

Territorial Tax Reform and Profit Shifting by US and Japanese Multinationals

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Motivation

- Base erosion and profit shifting (BEPS) by multinational corporations is a central policy issue on international taxation.
 - 4-10% of the global corporate income tax revenue (USD 100-240 billion) is lost as a result of BEPS (OECD, 2015).
- The design of the international tax system would affect multinationals' profit shifting.
 - Japan, the UK (in 2009), and the US (in 2018) changed their international tax systems from worldwide taxation to territorial taxation.
- I examine the response of Japanese multinationals to the tax incentives for profit shifting (host countries' tax rates and the introduction of the territorial tax system in 2009).

Profit Shifting by Multinationals

- Multinational corporations have incentive to shift profits from high- to low-tax jurisdictions using intrafirm transactions within the multinational group.
 - Manipulation of transfer prices: a parent company in a high-tax country imports (exports) goods or services from its foreign subsidiary in a low-tax country at high (low) prices.
 - Transfer of intangible assets: firm-specific intangible assets (e.g. patents and licenses) make it difficult to determine the appropriate arm's length prices and allow significant room for the manipulation of transfer prices.
 - Debt shifting: a company in a low-tax country finances investment in its subsidiary in a high-tax country with debt (rather than equity).

Japan's Worldwide Tax System (until 2008)

- **Worldwide tax system:** Prior to 2009, Japan had taxed the foreign profits of Japanese multinationals upon repatriation while providing foreign tax credits for the taxes paid to foreign governments.
 - **Upon repatriation:** foreign income would be taxed only when it is brought back to the home country.
 - **Foreign tax credits:** the amount of foreign taxes paid can be deducted from the tax liability in the home country.
 - Employed by Chile, Ireland, Israel, Mexico, South Korea among OECD members, and Indonesia.

Japan's Territorial Tax Reform in 2009

- In 2009, Japan began to exempt 95% of dividends paid by Japanese-owned foreign subsidiaries to their parent firms from home-country taxation.
 - Main objectives: 1) To stimulate profit repatriation from foreign countries, 2) stimulate domestic investment and employment, and 3) simplify the international tax system.
- As a result, Japan's corporate tax system moved to a **territorial tax system** that exempts foreign income from home-country taxation.
 - Employed by all of OECD countries except for the five countries listed in the previous slide.
 - Recently adopted by the UK (2009) and the US (2018)

Worldwide Tax System vs. Territorial Tax System

- Suppose a Japanese-owned subsidiary earns \$100 in Singapore (tax rate: 18%), and remits the after-tax profit of \$82 via dividends to the parent firm in Japan (40%).
- Total tax payment for the multinational firm under the **worldwide tax system**: \$40
 - Corporate tax paid to Singapore: \$18 ($=\100×0.18)
 - Japanese tax obligation: \$40 ($=\100×0.4); Foreign tax credit: \$18
 - Net tax payment to Japan: \$22 ($=\$40 - \18)
- Total tax payment under Japan's **territorial tax system**: \$19.64
 - Corporate tax paid to Singapore: \$18 ($=\100×0.18)
 - 5% of repatriated dividends taxed in Japan: \$1.64 ($=\$82 \times 0.05 \times 0.4$)

Impact of the Territorial Tax Reform on Profit Shifting

- Under the territorial tax system, the tax liabilities on foreign profits are essentially determined by host countries' tax rates (as long as they are repatriated via dividends).
- The tax reform should provide Japanese multinationals with stronger incentive to invest in and/or shift more profits to low-tax countries.
 - The Japanese government was concerned that the territorial tax system might facilitate the hollowing out of industry and profit shifting by Japanese multinationals (METI, 2008)

Research Questions and Contributions

- To what extent, do Japanese multinationals shift profits in response to host countries' corporate tax rates?
- Did Japanese multinationals start to shift more profits to low-tax countries after the territorial tax reform (in comparison to US multinationals)?
 - US and Japan had similar worldwide tax systems and set high tax rates (about 40% around 2009).
- This study is the first to examine the impact of Japan's territorial tax reform on profit shifting by Japanese multinationals.

Prior Studies on the Impacts of Territorial Tax Reform

- Impacts on business activities other than profit shifting:
 - Firm value (Bradley, Dauchy, and Hasegawa, 2018)
 - Dividend repatriations (Egger et al., 2015; Hasegawa and Kiyota, 2017)
 - Cross-border M&As (Feld et al., 2017), foreign investment (Liu, 2017), foreign cash holding (Xing, 2018)
 - Domestic investment and dividend payout (Arena and Kutner, 2015)
- Impact on profit shifting:
 - Markle (2016): uses financial data on multinationals from 2004-2008
 - Liu et al. (2017): analyze the intrafirm export prices of UK multinationals from 2005-2011.

Data

- Bureau van Dijk's Orbis (2013 and 2017 versions): Panel data on US- and Japanese-owned foreign subsidiaries from 2004 to 2016
 - 97,183 US-owned subsidiary-year observations and 28,625 Japanese-owned subsidiary-year observations, for which the basic unconsolidated financial information is available.
 - The coverage of subsidiaries in Orbis is better for European countries, and thus the distribution of the subsidiaries is similar between US and Japanese multinationals in the data.
- KPMG's Tax Rates Online: Statutory corporate tax rates
- World Bank's WDI: GDP per capita, population, annual GDP growth rate, unemployment rate

Hines-Rice Approach

- Use the Hines-Rice approach to estimate the extent of profit shifting (Hines and Rice, 1994).
- Key Idea: Reported profit = *true* profit (K, L) + *shifted* profit
 - *True* profit: profit generated from business activities unrelated to profit shifting (a function of capital and labor inputs)
 - *Shifted* profit: profit shifted in or out in response to the tax incentive for profit shifting
 - These two types of profits cannot be observed separately.
- Researchers are interested in the response of the *shifted* profit to the tax incentive (e.g. corporate tax rates).
 - Estimate the response of the reported profit to corporate tax rates, controlling for K and L (holding the *true* profit fixed).

Baseline Estimation Equation

$$\ln \pi_{it} = \beta_0 + \beta_1 Tax_{it} + \beta_2 \ln K_{it} + \beta_3 \ln L_{it} + X_{it} \gamma + Industry_i \times Year_t + \alpha_i + u_{it}$$

- i : subsidiary; t : year
- π_{it} : pre-tax profit; Tax_{it} : corporate tax rate faced by subsidiary i
- K_{it} : fixed assets; L_{it} : employment compensation;
- X_{it} : macroeconomic control variables
- $Industry_i \times Year_t$: industry-year dummies
- α_i : subsidiary fixed effects
- A negative coefficient for Tax_{it} implies tax-motivated profit shifting.
 - $|\beta_1|$: tax semi-elasticity of pre-tax profits
 - One percentage point lower corporate tax rate of the host country increases the subsidiary's reported profit by $|\beta_1|\%$.

Tax Sensitivity of Pre-tax Profits

	Dependent Variable: Log of Pre-tax Profit	
	US-owned Subsidiaries (1)	JP-owned Subsidiaries (2)
Tax	-0.7396*** (0.2783)	-0.2811 (0.4954)
Log of Fixed Assets	0.0959*** (0.0068)	0.0694*** (0.0149)
Log of Compensation	0.4173*** (0.0177)	0.4542*** (0.0371)
Log of GDP per Capita	-0.0845 (0.0798)	-0.1580 (0.1431)
Log of Population	0.7950* (0.4253)	2.1096** (0.8185)
Unemployment Rate	-0.0160*** (0.0033)	-0.0300*** (0.0065)
GDP Growth Rate	0.0052* (0.0029)	0.0315*** (0.0061)
Observations	70,350	21,333
R-squared	0.0865	0.0705
Industry-Year Dummies	Yes	Yes
Subsidiary Fixed Effects	Yes	Yes

- The tax semi-elasticity of pretax profits is 0.74 for US multinationals while it is smaller (0.28) and insignificant for JP multinationals

Heterogeneous Tax Sensitivity of Reported Profits (1)

- The response of reported profits to tax incentives may be heterogeneous depending on firm characteristics.
- Intangible assets held by foreign subsidiaries facilitate multinationals' profit shifting (Dischinger and Riedel, 2011)
 - Split the full sample (including both US- and Japanese-owned subsidiaries) into the **intangible-intensive** and **nonintangible-intensive** groups.
 - **Intangible-intensive groups**: the mean of (intangible assets/total assets) over the sample period is larger than the subsidiary median (=0.0014).

Heterogeneous Tax Sensitivity Depending on Intangible Intensity

	Dependent Variable: Log of Pre-tax Profit			
	US-owned Subsidiaries		JP-owned Subsidiaries	
	Non-intensive	Intensive	Non-intensive	Intensive
	(1)	(2)	(3)	(4)
Tax	-0.1042 (0.4196)	-1.3977*** (0.3787)	0.1097 (0.7799)	-0.6381 (0.7017)
Log of Fixed Assets	0.0805*** (0.0093)	0.1126*** (0.0098)	0.0884*** (0.0200)	0.0471** (0.0217)
Log of Compensation	0.4035*** (0.0244)	0.4256*** (0.0256)	0.4149*** (0.0476)	0.5059*** (0.0552)
Log of GDP per Capita	-0.1222 (0.1141)	-0.0209 (0.1132)	-0.1581 (0.2024)	-0.0087 (0.2133)
Log of Population	1.2036* (0.6570)	0.6501 (0.5659)	4.1377*** (1.2925)	0.9280 (1.1202)
Unemployment Rate	-0.0202*** (0.0046)	-0.0133*** (0.0046)	-0.0330*** (0.0106)	-0.0268*** (0.0083)
GDP Growth Rate	0.0065* (0.0039)	0.0045 (0.0043)	0.0442*** (0.0089)	0.0200** (0.0084)
Observations	33,582	36,736	10,032	11,301
R-squared	0.0822	0.0960	0.0818	0.0759
Industry-Year Dummies	Yes	Yes	Yes	Yes
Subsidiary Fixed Effects	Yes	Yes	Yes	Yes

- Intangible-intensive US-owned subsidiaries are more responsive to the tax incentive for profit shifting.
- The similar (but statistically weak) pattern for Japanese multinationals.

Heterogeneous Tax Sensitivity of Reported Profits (2)

- Large firms may take advantage of scale economies to cover fixed costs for profit shifting (e.g. costs for establishing tax-planning divisions and for learning tax practices in host countries)
 - Split the full sample (including both US- and Japanese-owned subsidiaries) into the **large** and **small** subsidiary groups.
 - **Large subsidiary group**: the mean of total assets over the sample period is larger than the subsidiary median (=16.18 million USD).

Heterogeneous Tax Sensitivity Depending on Firm Size

	Dependent Variable: Log of Pre-tax Profit			
	US-owned Subsidiaries		JP-owned Subsidiaries	
	Small	Large	Small	Large
	(1)	(2)	(3)	(4)
Tax	-0.4474 (0.4438)	-0.9735*** (0.3629)	-0.1635 (0.8015)	-0.6437 (0.6327)
Log of Fixed Assets	0.0694*** (0.0095)	0.1230*** (0.0096)	0.0754*** (0.0195)	0.0643*** (0.0211)
Log of Compensation	0.4338*** (0.0253)	0.4002*** (0.0245)	0.4129*** (0.0525)	0.4869*** (0.0511)
Log of GDP per Capita	-0.1491 (0.1195)	-0.0161 (0.1084)	-0.0754 (0.2187)	-0.2787 (0.1929)
Log of Population	0.9196 (0.6613)	0.8817 (0.5716)	2.1716 (1.3364)	2.5678** (1.0678)
Unemployment Rate	-0.0160*** (0.0047)	-0.0165*** (0.0047)	-0.0258*** (0.0094)	-0.0345*** (0.0088)
GDP Growth Rate	0.0057 (0.0040)	0.0040 (0.0042)	0.0278*** (0.0087)	0.0350*** (0.0086)
Observations	31,976	38,374	8,512	12,821
R-squared	0.0874	0.0905	0.0733	0.0819
Industry-Year Dummies	Yes	Yes	Yes	Yes
Subsidiary Fixed Effects	Yes	Yes	Yes	Yes

- Large US-owned subsidiaries are more responsive to the tax incentive for profit shifting.
- Large JP-owned subs exhibit a larger semi-elasticity though insignificant.

Interpretations of the Results

- Overall, Japanese multinationals are less responsive to the tax incentives for profit shifting.
- This is possibly due to the lack of tax aggressiveness and the norms regarding paying taxes of Japanese taxpayers.
 - Takashima (2009) argues that Japanese multinationals regard taxes as unavoidable and uncontrollable costs, and pay unnecessary tax costs without appropriate tax planning.
 - Altshuler, Shay, and Toder (2015): “A notable feature of the Japanese tax environment is a compliant international tax-planning culture.”

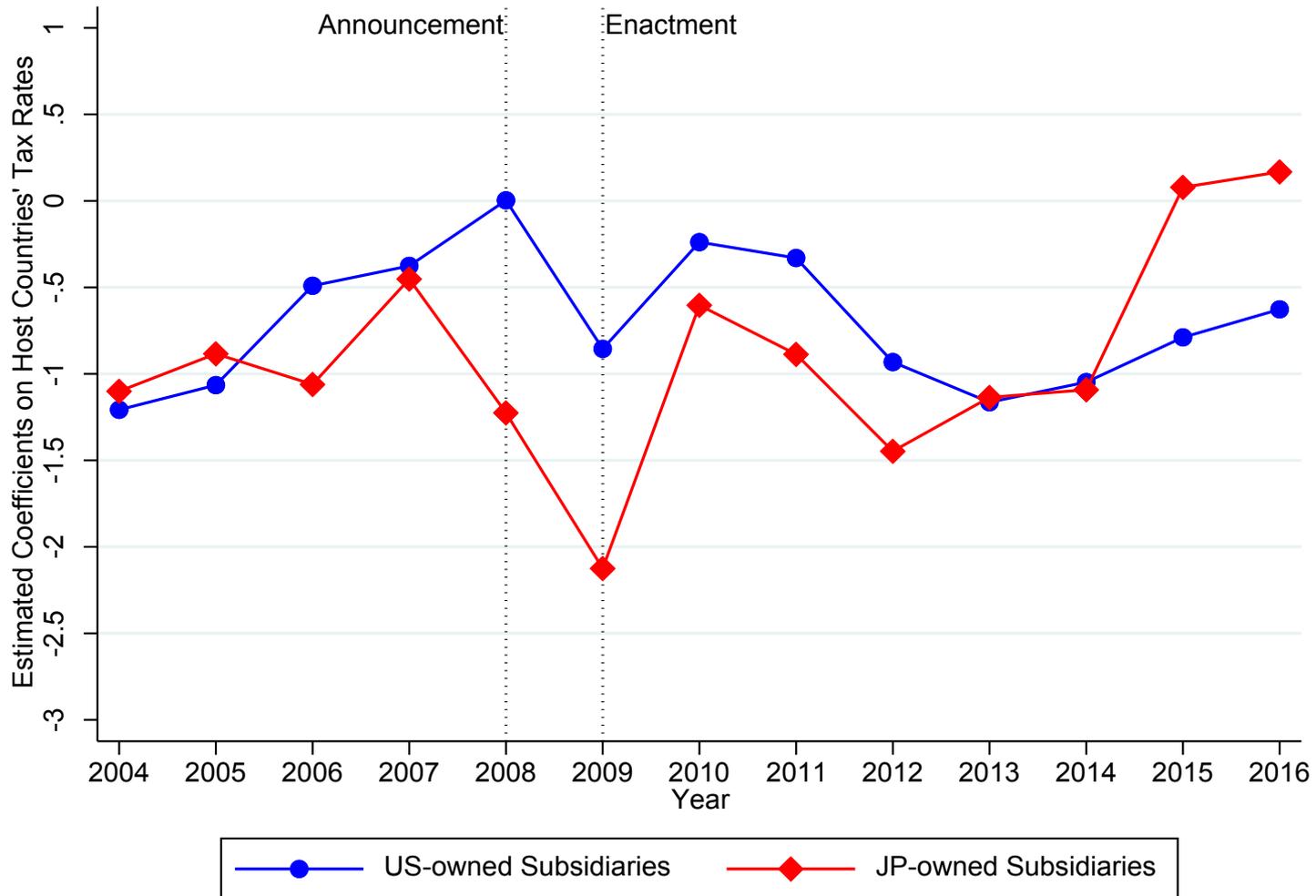
Change in the Profit Shifting Behavior after the Territorial Tax Reform

- Examine whether Japanese multinationals started to engage more aggressively in profit shifting with the enactment of the territorial tax regime in 2009.
- Japanese multinationals might start to facilitate profit shifting in 2008 in response to the announcement made by the Japanese government of introducing the territorial tax regime on May 9, 2008.
- Investigate whether the tax semi-elasticity of reported profits increased around 2008 or 2009.

Regression Equation

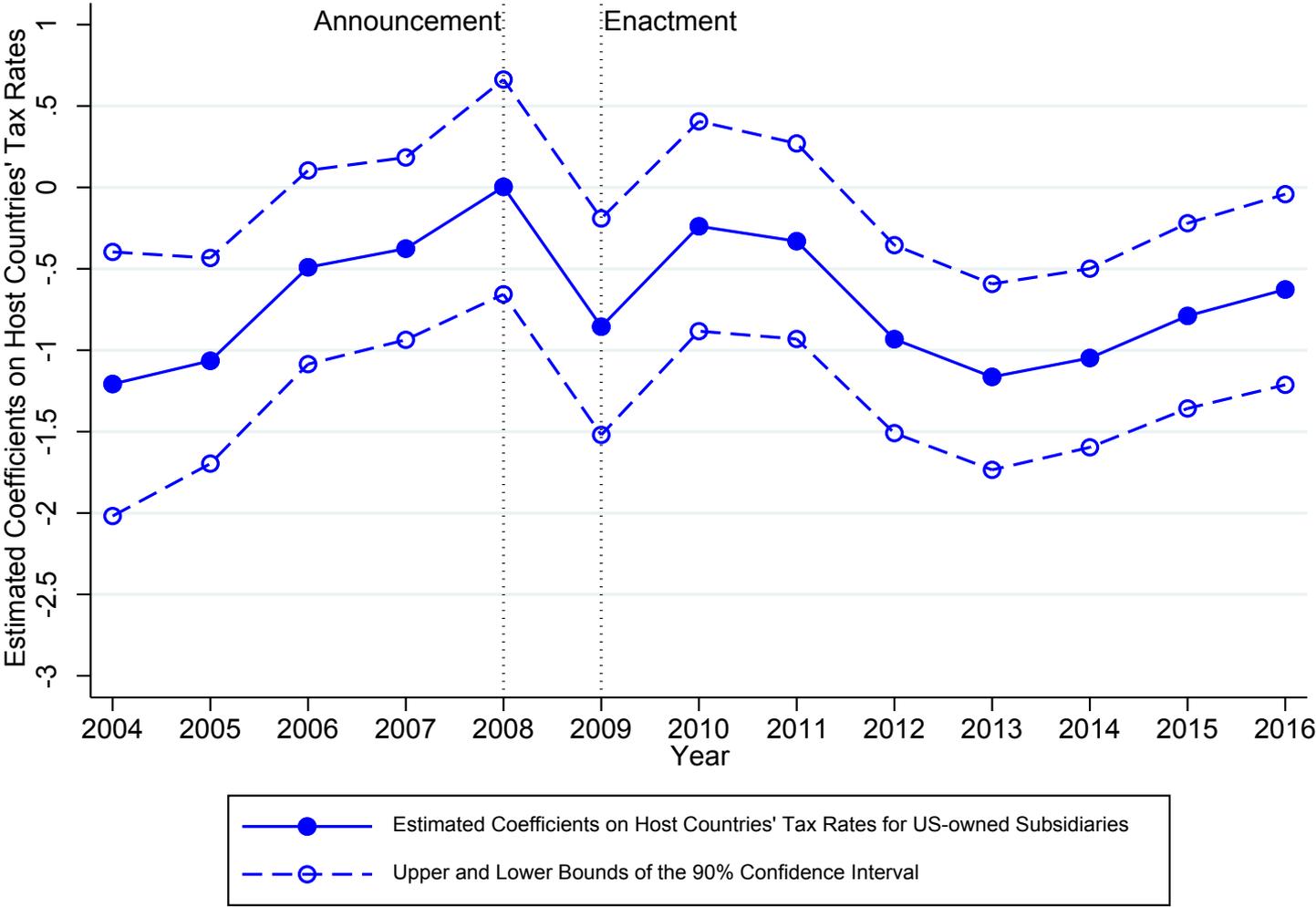
- Use the full sample of Japanese-owned and US-owned foreign subsidiaries.
- $$\ln \pi_{it} = \alpha_i + \sum_{j=2004}^{2016} \beta_{US, j} Year_j \times US_i \times Tax_{it} + \sum_{j=2004}^{2016} \beta_{JP, j} Year_j \times JP_i \times Tax_{it} + \sum_{j=2004}^{2016} \gamma_{US, j} Year_j \times US_i + \sum_{j=2004}^{2016} \gamma_{JP, j} Year_j \times JP_i + \alpha_1 \ln K_{it} + \alpha_2 \ln L_{it} + X_{it} \gamma + Industry_i \times Year_t + u_{it}$$
 - $Year_j$: Year dummy variable for year j (equal to 1 if $t = j$)
 - US_i : Dummy variable that is equal to one if subsidiary i is owned by a US parent
 - JP_i : Dummy variable that is equal to one if subsidiary i is owned by a Japanese parent
- Estimate the tax semi-elasticities for JP-owned and US-owned subsidiaries in each year from 2004 to 2016.
- Hypothesis: The tax semi-elasticity for JP-owned subsidiaries ($|\beta_{JP, j}|$) increases after the announcement or implementation of the tax reform.

Estimated Coefficients on Tax_{it} from 2004-2016



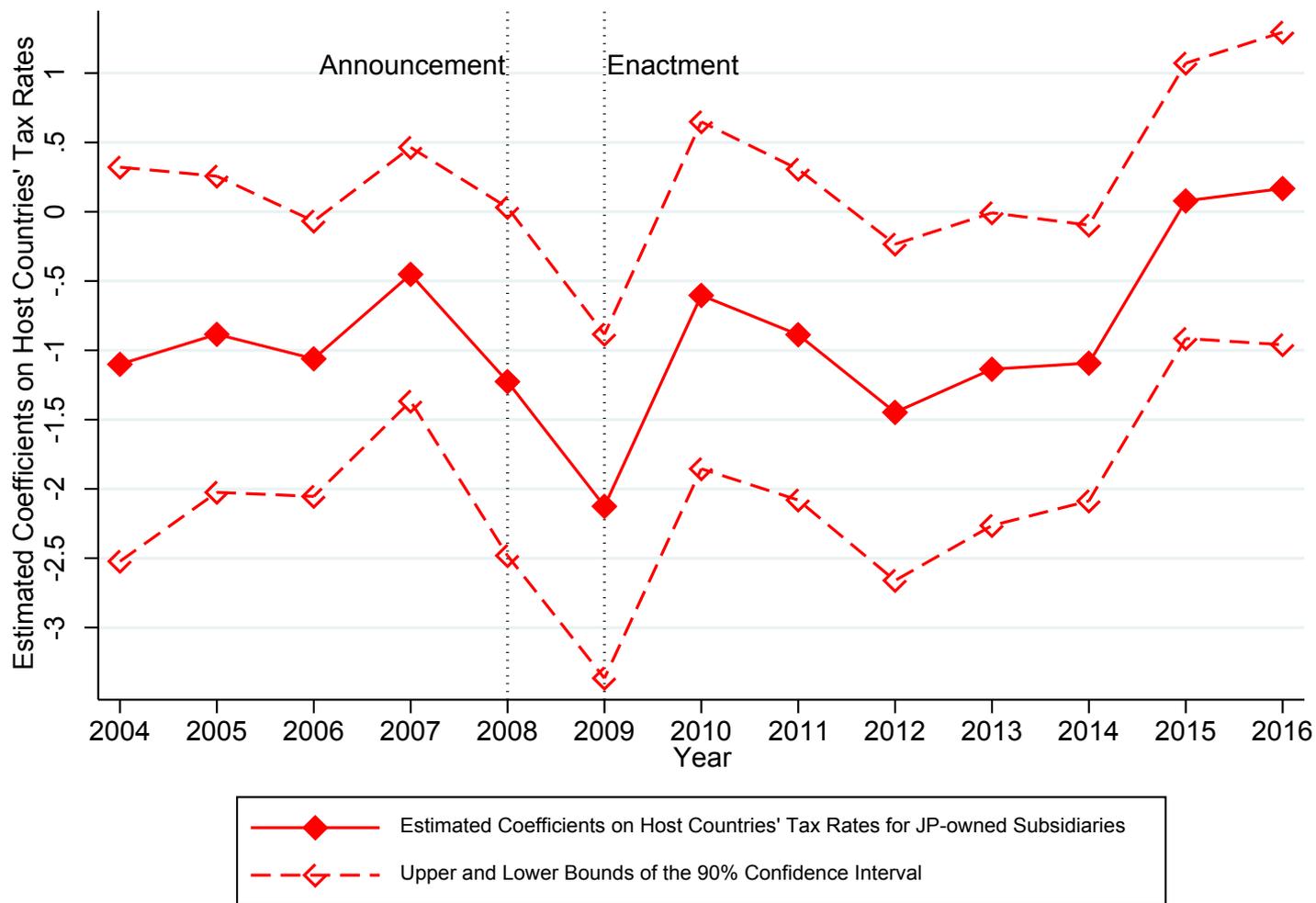
- The tax semi-elasticity for JP-owned subsidiaries increased in 2008 and 2009 more than that for US-owned subsidiaries.

Estimated Coefficients on Tax_{it} from 2004-2016 for US-owned Subsidiaries



- The coefficients are negative and statistically significant in most of the years over the data period (2004, 2005, 2009, 2012-2016).

Estimated Coefficients on Tax_{it} from 2004-2016 for JP-owned Subsidiaries



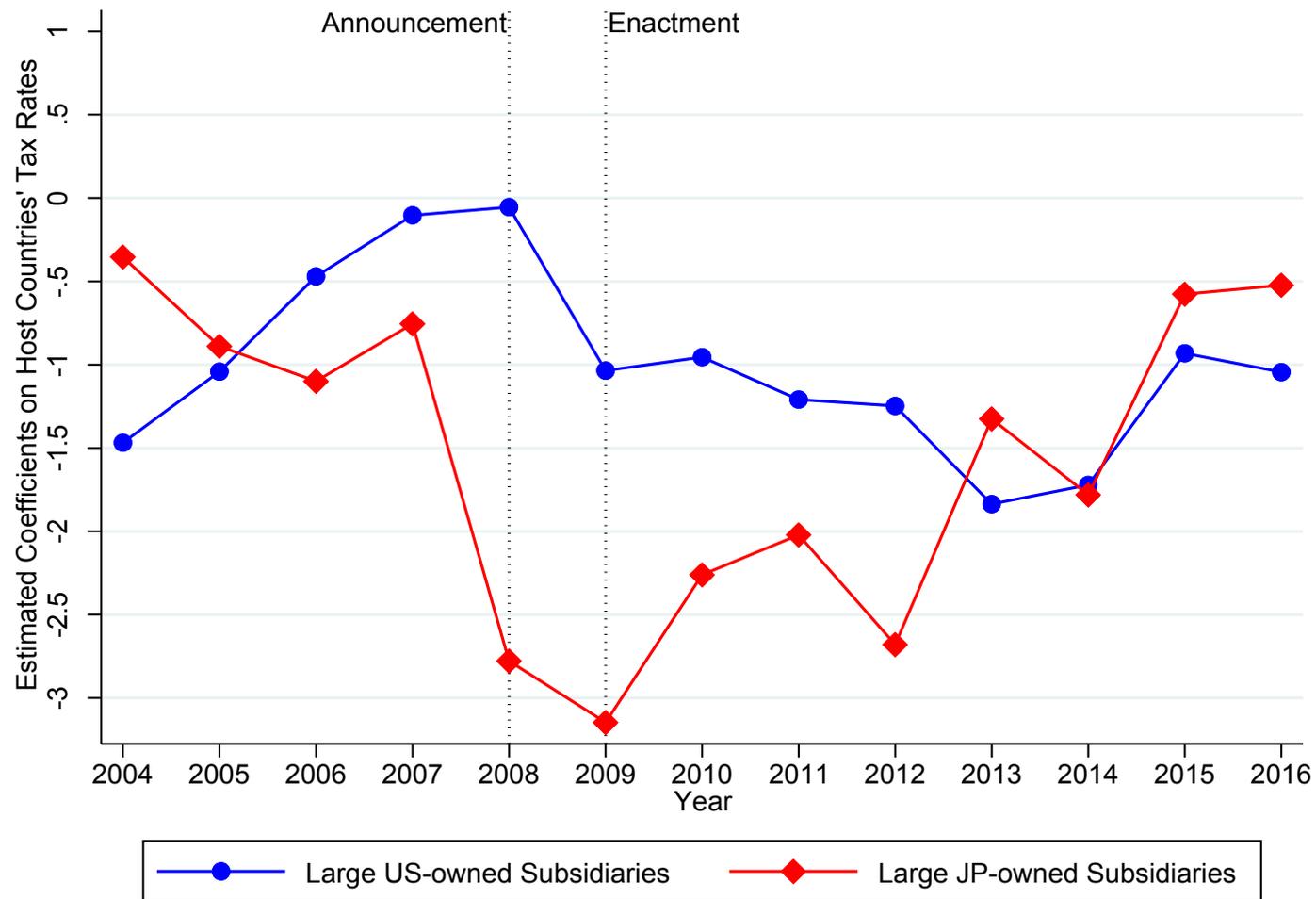
- The coefficients are negative and statistically significant only in the years after the tax reform (2009, 2012-2014) except for 2006.

Heterogeneous Response Depending on Firm Size

- Estimate the tax semi-elasticity for large and small subsidiaries in each year.
 - **Large subsidiary group**: the mean of total assets over the sample period is larger than the subsidiary median in the full sample.
 - $Large_i$ ($Small_i$): Dummy variable that is equal to one if subsidiary i is in the large (small) subsidiary group.

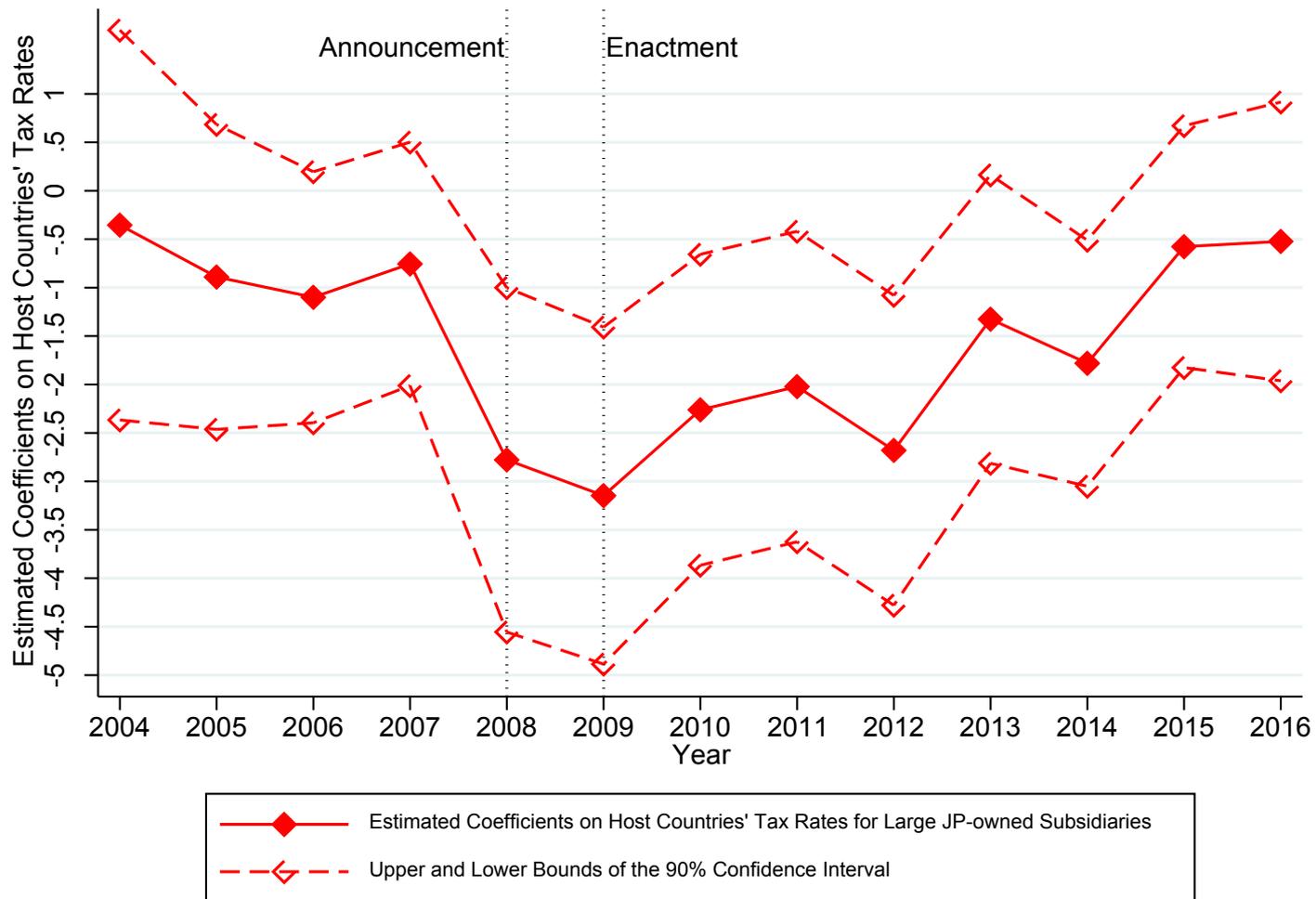
$$\begin{aligned}
 \ln \pi_{it} = & \alpha_i + \sum_{j=2004}^{2016} \beta_{US,j}^L Year_j \times US_i \times Large_i \times Tax_{it} + \sum_{j=2004}^{2016} \beta_{US,j}^S Year_j \times US_i \times Small_i \times Tax_{it} \\
 & + \sum_{j=2004}^{2016} \beta_{JP,j}^L Year_j \times JP_i \times Large_i \times Tax_{it} + \sum_{j=2004}^{2016} \beta_{JP,j}^S Year_j \times JP_i \times Small_i \times Tax_{it} \\
 & + \sum_{j=2004}^{2016} \gamma_{US,j}^L Year_j \times US_i \times Large_i + \sum_{j=2004}^{2016} \gamma_{US,j}^S Year_j \times US_i \times Small_i \\
 & + \sum_{j=2004}^{2016} \gamma_{JP,j}^L Year_j \times JP_i \times Large_i + \sum_{j=2004}^{2016} \gamma_{JP,j}^S Year_j \times JP_i \times Small_i \\
 & + \alpha_1 \ln K_{it} + \alpha_2 \ln L_{it} + \mathbf{X}_{it} \gamma + Industry_i \times Year_t + u_{it},
 \end{aligned} \tag{4}$$

Estimated Coefficients on Tax_{it} for Large Subsidiaries from 2004-2016



- The tax semi-elasticity for large JP-owned subsidiaries started to increase in 2008 and is larger than that for large US-owned subs until 2012.

Estimated Coefficients on Tax_{it} for Large JP-owned Subsidiaries from 2004-2016



- After the announcement of the tax reform in 2008, the estimated coefficients are negative and significant at the 10% level until 2014 (except for 2013).

Interpretations of the Results

- Large Japanese-owned foreign subsidiaries started to engage in profit shifting in response to the announcement of the tax reform.
 - As a result, the tax semi-elasticity for large Japanese-owned subsidiaries exceeds that for large US-owned subsidiaries from 2008-2014 (except for 2013).
- The decrease in the tax semi-elasticity from 2015-2016 is a common trend for both US- and JP-owned subsidiaries (unrelated to Japan's territorial tax reform).
 - In 2015, the BEPS final report was released and required countries to modify the transfer pricing and CFC rules according to the BEPS action plans.
 - In 2016, Japan introduced the Country-by-Country-Reporting system.

Alternative Specification

- Examine the change in the profit shifting behavior of Japanese multinationals, using the dummy variable that indicates the years after the announcement of the territorial tax system.
 - Restrict the data period to 2004-2014 (exclude 2015-2016)
- $After_t$: Dummy variable that is equal to one in the years after the announcement of the reform ($t \geq 2008$)
- Estimate the baseline equation including the interaction term of $After_t \times Tax_{it}$.
 - The estimated coefficient on this term captures the change in the tax semi-elasticity after the tax reform.
 - It is expected to be negative if Japanese multinational facilitated profit shifting under the territorial tax system.

Table 5: Change in Tax Sensitivity after the Announcement of the Tax Reform (Data Period: 2004–2014)

	Dependent Variable: Log of Pre-tax Profit					
	JP-owned Subsidiaries			US-owned Subsidiaries		
	All (1)	Small (2)	Large (3)	All (4)	Small (5)	Large (6)
Tax_{it}	-0.2205 (0.5452)	-0.3982 (0.8551)	-0.2997 (0.7324)	-0.7023** (0.3121)	-0.6107 (0.5014)	-0.5194 (0.4120)
$After_t \times Tax_{it}$	-0.7023 (0.4425)	0.4843 (0.6371)	-1.5107** (0.6598)	-0.0170 (0.2244)	0.5008 (0.3181)	-0.7443** (0.3312)
Log of Fixed Assets	0.0651*** (0.0155)	0.0718*** (0.0210)	0.0604*** (0.0215)	0.0879*** (0.0076)	0.0638*** (0.0112)	0.1127*** (0.0105)
Log of Compensation	0.4445*** (0.0399)	0.3860*** (0.0539)	0.4878*** (0.0559)	0.3988*** (0.0192)	0.4100*** (0.0280)	0.3869*** (0.0261)
Log of GDP per Capita	-0.2510 (0.1643)	-0.0272 (0.2654)	-0.4172* (0.2158)	-0.0624 (0.0886)	0.0110 (0.1323)	-0.0681 (0.1201)
Log of Population	3.1111*** (0.9273)	3.1621** (1.4904)	3.2795*** (1.2614)	1.1418** (0.4716)	1.7706** (0.7385)	0.5509 (0.6290)
Unemployment Rate	-0.0349*** (0.0071)	-0.0295*** (0.0103)	-0.0393*** (0.0100)	-0.0165*** (0.0035)	-0.0182*** (0.0050)	-0.0144*** (0.0050)
GDP Growth Rate	0.0337*** (0.0071)	0.0269** (0.0107)	0.0386*** (0.0097)	0.0068* (0.0037)	0.0012 (0.0049)	0.0133** (0.0055)
Observations	18,422	7,363	11,059	60,609	27,650	32,959
Within R-squared	0.0709	0.0716	0.0848	0.0793	0.0804	0.0837
Number of subid	2,520	1,067	1,453	8,669	4,347	4,322
Industry-Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Subsidiary Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

- The tax semi-elasticity for large JP-owned subsidiaries increased by 1.51 after the announcement (by 0.74 for large US-owned subsidiaries).
- No significant response from small JP-owned subsidiaries.

Conclusion

- Overall, US multinationals are more responsive to the tax incentives for profit shifting than Japanese multinationals.
 - Particularly, the profits of large or intangible-intensive US-owned foreign subsidiaries are more sensitive to host countries' corporate tax rates.
- The introduction of the territorial tax system facilitated profit shifting by large Japanese-owned foreign subsidiaries.
 - But small subsidiaries did not clearly change the profit shifting behavior in response to the tax reform.
 - The profit shifting response is heterogenous depending on firm size.