	Interest	0.014	0.005	0.016	0.008	(0.003)	***	(0.003)	***
Tax Planning	Size	20.75	20.69	21.10	21.15	(0.348)	***	(0.463)	***
Tax Planning	BigN	0.840	1.000	0.867	1.000	(0.028)	***	0.000	

Net inbound shifting on average

More R&D
Less capex

Less foreign sales %, return on sales

More growth

More tax incentives to shift

Less debt, smaller

Work in Process: Additional Descriptive Analysis

By 5471M Line Pair

- Net inbound shifting at mean (median) except for CSAs, Services, Commissions (IP, CSAs, Commissions, Insurance)

By Size

- Smallest asset quartile (~< $250M) is only quartile with net outbound income shifting on average

By Industry

- High Tech and Fama-French 12 “Other” (Mines, Construction, Building Materials, Transportation, Hotels, Business Services, Entertainment) are only industries with net outbound income shifting on average

By Year

- Net shifting increasing over time; net outbound at mean in 2012 and 2014

Prediction Model: Likelihood of OutShifter = 1 (Net Outbound Shifting)

		(1)	(2)	(3): OLS
Intangible Intensity	RD	+	2.5464***	2.2769***	-0.0549***
	AD	+	-2.2679	-2.6301	-0.0602
	Intangibles	+	0.4484	0.4984*	0.0076
	SGA	+	-0.3623	-0.4342	0.0286**
Unique Offerings	Capex	-	-1.6361***	-1.7256***	-0.0193
Global Footprint	GP%	+	-1.166***	-1.0589***	-0.0819***
	HighTech	+	0.6274***	0.6276***	0.0382***
	ForeignSales%	+	-0.9729***	-0.9083***	-0.0881***
	Lag_FROS	+	1.9507***	1.5106	0.1130***
	Lag_DROS	?	0.0357	0.044	-0.0357***
Tax Incentive Debt	FSalesGrowth	+	0.0545	0.0541	0.0017
	DSalesGrowth	?	0.1329	0.1969	0.0035
Tax Planning	HasHaven	+	0.2964**	0.3109**	0.0139***
	LagFTR	+	0.4042***	0.4869**	0.0078
	Leverage	?	-0.2335	-0.1807	-0.0067
	Interest	?	1.0400	0.2744	0.0249
	Size	?	-0.1016***	-0.1022**	-0.0035***
	Big5	+	0.0648	0.1042	-0.0092**

Likelihood of Net Outbound Income Shifting:

+ R&D, HighTech, foreign return on sales, has haven operations, foreign tax rate differential

- Capex, gross profit %, foreign sales %, size

Predictive Power

AUCs low but improving in revision (~0.70+)

Holdout sample analysis

Aggressive Shifters

If positive residual in OLS model, shifting more out (or less in) than predicted

Additional Tests: Firms that Shift More Out (Less in) than Expected

Aggressive Shifters vs. Net Outbound Income Shifters

	OutShifter = 0	OutShifter = 1	Total
AggShifter = 0	3,130	385	3,515
AggShifter = 1	1,038	2,029	3,067
Total	4,168	2,414	6,582

Percent of sample years firms are Aggressive Shifters

Unique MNEs	Mean	p25	p50
1,526	0.448	0.000	0.333

Additional Tests: Audits by Year

Even ignoring most recent years (for which audits may not be initiated), audit rate is declining.

In future work, we would like to compare to average audit rates for all firms.

	OutShifter = 1 (n = 1,568)			AggShifter = 1 (n = 2,032)		
Year	N	Audit = 1	Audit Rate	N	Audit = 1	Audit Rate
2005	36	20	55.56%	67	36	53.73%
2006	152	91	59.87%	195	135	69.23%
2007	171	97	56.73%	233	144	61.80%
2008	166	102	61.45%	219	135	61.64%
2009	148	74	50.00%	229	129	56.33%
2010	226	98	43.36%	317	147	46.37%
2011	286	104	36.36%	336	123	36.61%
2012	264	63	23.86%	292	76	26.03%
2013	100	27	27.00%	122	32	26.23%
2014	19	7	36.84%	22	11	50.00%
Total	1,568	683	43.56%	2,032	971	47.79%

Additional Tests: Likelihood that Audit = 1

Here and in revision, consistent evidence of no different audit likelihood for net outbound income shifters or firms that shift more out (or less in) than expected.

	Shift Variable =	(1) OutShifter	(2) AggShifter	(3) OutShifter	(4) AggShifter
Intercept	?	-0.0363	-0.1364	-11.5536***	-11.6247***
Shift	+	-0.2228**	0.0419	-0.0873	-0.0608
Size	+			0.5493***	0.5523***
Big5	+			0.0638	0.0668
ROS	+			1.0636***	1.0752***
NOL	-			0.1949	0.1899
Leverage	-			-0.5523***	-0.5398***
Observations		4,322	4,322	4,322	4,322
AUC		0.526	0.505	0.738	0.738

Conclusions

Ongoing work

- Continuing to improve predictive power of the model
- Increased descriptive analysis to understand who the shifters are, how they vary over time

Identification of firms with net outbound intercompany transactions

- Net *inbound* on average
- Net outbound for High Tech industry and IP transactions
- Increasing in R&D, High Tech industry membership, foreign return on sales, foreign effective tax rate differential
- Decreasing in capex, gross profit, foreign sales, size

Audit likelihoods

- Net outbound shifters and firms that shift more out (or less in) than expected have no different likelihood of audit

Thank you!

University of Connecticut
School of Business

Income Shifting by U.S. Multinational Corporations

7th Annual IRS-TPC Joint Research Conference on Tax Administration

Ted Black (IRS RAAS), Amy Dunbar (UConn),
Andrew Duxbury (James Madison), and Tom Schultz (Western Michigan)

June 21, 2017

Research Question

- **What is the question?**
  - Can we use new foreign tax information reporting (FTIR) data that includes payments of interest and royalties (FDAP income) to U.S. MNCs to estimate ***tax compliant*** income shifting?
    - We assume that the FDAP "footprint" from the FTIR data provides an empirical proxy measure for compliant income shifting.
- **Why important?**
  - OECD suggests that the FTIR data can be used to improve compliance
  - Similar to the effect of a 1099 on reporting behavior
- **How do we answer the question?**

Approaches to estimating income shifting

- **Prior research**
  - ***magnitude*** of income shifting
    - Rousslang (1997) and Christian and Schultz (2005) use a theoretical approach that assumes equal marginal after-tax rate of returns across jurisdictions.
  - ***tax-motivated*** income shifting
    - Hines and Rice (1994) use a production function with tax rates
    - Collins, Kemsley and Lang (1998) and Klassen and LaPlante (2012) use foreign return on sales.

Our approach: estimate compliant income shifting

1. Estimate magnitude of income shifting

2. Match FTIR and IRS data

3. Estimate compliant income shifting using FTIRC measures

Our approach: estimate compliant income shifting

1. **Estimate magnitude of income shifting**
   - Extend prior two-state model to an N-state: CFC /country by country basis

N-State Income Shifting Model

$$\frac{[Y_d + IS_T] * (1-t_d)}{K_d} = \frac{[Y_1 - IS_1] * (1-t_1)}{K_1} = \frac{[Y_2 - IS_2] * (1-t_2)}{K_2}$$

- Y = pretax income
- K= capital stock
- t = tax rate (T/Y) where T = level of taxes
- IS_T = total income shift $[IS_T = IS_1 + IS_2]$

1. Compute ATROC for each MNC and CFC;
2. Adjust for the income shift (IS) to equalize the ATROCs;
3. Aggregate the IS across all firms within N jurisdictions within year

Our approach: estimate compliant income shifting

1. **Estimate magnitude of income shifting**
   - Extend prior two-state model to an N-state: CFC /country by country basis
   - Obtain measures of capital and income from IRS Forms 1120 and 5471

Income Shifting Dataset: MNCs/CFCs

Initial		2007	2008	2009	2010	2011	2012	2013	2014	2015
#MNCs										
18,009		6,147	6,560	7,009	7,799	8,356	8,777	9,418	10,085	10,626
	#CFCs									
	668,523	67,114	69,897	70,042	71,333	74,653	76,419	77,971	79,283	81,811

Dropped 5471s that report zero income or capital

Using the reduced dataset still resulted in HUGE estimates of income shifting

- small denominator led to ATROCs that exceeded 100%.

Income Shifting Dataset: MNCs/CFCs

Initial		2007	2008	2009	2010	2011	2012	2013	2014	2015
#MNCs										
18,009		6,147	6,560	7,009	7,799	8,356	8,777	9,418	10,085	10,626
	#CFCs									
	668,523	67,114	69,897	70,042	71,333	74,653	76,419	77,971	79,283	81,811
Final										
9,701		3,345	3,407	3,571	3,848	4,088	4,187	4,311	4,480	4,547
	214,049	22,304	21,521	21,642	22,890	24,436	25,230	25,533	25,315	25,178

More reasonable ATROCs but magnitude of shifting substantially reduced.

Income Shifting Estimates – Positive Outbound Shifts (ISp)

($M)

	All CFCs	
	N-CFCs	**ISp**
2007	22,304	**$144,844**
2008	21,521	**161,884**
2009	21,642	**140,042**
2010	22,890	**181,310**
2011	24,436	**188,616**
2012	25,230	**165,990**
2013	25,533	**177,618**
2014	25,315	**179,714**
2015	25,178	**161,417**

Income Shifting Estimates – Positive Outbound Shifts (ISp)

($M)

	All CFCs		FTIR Countries		Non-FTIR Countries		Unidentified Country	
	N-CFCs	ISp	N	ISp	N	ISp	N	ISp
2007	22,304	**$144,844**	14,813	$75,783	7,350	$67,462	141	$1,599
2008	21,521	**161,884**	14,145	79,088	7,277	76,986	99	5,811
2009	21,642	**140,042**	14,276	75,221	7,313	63,351	53	1,470
2010	22,890	**181,310**	15,121	90,049	7,725	89,200	44	2,062
2011	24,436	**188,616**	16,010	91,494	8,374	93,995	52	3,127
2012	25,230	**165,990**	16,601	79,829	8,569	82,828	60	3,333
2013	25,533	**177,618**	16,678	83,896	8,798	91,745	57	1,978
2014	25,315	**179,714**	16,386	81,565	8,877	97,363	52	786
2015	25,178	**161,417**	16,437	74,847	8,692	86,245	49	325

Normalized ISp to CFCs Controlled by a Compliance Assurance Process (CAP)-MNC vs NonCAP-MNCs

	CAP					NonCAP				
	N					N				
	MNCs	**CFCs**	**ISp**	**Yd**	**NISp**	**MNCs**	**CFCs**	**ISp**		
2007	88	1,529	$21,080			118	2,923	$18,981		
2008	70	998	15,095			99	2,544	18,455		
2009	68	1,084	12,707			92	2,278	14,954		
2010	84	1,356	19,803			103	2,716	24,440		
2011	77	1,248	19,363			104	2,884	27,769		
2012	80	1,388	14,583			102	3,049	27,145		
2013	88	1,510	18,366			101	3,124	24,875		
2014	87	1,468	18,961			95	2,831	26,469		
2015	88	1,395	14,394			88	2,630	20,689		

Normalized ISp to CFCs Controlled by a
Compliance Assurance Process (CAP)-MNC vs NonCAP-MNCs

	CAP					NonCAP				
	N					N				
	MNCs	**CFCs**	**ISp**	**Yd**	**NISp**	**MNCs**	**CFCs**	**ISp**	**Yd**	**NISp**
2007	88	1,529	$21,080	118,739	0.151	118	2,923	$18,981	113,091	0.144
2008	70	998	15,095	80,579	0.158	99	2,544	18,455	94,908	0.163
2009	68	1,084	12,707	78,034	0.140	92	2,278	14,954	78,352	0.160
2010	84	1,356	19,803	105,422	0.158	103	2,716	24,440	98,139	0.199
2011	77	1,248	19,363	74,710	0.206	104	2,884	27,769	96,320	0.224
2012	80	1,388	14,583	85,602	0.146	102	3,049	27,145	104,134	0.207
2013	88	1,510	18,366	118,856	0.134	101	3,124	24,875	111,970	0.182
2014	87	1,468	18,961	124,384	0.132	95	2,831	26,469	131,880	0.167
2015	88	1,395	14,394	127,650	0.101	88	2,630	20,689	128,475	0.139

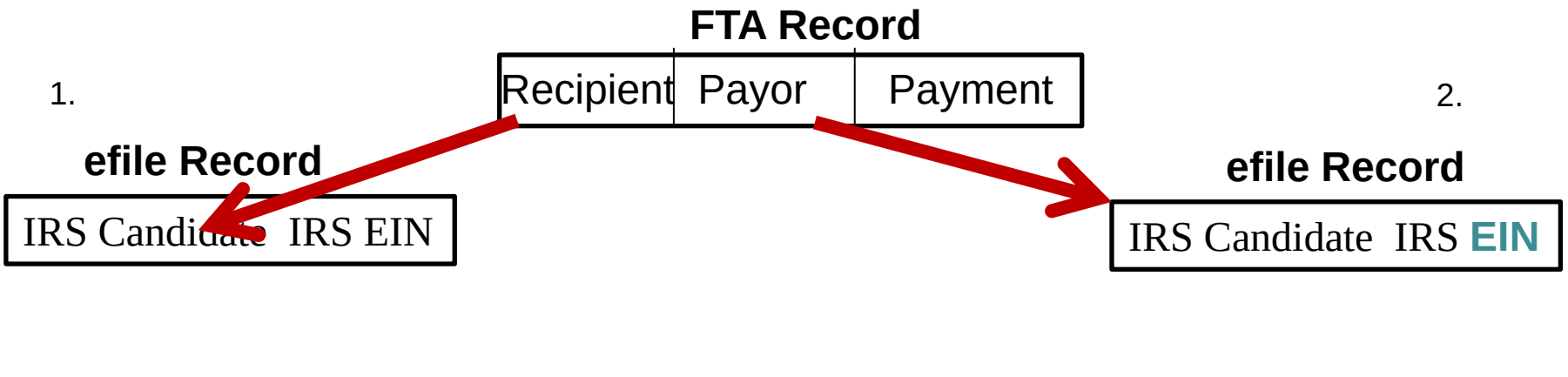
Our approach: estimate compliant income shifting

1. **Estimate magnitude of income shifting**

2. **Match FTIR and IRS data**
   - Match U.S. MNC-related ***payors*** in the FTIR data to their Form 5471 data.
   - Use computational linguistics for matching process because no FTIR TIN.

Identifying Related Payors that Report to FTA and IRS

1. Match FTA recipient to IRS corporate efile – identify “certain” match
2. Match FTA payor to IRS corporate efile
3. Determine if matched payor EIN matches a “certain” match recipient EIN



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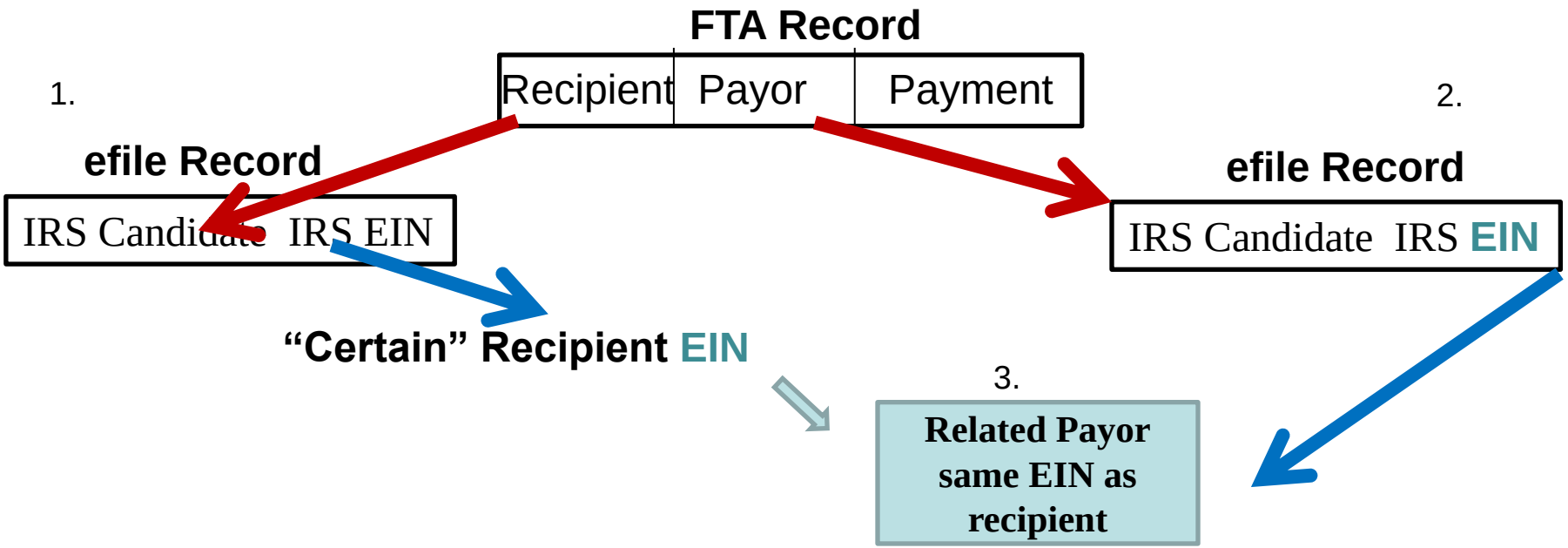

Foreign Tax Information Reporting Data: 2007-2012 ($M)

	Payments Made To		Percent
	Corporations	Any Recip	Corp FDAP
FDAP Payments			
Dividends	175,745	284,712	36.0%
Interest	**62,598**	153,852	19.4%
Royalties	**68,489**	114,287	14.4%
Capital Gains	1,881	4,127	0.5%
Non-FDAP Payments			
Other income	77,609	234,547	
	$386,322	$791,525	

Recipients Matching: Certain/Uncertain

	Certain	Uncertain	Total
N (unique)	63,921	159,311	223,232
$ M	$265,649	$117,322	$382,971
Total			**$386,322**
% of recipients	28.6%	71.4%	
% of income	**69.4%**	30.6%	

The recipient matching process found multiple potential matches for 223,232 unique recipients, but there were recipients that could not be matched at all. For example, the name on the data record was simply random characters. These certain and uncertain matches account for $382,971/$386,322 (99%) of the payments to U.S. corporate recipients.

Recipients Matching: Certain/Uncertain
Payors: Related/Unrelated

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Certain and uncertain matches account for 99% of the payments to U.S. corporate recipients.

	Related	Unrelated	Total
N (unique)	7,911	39,165	47,076
Dividends	$99,910	$75,835	$175,745
Interest	36,388	26,210	62,598
Royalties	42,011	26,478	68,489
Capital Gains	182	1,699	1,881
Other	33,510	44,100	77,610
Total	$212,001	$174,321	**$386,322**
% of payors	16.8%	83.2%	
% of payments	**54.9%**	45.1%	

The related payors make payments to US beneficial owners that average $27M ($212,000/7,911) over the 2007-2012. The unrelated payors remit an average $4.5M to US beneficial owners.

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Payors: Related/Unrelated

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Our approach: estimate compliant income shifting

1. **Estimate magnitude of income shifting**

2. **Match FTIR and IRS data**

3. **Estimate compliant income shifting using FTIRC measures**
   - Compute two compliance measures

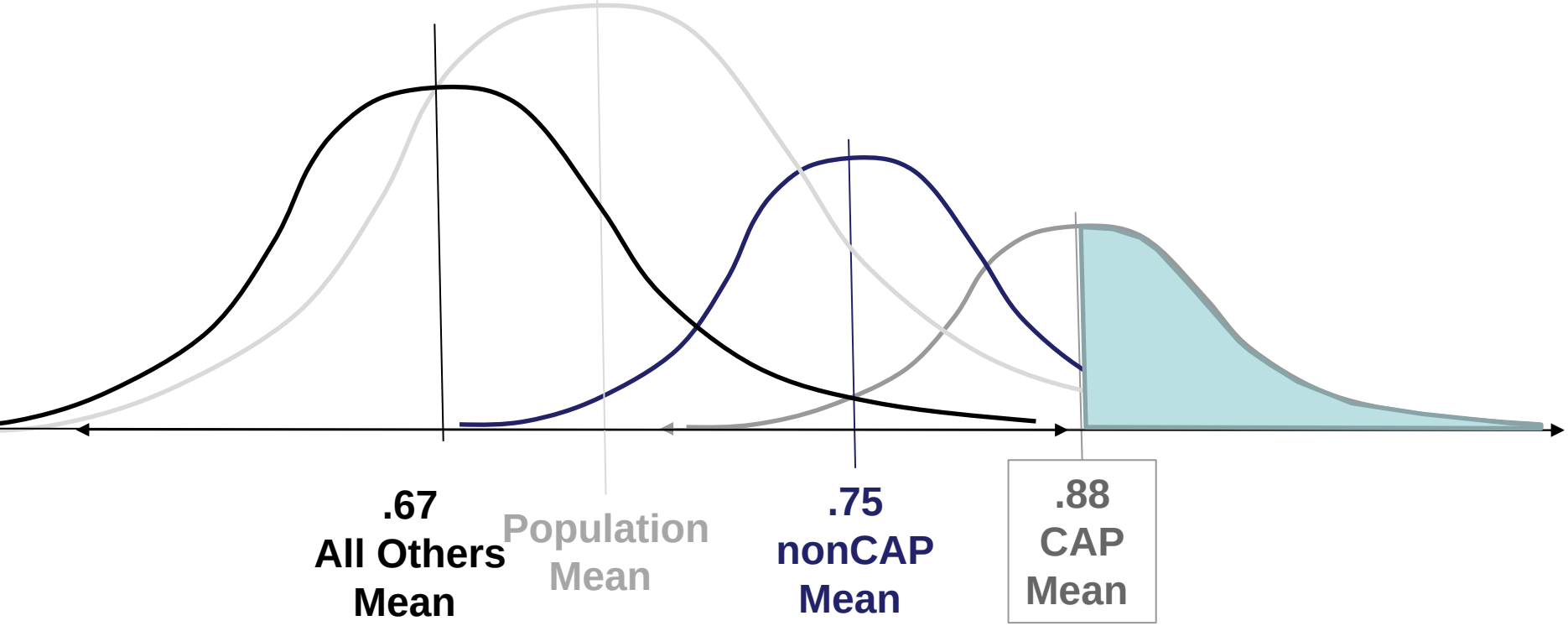
Foreign Tax Information Reporting Compliance (FTIRC) Measures

FTIRC1

- the ratio of the matched recipients to all recipients for each related payor, weighted by the FDAP payments.
  - The percent of all payments reported to the FTA for recipients matched to the corporate efile.

FTIRC2

FTIRC1 – Recipient Filing



Foreign Tax Information Reporting Compliance (FTIRC) Measures

FTIRC1

- the ratio of the matched recipients to all recipients for each related payor, weighted by the FDAP payments.
  - The percent of all payments reported to the FTA for recipients matched to the corporate efile.

FTIRC2

- the ratio of expense reported by the CFC to the FTA, relative to the expense reported by the CFC to the IRS.
  - FTA royalties/IRS royalties
  - FTA interest/IRS interest

FTIRC2 Compliance Adjustment Factor (CAF)

If a CFC's

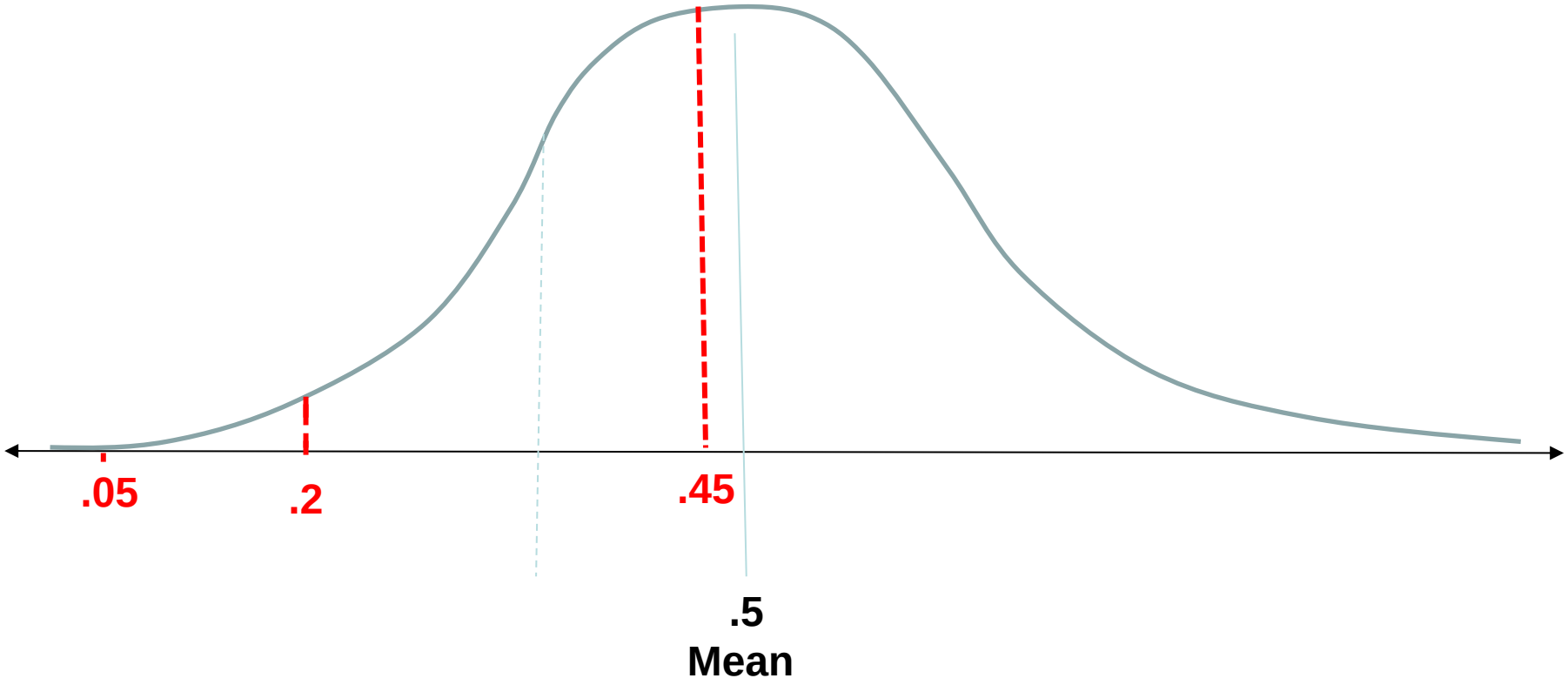
- FTIRC2 < mean FTIRC2 for the CFC's group,

Then we compute

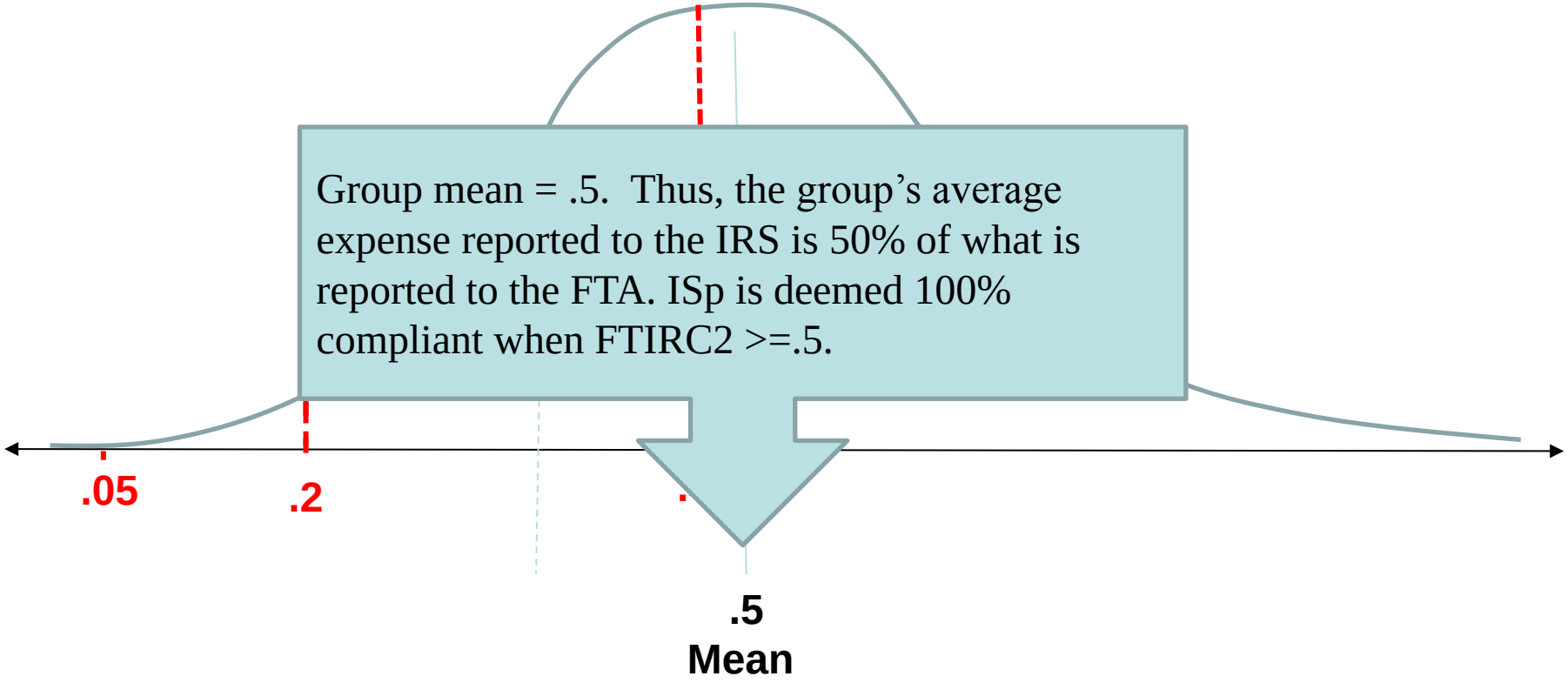
- CAF = FTIRC2/mean FTIRC2.

- Then compute a weighted average of the royalty and interest CAFs, where the weights are the relative share of (interest or royalty) expense

FTIRC2 – Compliance Adjustment Factor



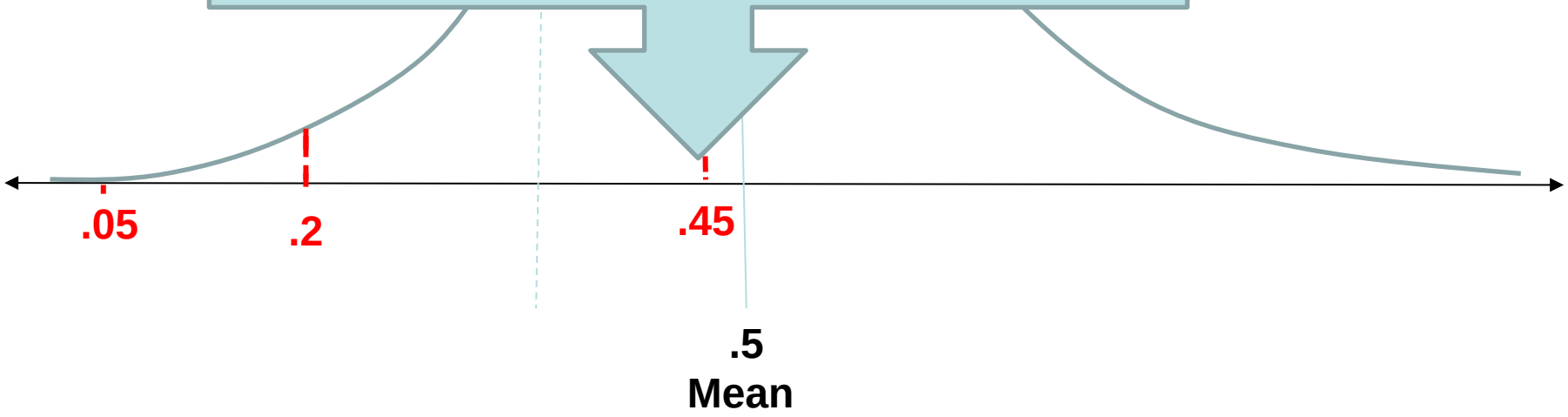
FTIRC2 – CAF


Group mean = .5. Thus, the group's average expense reported to the IRS is 50% of what is reported to the FTA. ISp is deemed 100% compliant when FTIRC2 >=.5.
.05
.2
.5
Mean

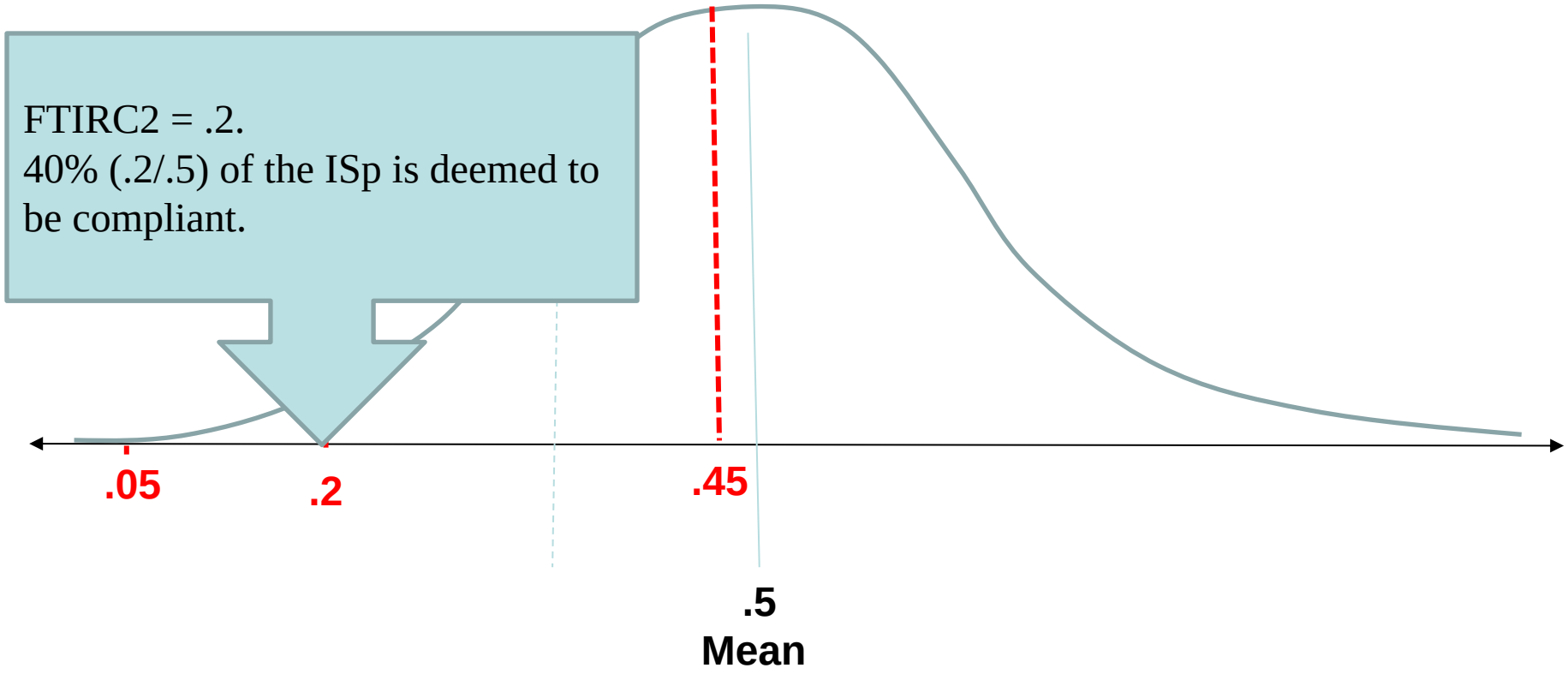
FTIRC2 – CAF

FTIRC2 = .45. CAF = .45/.5 = 90%

The CFC's royalty expense reported to the IRS is 45% of what is reported in the source country. Because this CFC's FTIRC2 is below the mean, 90% (.45/.5) of the ISp is deemed to be compliant.



FTIRC2 – CAF


FTIRC2 = .2.
40% (.2/.5) of the ISp is deemed to be compliant.
.05
.2
.45
.5
Mean

Compliant Income Shifting Estimates

	ISp			Compliant ISp			Compliance Adjustment Factor (Percent Compliant)		
	CAP	**nonCAP**	**others**	**CAP**	**nonCAP**	**others**	**CAP**	**nonCAP**	**others**
2007	9,518	13,958	51,039	4,135	6,150	22,523	**0.434**	**0.441**	**0.441**
2008	6,559	12,771	56,683	3,058	5,970	25,077	**0.466**	**0.467**	**0.442**
2009	12,928	14,705	48,533	6,177	6,663	21,940	**0.478**	**0.453**	**0.452**
2010	10,633	20,167	58,241	5,035	9,435	26,362	**0.474**	**0.468**	**0.453**
2011	12,212	18,254	61,226	5,591	8,170	26,965	**0.458**	**0.448**	**0.440**
2012	10,049	16,185	53,660	4,800	7,280	23,699	**0.478**	**0.450**	**0.442**

Conclusion

- FTIRC1 showed expected differences between CAP, nonCAP and all other filers.
- FTIRC2 did not support the conclusion that CAP taxpayers are more compliant.
  - Further study is needed to confirm the attributes used to create the groups.

The economic effects of special purpose entities on corporate tax avoidance

Paul Demeré | **Michael Donohoe** | **Petro Lisowsky**

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ILLINOIS

Overview

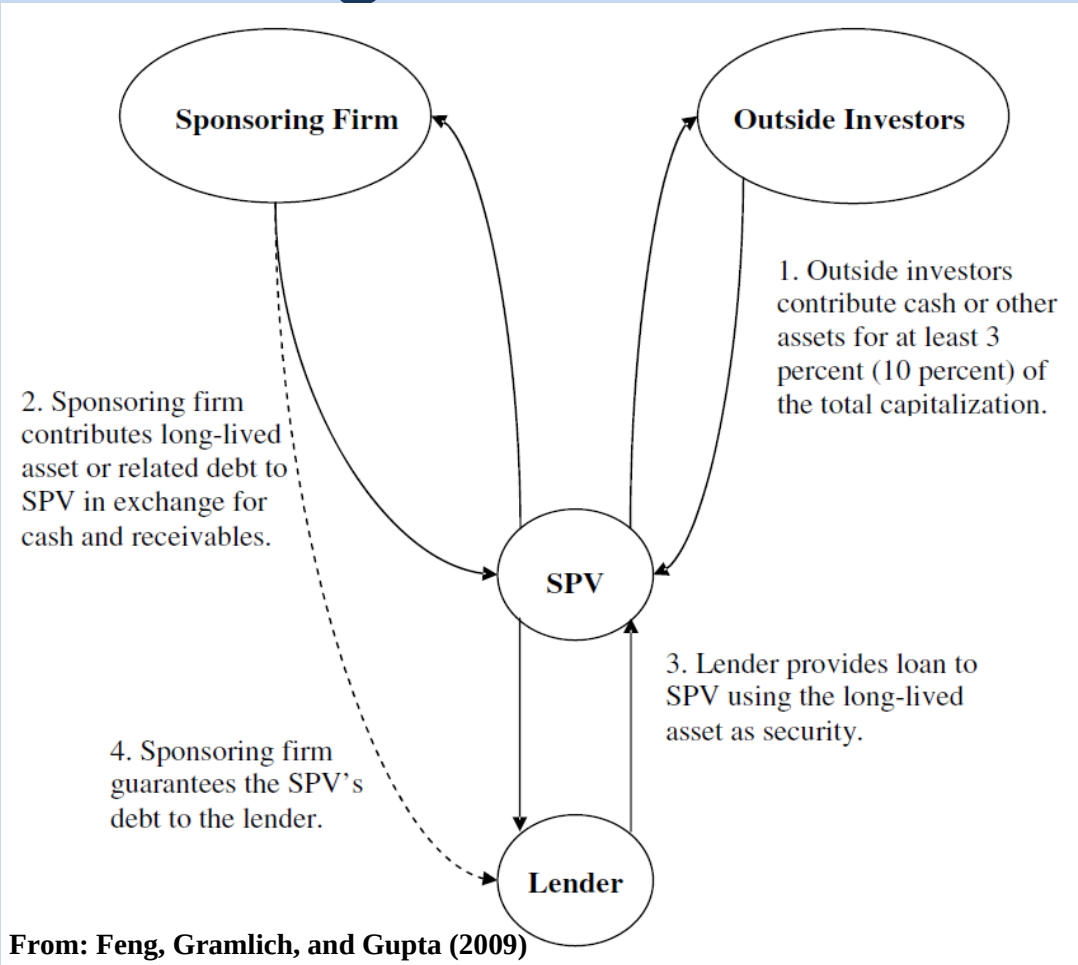
- **Goal:** Examine how SPEs facilitate corporate tax avoidance
- **Special Purpose Entities (SPEs)**
  - Separate legal entities created by a sponsor-firm to perform narrow, pre-defined business activities or series of transactions (Feng Gramlich Gupta 2009)
- **Research questions**
  - To what extent are transactions used *within* SPEs for tax avoidance?
  - How *large* are the total corporate tax savings facilitated by SPEs?
  - For which transactions do SPEs *enhance* relative tax savings?

Overview

- **Motivation**
  - Many papers and reports study different tax advantaged *transactions*
  - Few studies on the *organizational structures* facilitating transactions
    - Mostly on multinational firms seeking to shift income
  - Most evidence on tax revenue losses is anecdotal
    - But, SPEs have many *non*-tax applications
  - Corporate use of SPEs is large (50% of S&P 500) and growing (600%)
  - Prior research focuses on determinants of SPEs, but not effects.

  - What are the corporate tax effects of these structures?

Background on SPEs



From: Feng, Gramlich, and Gupta (2009)

Tax Advantages of SPEs

- ***Facilitate*** **tax avoidance**
  - Enable sponsors to conduct a greater level of tax-advantaged transactions
  - Enhance the tax efficiency (i.e., relative tax savings) of such transactions, holding level constant

$$Total\ Tax\ Savings = f(Level, Efficiency)$$

Disadvantages of SPEs

- **Non-tax and tax costs of SPEs are potentially large**
  - Reduce information quality — Feng et al. (2009)
  - Increase regulatory scrutiny — IRB 2011-39; Inland Revenue (2013)
  - Enhance public pressure — Dyreng et al. (2016)
  - Result in large tax penalties — Wilson (2009)
  - Result in higher taxes — Wittendorff (2010)

  - Key drivers of SPE use (Feng et al. 2009)
    - Financial reporting pressures, governance, and others
    - Tax avoidance not necessarily a major objective for SPEs

  - Is tax avoidance via SPEs economically significant?

Research Design

- Measures of SPE use
  - Identification using Feng et al. (2009) approach
  - Python script: LLP, LLC, LP, and other pass-thru subs in Exhibit 21
    - Mitigates selection bias (mandatory disclosure)
    - *SPETOT* = log of (one plus) the total number of SPEs
      - Winsorize at top 1% to mitigate outliers
    - *SPEBIN* = indicator for firm-years with an SPE; 0 otherwise
- Measures of tax avoidance
  - Forward-looking ETRs estimated over three years (*t* to *t*+2)
    - *GETR* (GAAP ETR) = total tax expense / pre-tax book income
    - *CETR* (Cash ETR) = worldwide cash taxes paid / pre-tax book income

Research Design

- **Empirical model**
  - $ETR = \beta_{i0} + \beta_1 SPE_{it} + \sum_{j=2}^{11} \beta_j TAT_{jit} + \sum_{j=12}^{20} \beta_j CTRL_{jit} + \delta_{0t} + \epsilon_{it}$
    - *TAT* vector of variables capturing Tax-Advantaged Transactions
    - *CTRL* vector of control variables (for ETR regressions)
      - Also include other structures (haven, business segments)
    - Firm and year fixed-effects → generalized difference-in-differences
      - Adapt model to examine our research questions: Path and Moderation
- **Sample selection**
  - Compustat [1997-2011]
    - Publicly traded; domestic; positive total assets
    - Drop negative three-year pre-tax income; regulated/financial firms
    - Require two future years of data for future ETRs
      - 25,533 observations from 4,566 unique firms

Main Results

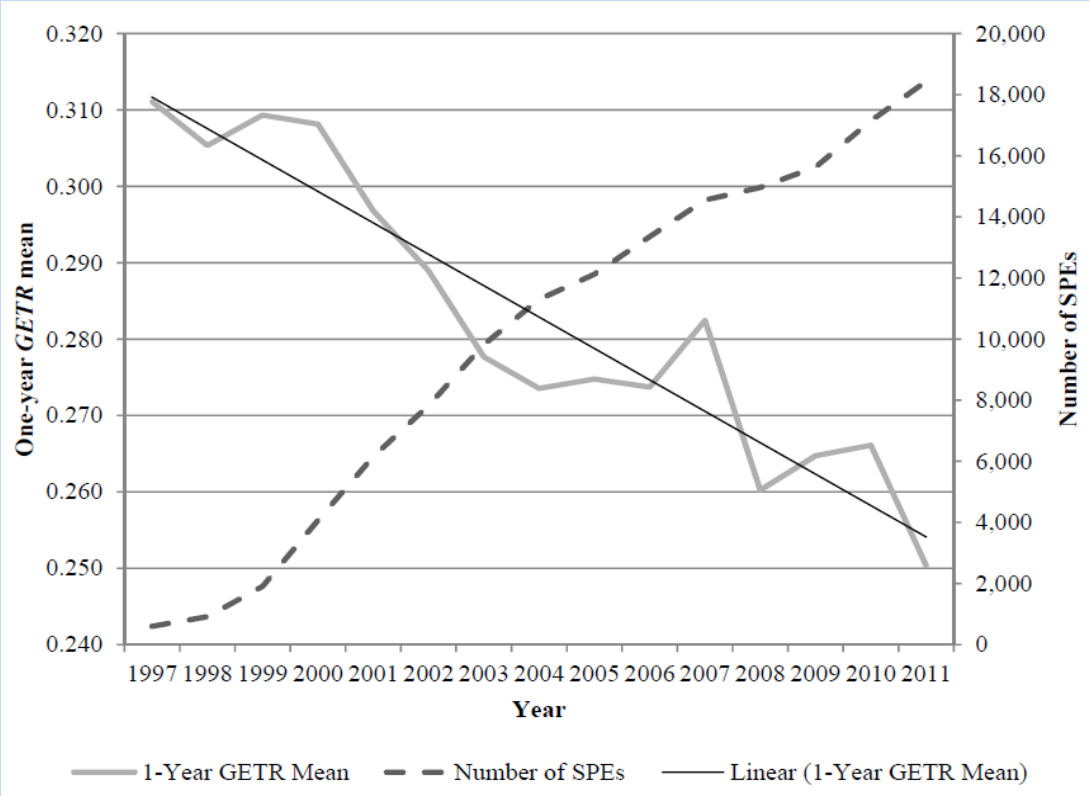
- **Descriptive statistics**
  - **Temporal distribution**

Year	(1) Total SPEs	(2) SPE Users	(3) SPEs Per User [(1)/(2)]	(4) Non-Users	(5) Total Obs. [(2)+(4)]	(6) SPE Use [(2)/(5)]
1997	605	165	3.67	1,589	1,754	9.4%
1998	917	207	4.43	1,517	1,724	12.0%
1999	1,910	268	7.13	1,372	1,640	16.3%
2000	4,075	520	7.84	[illegible]	1,556	33.4%
2001	6,161	607	10.1[illegible]	1,010	1,617	37.5%
2002	7,827	726	[illegible]78	1,071	1,797	40.4%
2003	9,823	8[illegible]	12.25	1,054	1,856	43.2%
2004	11,302	839	13.47	970	1,809	46.4%
2005	12,125	875	13.86	909	1,784	49.0%
2006	13,353	876	15.24	828	1,704	51.4%
2007	14,552	917	15.87	805	1,722	53.3%
2008	14,961	910	16.44	785	1,695	53.7%
2009	15,634	921	16.98	708	1,629	56.5%
2010	17,147	971	17.66	666	1,637	59.3%
2011	18,436	999	18.45	610	1,609	62.1%
Total	148,828	10,603	14.04	14,930	25,533	41.5%

600% increase

Main Results

- **Descriptive statistics**
  - **Time trends in SPEs and one-year GAAP ETR (*GETR*)**



Main Results

- **Descriptive statistics**
  - **Industry distribution**

NAICS Industry	(1) Total SPEs Obs.	(1) Total SPEs %	(2) SPE Users Obs.	(2) SPE Users %	(3) Non-Users Obs.	(3) Non-Users %	(4) Total [(2+3)] Obs.	(4) Total [(2+3)] SPE Use
62: Health Care	24,872	16.7	381	3.6	256	1.7	637	59.8%
71: Arts & Entertainment	2,274	1.5	112	1.1	78	0.5	190	58.9%
81: Other Services	1,173	0.8	83	0.8	62	0.4	145	57.2%
23: Construction	5,447	3.7	228	2.2	172	1.2	400	57.0%
56: Administrative & Support Service	5,351	3.6	366	3.5	335	2.2	701	52.2%
44: Consumer Retail	11,757	7.9	468	4.4	526	3.5	994	47.1%
72: Accommodation & Food Services	5,793	3.9	319	3.0	367	2.5	686	46.5%
54: Professional Services	4,605	3.1	569	5.4	660	4.4	1,229	46.3%
53: Real Estate	6,568	4.4	298	2.8	348	2.3	646	46.1%
45: Miscellaneous Retail	1,604	1.1	249	2.3	308	2.1	557	44.7%
21: Mining, Oil, & Gas Extraction	8,388	5.6	656	6.2	818	5.5	1,474	44.5%
32: Wood & Petroleum Products Manufacturing	10,942	7.4	1,451	13.7	1,888	12.6	3,339	43.5%
31: Food & Apparel Manufacturing	7,965	5.4	695	6.6	968	6.5	1,663	41.8%
51: Information	19,099	12.8	994	9.4	1,398	9.4	2,392	41.6%
49: Couriers & Warehousing	99	0.1	38	0.4	55	0.4	93	40.9%
42: Wholesale Trade	3,226	2.2	493	4.6	717	4.8	1,210	40.7%
61: Education	490	0.3	44	0.4	78	0.5	122	36.1%
48: Transportation	9,567	6.4	352	3.3	626	4.2	978	36.0%
33: Other Manufacturing	19,225	12.9	2,742	25.9	5,121	34.3	7,863	34.9%
99: Other	246	0.2	35	0.3	75	0.5	110	31.8%
11: Agriculture, Forestry, & Fishing	137	0.1	30	0.3	74	0.5	104	28.8%
Total	148,828	100.0	10,603	100.0	14,930	100.0	25,533	41.5%

More intangibles / legal risk

Less Intangibles / legal risk

Main Results

- **Relation between SPEs and corporate tax avoidance**

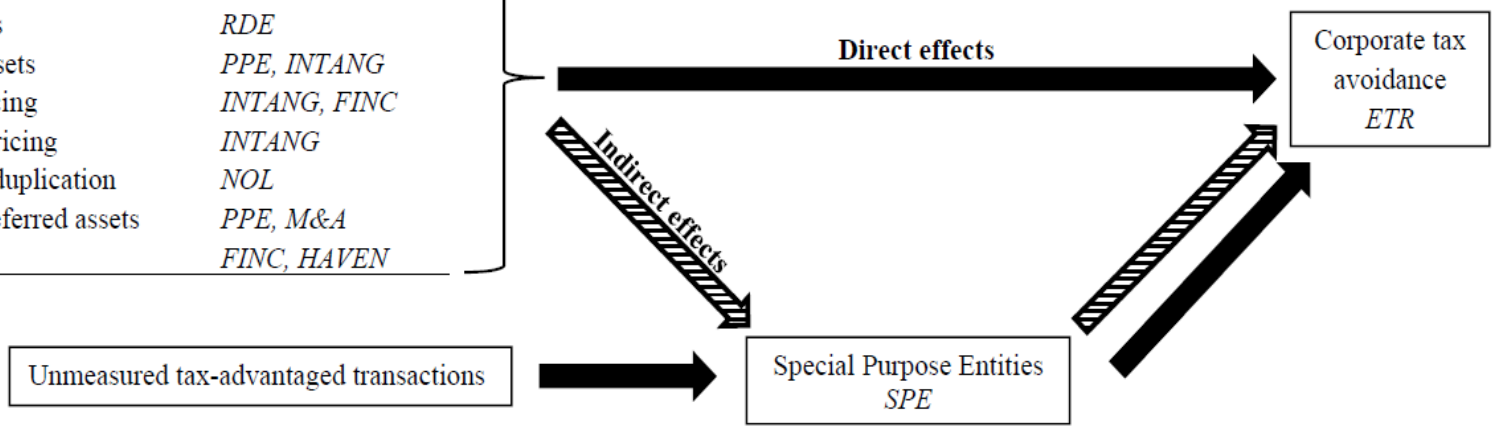
	(1)			(2)			(3)			(4)		
	GETR			*GETR*			*CETR*			*CETR*		
	Coeff.		*t*-stat	Coeff.		*t*-stat	Coeff.		*t*-stat	Coeff.		*t*-stat
Measures of SPE use (*SPE*)												
SPETOT	−0.010	***	−3.95				−0.008	***	−2.68			
SPEBIN				−0.014	***	−2.75				−0.012	**	−2.44

  - First large-sample evidence on the *overall* relation between SPEs and ETRs
    - SPEs facilitate tax avoidance above and beyond common tax-advantaged transactions (*TAT*) and controls (*CTRL*)
  - Results serve as an important starting point
    - Overall Effects = Direct Effects + Indirect Effects
      - Path Analysis (RQ1 and RQ2)
    - Moderation Analysis (RQ3)

Main Results

- **Path analysis diagram**

Empirical mapping	
Tax-advantaged transaction	Vector *TAT*
Increase leverage	*LEV, DISS, CLTD*
Hold R&D activities	*RDE*
Hold depreciable assets	*PPE, INTANG*
Foreign transfer pricing	*INTANG, FINC*
Domestic transfer pricing	*INTANG*
Tax credit and loss duplication	*NOL*
Basis shift to tax preferred assets	*PPE, M&A*
Foreign tax deferral	*FINC, HAVEN*



- **With *SPE* in the model, coefficients for *TAT* capture direct effect of measured transactions on ETRs, *absent* the use of SPEs (solid arrows)**
- **Path analysis steps**
  - **Map each tax-advantaged transaction to at least one *TAT* variable**
  - **Estimate model with and without *SPE* to obtain path coefficients**

Main Results

- **Level of tax-advantaged transactions used within SPEs (RQ1)**

	Panel A: *GETR*							Panel B: *CETR*						
	Total		*Direct*		*Indirect (within)*			*Total*		*Direct*		*Indirect (within)*		
	Coeff.	*t*-stat	Coeff.	*t*-stat	Coeff.	*t*-stat	%	Coeff.	*t*-stat	Coeff.	*t*-stat	Coeff.	*t*-stat	%
SPETOT			−0.037	**−3.95**						−0.027	**−2.68**			
Tax-advantaged transactions (*TAT*)														
LEV	−0.030	**−2.55**	−0.029	**−2.46**	−0.001	**−1.87**	3.6	−0.053	**−4.19**	−0.052	**−4.12**	−0.001	**−1.79**	1.8
DISS	0.036	**3.45**	0.035	**3.37**	0.001	**2.04**	2.5	0.028	**2.58**	0.027	**2.51**	0.001	**1.87**	2.6
CLTD	−0.026	**−2.60**	−0.026	**−2.58**	0.000	0.89	1.2	−0.016	−1.52	−0.016	−1.50	0.000	0.65	1.1
RDE	−0.016	−1.59	−0.015	−1.49	−0.001	**−2.61**	6.6	−0.010	−0.97	−0.009	−0.89	−0.001	**−2.12**	8.7
PPE	−0.027	**−1.85**	−0.027	**−1.88**	0.000	0.70	1.4	0.028	**1.94**	0.028	**1.92**	0.000	0.79	1.3
INTANG	−0.052	**−3.64**	−0.050	**−3.51**	−0.002	**−2.39**	3.5	0.019	1.31	0.020	1.39	−0.001	**−1.74**	6.1
NOL	−0.066	**−5.24**	−0.065	**−5.15**	−0.001	**−2.83**	2.0	−0.025	**−2.23**	−0.024	**−2.16**	−0.001	**−2.03**	3.3
M&A	0.010	1.17	0.010	1.19	0.000	0.40	1.4	0.031	**3.46**	0.031	**3.46**	0.000	0.26	0.2
FINC	−0.029	**−3.01**	−0.028	**−2.96**	−0.001	−1.21	1.7	−0.034	**−3.62**	−0.034	**−3.59**	0.000	0.76	0.7
HAVEN	−0.017	**−1.86**	−0.011	−1.21	−0.006	**−3.72**	34.6	−0.001	−0.13	0.003	0.31	−0.004	**−2.59**	331.2

- ***Negative Indirect*→ SPEs result in *more* tax avoidance for given variable**
  - ***Example:* A one std. dev. increase in *LEV* results in a 0.030 std. dev. decrease in *GETR*, where 0.001 occurs from leverage *within* SPEs and 0.029 occurs from leverage *outside* of SPEs**
  - ***Indirect%* → 3.6% of total tax savings from *LEV* occurs within SPEs**
- **SPEs facilitate a greater level of specific transactions such that an economically large portion of the total cash tax savings occurs *within* SPEs**
  - **Lev (1.8%); NOL (3.3%); R&D (8.7%); intangibles (6.1%); haven (all)**

Main Results

- **Total tax savings facilitated by SPEs (RQ2)**
  - **SPE users: *GETR* and *CETR* are 1.6 and 1.2% points lower than non-users**
  - **Firm-level: GAAP and cash tax savings of $9.84M and $7.77M per year**
  - **Sample-level: cash tax savings alone averages $82B (as high as $165B)**
    - **1.9% (up to 3.7%) of total U.S. corporate tax revenues collected**

- **Comparisons:**
  - **Havens ($1.3B); round-tripping ($33.0B); shelters ($12.4B); derivs ($3.8B)**

Main Results

	Panel A: *GETR*			Panel B: *CETR*		
	(1) Main Effect (*t*-stat)	(2) Interaction (*t*-stat)	(2)/(1) |Change| (%)	(1) Main Effect (*t*-stat)	(2) Interaction (*t*-stat)	(2)/(1) |Change| (%)
SPETOT	−0.038*** (−3.30)			−0.031*** (−2.59)		
Tax-advantaged transactions (*TAT*)						
LEV	−0.034*** (−3.17)	−0.002 (−0.21)	0%	−0.046*** (−4.09)	0.022** (2.19)	47.8% ↓
DISS	0.032*** (3.44)	0.011 (1.59)	0%	0.020** (2.10)	−0.001 (−0.16)	0%
CLTD	−0.026*** (−2.84)	0.014* (1.79)	53.8% ↓	−0.015 (−1.55)	0.007 (0.91)	0%
RDE	−0.027** (−2.57)	−0.025** (−2.30)	92.6% ↑	−0.009 (−0.96)	−0.010 (−0.96)	0%
PPE	−0.029** (−2.19)	−0.001 (−0.06)	0%	0.026** (2.05)	0.007 (0.65)	0%
INTANG	−0.051*** (−3.61)	−0.037*** (−3.30)	72.5% ↑	0.026* (1.89)	−0.013 (−1.07)	0%
NOL	−0.059*** (−4.76)	0.028** (2.23)	47.5% ↓	−0.028** (−2.50)	−0.001 (−0.06)	0%
M&A	0.009 (1.21)	0.005 (0.60)	0%	0.030*** (3.54)	−0.016** (−2.09)	53.3% ↑
FINC	−0.031*** (−3.41)	0.008 (0.98)	0%	−0.037*** (−4.17)	0.012 (1.43)	0%
HAVEN	−0.008 (−0.88)	0.003 (0.32)	0%	0.004 (0.40)	0.006 (0.69)	0%
Intercept	−0.001* (−1.71)			−0.001 (−0.96)		

- Debt (NOLs) within SPEs is 47.8%-53.8% (47.5%) *less* tax efficient
- R&D and intangibles-based trans. 92.6% and 72.5% *more* tax efficient

Example: R&D

Main

One s.d. increase in *SPETOT* results in a 0.038 s.d. decrease in *GETR* (at the mean of all variables).

One s.d. increase in *RDE* results in a 0.027 s.d. decrease in *GETR*.

Interaction

For one s.d. increase in *SPETOT*, effect of one s.d. increase in *RDE* is assoc. with further 0.025 s.d. decrease in *GETR* (for total of 0.052).

|Change| (%)

Incremental reduction in *GETR* due to increase in *SPETOT* (-0.025 / -0.027)

Other Tests

- **Tax aggressiveness**
  - SPEs facilitate some, but not overly, aggressive tax positions
- **SPEs in domestic vs. foreign jurisdictions**
  - *GETR* (but not *CETR*) results stronger for U.S. MNCs
  - Majority of tax savings from avoiding U.S. federal income taxes
- **SPEs by industry**
  - Despite high-tech/intangibles anecdotes, results pervasive across industries
- **Endogenous choice to use SPEs**
  - Heckman two-stage model, PSM, and entropy balancing
- **Robust to:**
  - Analyses relating to minority interest
  - Changes in Exhibit 21 disclosures ("disappearing subs") and disclosure regimes

Bottom Line

- **Results**
  - SPEs facilitate a greater level of specific transactions such that an economically large portion of the total cash tax savings occurs *within* SPEs
    - Lev (1.8%); NOL (3.3%); R&D (8.7%); intang (6.1%); haven (all)
  - SPEs facilitate an economically large amount of total tax savings
    - $82.4 billion (sample); 2% of U.S. corporate tax revenue
  - SPEs enhance the tax efficiency of some transactions
    - R&D (92.6%) and intangibles (72.5%)

- **Contributions**
  - Differ from traditional tax avoidance research (the "what")
    - Organizational structures (the "how")
  - First large-sample empirical estimates of tax savings facilitated by SPEs
  - First to use path and moderation analysis to separate level from efficiency


Thank you!
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