Twenty-five Years of Effective US and Foreign Tax Rates for Large and Small Firms and their Effect on EPS

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Corporate tax law reform continues to be an important topic in the political arena, especially with the US having one of the highest marginal tax rates in the world. This paper examines twenty-five years of effective US and foreign tax rates for both large and small firms from 1990 to 2015. One of our major findings is that the effective tax burden on most US corporations is not nearly as heavy as the statutory law suggests. Our results suggest that future tax policy should consider both effective US tax rates and statutory tax rates when implementing new corporate tax laws.

INTRODUCTION

The objective of this paper is to analyze the effect of foreign taxes on EPS and Diluted EPS and examine the differences between the foreign tax rate and US tax rate as well as the differences between large and small corporations. Corporate tax law reform and tax rates continue to be an important topic. It is well known that the US marginal corporate tax rate of 38.9% is one of the largest in the world, exceeded only by Chad and the United Arab Emirates (Pomerleau and Potosky, 2016). In contrast, Europe has an average tax rate of only 18.7% which is the lowest in the world by region (Pomerleau, 2015).

In the political arena, one faction claims that the US top corporate tax rate is too high and should be lowered. Another faction claims that the corporate tax rate should be raised because corporations pay too little taxes. For example, the current president would like to lower corporate taxes to 15% even though some in the Republican party would like to lower the taxes to 20%. No matter what route the US takes, the US must consider other factors than just the marginal tax rate. For instance, average tax rates and tax deductions should be considered as well as the effect of taxes on EPS.

Those in favor of lowering US corporate tax rates argue that reducing the tax rates may enhance competitiveness, stimulate the economic growth of the economy, and even decrease the budget deficit. In a study at the request of Senator Bernie Sanders, the Government Accountability Office found approximately 20% of profitable corporations paid zero in U.S. corporate income taxes (Sahadi, 2016). General Electric (GE), the poster boy of corporations not paying taxes, was in the news a few years ago when it had $14.2 billion profit but paid no US corporate taxes (Kocieniewski, 2011), even though no illegal activity was involved. GE is not unique in making minimization of taxes a priority and using its tax

departments as profit centers. Numerous other high-profile companies such as Google, Ikea, Microsoft, Hewlett-Packard, and Starbucks were in the news about their tax practices (Dowling, 2014).

Even though the taxes for the US are in the top three in the world, on average, US corporations many times do not pay as much as their counterparts in Europe or other areas of the world. In the US, multinational corporations have many devices to help them avoid income taxation. Besides favorable tax laws that allow special deductions and credits, large multinational companies can use government bailouts, subsidiaries, and tax shelters to reduce or defer their taxes. Deferrals allow US corporations to delay paying taxes on income earned in foreign countries. These deferred taxes are considered liabilities on the financial statements even though many times corporations delay paying the taxes indefinitely.

Common Tax Loopholes and Deductions

Many of these deductions and loopholes help explain the differences between the statutory rates and the rate of taxes actually paid by a corporation. The effective tax rate of a corporation is computed by dividing total tax expense by pretax income. Thus, the effective tax rate will almost always be lower than the highest marginal rate.

Tax loopholes usually fall into two categories, exclusions and deferrals. Earnings may not be subject to taxation. Thus, they are excluded permanently from taxable income while included in financial income. This is also called a permanent difference. Corporations will many times also incur a timing issue relating to when they recognize revenues and expenses on taxable income and financial income. For example, earnings may be recognized in the future for taxable income while currently recognized in financial income. Expenses may be recognized early in taxable income, but not recognized in financial income until sometime in the future. Timing differences should be recognized on the financial statements in deferred income or deferred charges. Following are a few of the common deductions and loopholes used by multinational corporations that account for the difference between the statutory rate and the actual tax rate paid.

Corporations have the right to carry their losses back two years and forward up to 20 years. Thus, if a corporation has a major loss, it will pay zero federal taxes until the profits exceed the loss. This is a major reason profitable corporations many times pay zero taxes for an extensive time.

Another common method used by corporations is deferring their taxes by deducting a greater amount from taxable income than from financial income. Taxable income is based on statutory law, while financial income is based on generally accepted accounting principles (GAAP).

Since taxable income and financial income are computed separately and have different deductions and revenues, they will rarely be equal. Thus, it would be a major advantage to the corporation if it could reduce taxable income to the lowest dollar amount possible while at the same time keeping the financial income at the largest amount possible. By using accelerated method depreciation, corporations can then defer their taxes by deducting a greater amount of depreciation expense from their taxable income in the early years when the majority of the deductions occur. At the same time, the identical corporation would use straight-line method of depreciation for deducting depreciation expense for financial income. In this case, the taxable income would initially be smaller than financial income because of the early large deductions of depreciation. For financial income, deductions would be consistent over the life of the asset. The end result would be less taxes and greater financial income as long as the corporation continues to implement this method.

Corporations are becoming more global as well as multinational, and their operations are increasingly being integrated in foreign countries. To remain competitive, the corporations have been moving their operations to other countries (offshore) in which the tax rates are much more favorable. The company can then set up a non-US subsidiary as a tax haven in countries such as Bermuda, the Cayman Islands, Singapore, and Ireland. The foreign profits that result from this relationship can result in one of the largest tax breaks for multinational corporations.

For example, the US is one of the few countries in the world in which their foreign income is taxed on a world-wide basis. In this method of taxing foreign income, the US companies are taxed on all income earned in the US and in foreign countries. This is in contrast to most countries that require their

corporations to operate in a territorial system, in which corporations are taxed on income only earned within the physical borders of their country. This does not seem like a tax shelter for US companies until the realization that there are two rules that complicate the collection of taxes. First, US companies are allowed a credit as a deduction from their revenues on taxes paid to other countries, known as the foreign tax credit. Second, and more important, US corporations are not required to pay US taxes on foreign income until the income is repatriated back to the US (Keightley & Sherlock, 2014), usually in the form of dividends. US corporations would then pay little or no taxes on income earned in foreign countries while keeping trillions of dollars of profits (Clausing, 2016; Dixon, 2012) in tax friendly countries.

The topic of repatriation has been discussed many times in the political arena. In fact, corporations have used their power in the form of rent seeking to threaten corporate inversions if favorable corporate tax laws are not passed. A corporate inversion results in a multinational corporation's headquarters transferring to a much more tax friendly country. This is usually done in combination with a merger or acquisition and allows corporations to avoid repatriation (Clausing, 2016).

Transfer pricing also allows corporations to move taxable profits from countries with high tax rates to countries with lower tax rates. For example, large multinational corporations can sell products at very low prices to a related foreign subsidiary that resides in a low-tax country. This exchange leads to lower taxable income in the US because the corporation is showing little or no profit in the exchange while at the same time showing higher profits for the subsidiary, which will be deducting costs at a reduced price. The income that the related subsidiary corporation earns in the low-tax country is usually classified as permanently or indefinitely reinvested. This is also not taxed until the income is repatriated as dividends to the large corporation located in the US.

Another method is an exchange of debt between a subsidiary in a low-tax jurisdiction and a multinational parent company in the US. If a US corporation borrows money from the subsidiary that resides in a lower-tax jurisdiction, this exchange allows the corporation in the US extra tax deductions in the form of interest expense, and the foreign subsidiary would have extra income in the form of interest revenue. The end result would be a smaller taxable income for the US corporations and larger taxable income in the lower-tax jurisdiction.

Background

The US corporate tax law contains a number of pro-growth incentives such as Research and Development tax credits. The US also has tax laws that are not pro-growth or advantageous to the public interest (Kennedy, 2014). Some of these laws are advantageous only to specific corporations, and many times are the consequence of political power and favors resulting from rent-seeking activities. Rent-seeking in this context can be broadly defined as a benefit obtained not by increasing productivity, but through influencing political decisions (Hillman, 2009).

These are just a few ways in which corporations can either shift taxes to a lower paying subsidiary or have an abundance of deductions in the US. No wonder Beckal (2014) mentions that the US has "the largest number of deductions available to corporations," and many times is subject to lower taxes than a lot of European countries. Thus, all of the above leads to an important question: Should the US top marginal tax rate be changed? The marginal federal corporative tax rate in the US has been relatively constant since 1986, deviating by only one percentage point, from 34 percent to 35 percent. The state rates range from zero to 12 percent for state and local government taxes of corporations and are deductible from federal taxes. Accordingly, if state and other local taxes are added, the marginal rate will be approximately 40 percent (MAPI, 2015) and higher than the marginal tax rate in all but three countries in the world.

This is in contrast to 1986, when the US corporate tax rate was lower than in most developed countries (Desai, 2012). In fact, during the 1960's to the 1980's, the US was one of the first countries to start the trend toward lowering corporate taxes. Since the 1980's, the US has been relatively static, with most foreign countries lowering their corporate tax rates and reducing tax breaks. This is one of the reasons Kennedy (2014) believes that the US is lagging behind other developed nations in creating a business tax environment that is favorable to growth and competiveness.

This paper illustrates that the unfair tax-rate competitiveness between foreign corporations and US corporations may be an illusion for small firms, but an actual problem for large firms. We have found small firms in the US to have a significantly lower tax rate than foreign firms since the early 2000's, and just the opposite for large firms, with US corporations having a significantly higher rate than foreign corporations for two of the five periods in the study. We found no significant effect on EPS because of corporations' overseas operations and lower taxes.

EMPIRICAL WORK

Hypotheses
The US marginal tax rate is one of the highest in the world. Thus, we expect US firms to have an effective tax rate higher than that incurred by foreign firms.

H1: $\text{USRATE}_{\text{All US}} \geq \text{FRATE}_{\text{All Foreign}}$

An obvious reason for US corporations to move their operations to foreign countries is to take advantage of the lower foreign corporate taxes in countries in which their operations reside. The BEPS and DEPS include both US and foreign taxes at the appropriate rate. If their pretax income from foreign operations is subject to the higher US corporate tax rate, then the US income tax would be higher, resulting in the US basic earnings per share and diluted earnings per share to be lower. Thus this paper examines both EPS figures hypothetically, assuming only the higher US tax rate is used in the computations. We want to determine if the assumed higher US tax rate when applied to EPS will result in a significant difference in BEPS and DEPS. In both cases, we expect BEPS (H2) and DEPS (H3) to be larger.

H2: $\text{BEPS}_{\text{All USA}} \geq \text{NEWBEPS}_{\text{All USA}}$

H3: $\text{DEPS}_{\text{All USA}} \geq \text{NEWDEPS}_{\text{All USA}}$

Generally, smaller firms have smaller profits than large firms. Thus smaller firms will find their income usually taxed at a lower tax rate than large firms since US rates are based on increasing tax brackets in the US. (The tax brackets in the US do not increase steadily with each bracket. For the period of 2005 to 2016, there are two bubbles, one between \$100,000 and \$335,000 in which the marginal tax rate increases from 34% to 39% and then goes back down to 34%; and the bracket between \$15,000,000 and 18,333,333 in which the bracket jumps from 35% to 38% and then decreases to 35%. Other than these two bubbles, the tax rates climb from the lowest bracket of 15% to the last bracket of 35%.) We classify US firms as "large" or "small" by partitioning along the median of total assets within each year. We expect US firms classified as small to have an effective tax rate less than that of US large firms. This logic is also applicable to foreign firms. Thus, our next two hypotheses, H4 and H5, suggest that the tax rates for larger firms for both US (USRATE) and foreign taxes (FRATE) are larger than those of smaller firms.

H4: $\text{FRATE}_{\text{L Foreign}} > \text{FRATE}_{\text{S Foreign}}$

H5: $\text{USRATE}_{\text{L USA}} > \text{USRATE}_{\text{S USA}}$

Small Firms
In the previous two hypotheses, we compared small foreign firms to large foreign firms, and then we compared small US firms with large US firms. For the next hypothesis, we will compare small foreign firms with small US firms. As mentioned in a previous paragraph, smaller firms earn less and thus do not usually pay the high marginal tax rates normally associated with large corporations in the US, with earnings greater than \$15,000,000. Many foreign countries would not necessarily have the steep rates, graduated steps, and number of deductions that firms in the US have that are available to small firms. Thus in H6, we expect foreign small firms to have an actual tax rate larger than that of US small firms.

H6: $\text{FRATE}_{\text{S FOREIGN}} \geq \text{USRATES}_{\text{USA}}$

For hypotheses H7 and H8, we are applying the same logic in the paragraph above for the EPS figures hypothetically calculated, assuming only the higher US tax rate is used in the computations. However, this time we are separating BEPS and DEPS into large and small firms. In both cases, we expect BEPS and DEPS to be larger than NEWBEPS and NEWDEPS for smaller firms.

H7: $BEPS_{S\ USA} \geq NEWBEPS_{S\ USA}$
H8: $DEPS_{S\ USA} \geq NEWDEPS_{S\ USA}$

Large Firms

In hypothesis H9, we expect just the opposite to happen for large firms when comparing the USRATE with FRATE. Because the US marginal tax rate is one of the highest in the world, large US firms' marginal tax rate will many times lie in the highest tax brackets. Thus, we expect the USRATE to be larger than the FRATE. For hypotheses H10 and H11, we also expect BEPS and DEPS to be larger than NEWBEPS and NEWDEPS for larger firms based on the same logic mentioned above.

H9: $USRATE_{L\ USA} \geq FRATE_{L\ FOREIGN}$
H10: $BEPS_{L\ USA} \geq NEWBEPS_{L\ USA}$
H11: $DEPS_{L\ USA} \geq NEWDEPS_{L\ USA}$

Sample and Variables used in Study

Data are collected using the following procedures: All firms in COMPUSTAT database from 1990 to 2015 are initially included. The information selected includes pretax income, pretax income from foreign operations, income taxes, income taxes for foreign operations, total assets, total liabilities, sales, net income, basic earnings per share excluding extraordinary items, and diluted earnings per share excluding extraordinary items.

Data used in study

Effective tax rate on foreign operations is calculated by dividing income taxes for foreign operations by pretax income from foreign operations (TXFP / PIPO). Income taxes for US operations are calculated by subtracting income taxes for foreign operations from total income taxes (TXT – TXFO), while pretax income from US operations is calculated by subtracting pretax income from foreign operations from pretax income (PI – PIFO). Effective tax rate on US operations is then calculated by dividing income taxes for US operations by pretax income from US operations (TXT – TXFO) / (PI – PIFO). Hypothetical Basic EPS, assuming that US tax rate is applied to all income, is calculated by dividing Basic EPS by (1 – actual tax rate) and multiplying by (1 – the US tax rate). The hypothetical Diluted EPS is calculated similarly.

Observations without effective tax rate on foreign operations are deleted. A 2% winsorizing procedure (1% on each tail) is applied to the calculated variables to control the outliers [see V. Barnett & T. Lewis, *Outliers in Statistical Data* (3rd ed.), Wiley (NY), 1994.] The final sample consists of 39,394 firm-year observations.

TABLE 1
COMPUSTAT DATA ITEMS USED IN THIS STUDY

Variable	Used name	Description
AT	TA	Assets, Total
LT	TL	Liabilities, Total
NI		Net Income (Loss)
REVT	SALE	Revenue – Total
EPSPX	BEPS	Earnings Per Share (Basic) Excluding Extraordinary Items
EPSFX	DEPS	Earnings Per Share (Diluted) Excluding Extraordinary Items
PIFO		Pretax Income Foreign
PI		Pretax Income
TXFO		Income Taxes – Foreign
TXT		Income Taxes – Total

TABLE 2
CONSTRUCTED VARIABLES USED IN THIS STUDY

Variable	Description
FRATE	Foreign tax rate. TXFO / PIFO
USRATE	US tax rate. (TXT – TXFO) / (PI - PIFO)
TXRATE	Total tax rate. TXT / PI
NEWBEPS	Hypothetical BEPS if US tax rate is applied to all income. BEPS / (1-TXRATE)*(1-USRATE)
NEWDEPS	Hypothetical DEPS if US tax rate is applied to all income. DEPS / (1-TXRATE)*(1-USRATE)

**Descriptive Statistics Partitioned by Time Periods for the Period from 1990 to 2015**

Table III displays the summary statistics partitioned by 5-year successive time periods for the period from 1990-2015. Besides total assets, total liabilities, total sales, and net income, descriptive statistics are presented for basic EPS and New Basic EPS, Diluted EPS, New Diluted EPS, and Foreign Tax Rate as well as the US Tax Rate. The first four variables of total assets, total liabilities, total sales, and net income increase each five-year period from 1990-2015. All four measures of EPS have initially decreased and rebounded the last two time periods of 2006-2010 and 2011-2015 to end up with the highest EPS rates during the last time period of 2011-2015. The foreign tax rate has decreased each 5-year period, while the US rate went down or stayed the same with the exception of the period from 1996-2000. Since many foreign countries have been reducing their corporate tax rates during the last twenty years, the decrease in the foreign tax rates is to be expected.

TABLE 3
DESCRIPTIVE STATISTICS

Variables	1990-1995		1996-2000		2001-2005		2006-2010		2011-2015		Total 1990-2015	
	Mean	StDev	Mean	StDev	Mean	StDev	Mean	StDev	Mean	StDev	Mean	StDev
TA	2884.56	13321.73	4093.12	22286.90	8152.95	58107.54	10555.38	82758.16	11371.32	71411.82	7722.85	58579.30
TL	2133.78	11713.01	2984.66	19792.17	6136.32	53538.75	7974.46	77044.05	8376.64	63759.39	5753.29	53554.95
SALE	2232.08	8289.58	2846.47	10125.98	4223.36	16027.57	5157.97	19743.56	5573.54	20330.64	4126.21	16156.11
NI	80.12	477.59	164.48	763.09	215.17	1275.84	323.60	1689.88	376.30	1621.44	242.05	1300.56
BEPS	0.84	1.80	0.75	1.80	0.54	1.81	0.85	2.08	1.08	2.18	0.82	1.97
NEWBEPS	0.87	2.81	0.77	2.11	0.53	1.95	0.85	2.36	1.09	2.42	0.83	2.35
DEPS	0.83	1.78	0.72	1.77	0.51	1.78	0.83	2.05	1.05	2.16	0.80	1.94
NEWDEPS	0.87	2.79	0.74	2.08	0.51	1.91	0.82	2.32	1.07	2.37	0.81	2.32
FRATE	0.27	0.48	0.25	0.47	0.21	0.48	0.20	0.44	0.20	0.46	0.22	0.47
USRATE	0.25	045	0.26	0.49	0.20	0.55	0.20	0.56	0.17	0.57	0.21	0.53

The US Tax rate has averaged 21% from 1990 to 2015, with a low rate of 17% during the 2011-2015 period and a high rate of 26% from 1996 to 2000. Note that this statistic includes state as well as foreign taxes. The foreign tax rate reached a high of 26% during the 1996-2000 period and a low of 20% during the 2006-2010 and 2011-2015 periods, thus decreasing each 5-year period, while the US rate also has gone down with the exception of the years 1996-2000. The foreign rate since 2001 has remained at a relatively constant rate of 20% or 21%. As shown by Figure 1, the US, in spite of having a larger marginal tax rate higher than all but two countries in the world, has been paying a tax rate three percent lower than foreign countries for the past five-year period.

FIGURE 1
AVERAGE US AND FOREIGN TAX RATES BY YEAR

US and Foreign tax rates by year
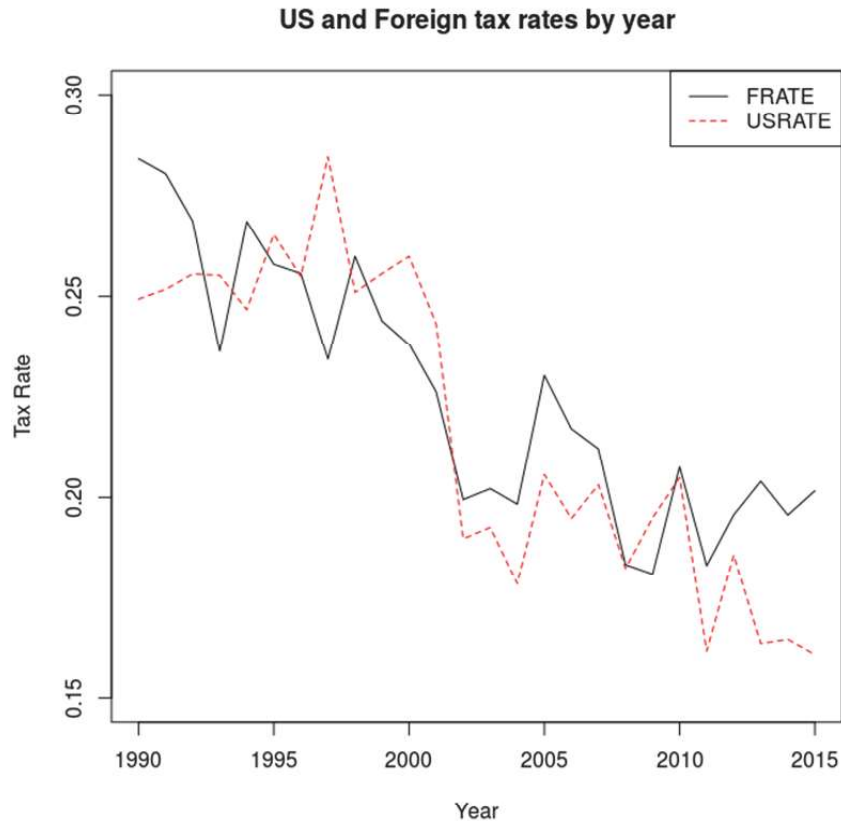
Univariate Statistics, Foreign (F) vs. US rates (US), by Time Period

Table IV displays the results of the univariate statistics for the information provided by Table III. All variables are as defined earlier in Tables I and II. Two-tailed t-tests for differences in means are conducted for each pair of variables listed in the first column between the foreign tax rate and US tax rate, the basic EPS and the new basic EPS (Hypothetical BEPS assuming the US tax rate is applied to all income), and the Diluted EPS and New Diluted EPS (Hypothetical Diluted EPS assuming the US tax rate is applied to all income). Also included are the means of each of the two variables in the pair, the t statistic, and the p-value for all five time periods as well as the average for the whole period.

Two time periods show a significant difference between US and foreign tax rates in Table IV. The period of 1996-2000 indicates the US rate being significantly higher than the foreign rate at the .10 level, and the period of 2011-2015, surprisingly, shows the US rate significantly smaller than the Foreign tax rate at the .01 level. The difference between the FRATE and the USRATE was not significantly different for the three other periods. Even the total period of 1990-2015 had the opposite result expected, with the US rate being significantly lower at the .05 level for the cumulative 20 years computed for this study. Thus, our first hypothesis (H1) suggesting that the US rates would be larger is not true. Even though the US has some of the highest marginal tax rates in the world, apparently corporations have many devices in terms of tax loopholes and deductions that allow the US corporations to pay a smaller rate of taxes than their foreign counterparts.

Surprisingly, no other variables listed in this table are significant. Apparently, the difference between the foreign tax rates and the US tax rates has no significant effect on Basic EPS and Diluted EPS using either both the US and Foreign tax rates or the hypothetical basic EPS and hypothetical diluted EPS using only the US rates. Even though the amount of taxes saved by corporations using foreign tax rates in the computation of BEPS and DEPS and comparing these figures with the hypothetical NEWBEPS and

NEWDEPS may be material for many firms, it was not large enough to be significant when examining corporations' tax saving in the aggregate. Thus, neither of the hypotheses H2 and H3 is significant.

TABLE 4
UNIVARIATE STATISTICS, FOREIGN VS US RATES, BY TIME PERIOD

Variables	Mean 1	Mean 2	T-stat	P-value
Panel 1: 1990 – 1995 (N = 6934)				
FRATE/USRATE	0.2648	0.2543	1.3113	0.1898
BEPS/NEWBEPS	0.8371	0.8741	-0.9215	0.3568
DEPS/NEWDEPS	0.8303	0.8678	-0.9421	0.3461
Panel 2: 1996 - 2000 (N = 7312)				
FRATE/USRATE	0.2464	0.2612	-1.8556*	0.0635
BEPS/NEWBEPS	0.7484	0.7705	-0.6838	0.4941
DEPS/NEWDEPS	0.7219	0.744	-0.6923	0.4888
Panel 3: 2001 - 2005 (N = 7682)				
FRATE/USRATE	0.2113	0.2011	1.216	0.224
BEPS/NEWBEPS	0.5391	0.5343	0.1579	0.8746
DEPS/NEWDEPS	0.5109	0.5073	0.1203	0.9042
Panel 4: 2006 - 2010 (N = 8504)				
FRATE/USRATE	0.2002	0.1961	0.5241	0.6002
BEPS/NEWBEPS	0.853	0.8464	0.1935	0.8466
DEPS/NEWDEPS	0.8251	0.8191	0.1781	0.8586
Panel 5: 2011 - 2015 (N = 8962)				
FRATE/USRATE	0.196	0.1675	3.6857***	0.0002
BEPS/NEWBEPS	1.0794	1.0941	-0.426	0.6701
DEPS/NEWDEPS	1.0541	1.0678	-0.4038	0.6864
Panel 6: 1990 - 2015 (N = 39394)				
FRATE/USRATE	0.2213	0.2129	2.3594**	0.0183
BEPS/NEWBEPS	0.8211	0.8327	-0.7507	0.4528
DEPS/NEWDEPS	0.7977	0.8095	-0.7764	0.4375

*This table shows the results of the univariate analysis. Two-tailed t-tests for differences in means are conducted for each pair of variables listed in the first column. Included are the means the first and second variable in the pair, the t statistic, and the p-value. All variables are as defined earlier in **TABLES 1** and **2**. ***, **, * indicate significance at the 1, 5, and 10 percent levels, respectively.*

Univariate Statistics, Partitioned by Firm Size and Time Period

In Table V, we partitioned total assets, total liabilities, total sales, Net Income, Foreign Tax Rate, US Tax Rate, Basic EPS, New Basic EPS, Diluted EPS, and New Diluted EPS by firm size (along the median of firm total assets) and five-year time periods from 1990 to 2015. Prior accounting studies, such as Watts and Zimmerman (1978), used the size hypothesis to conclude that larger firms are more politically sensitive and that firm size is a (noisy) proxy for political costs. The behavior of the larger firms, therefore, is different from that of other firms. Two-tailed t-tests for differences in means are conducted for each pair of variables listed in the first two columns for each time period. Unsurprisingly, differences in the means between large and small firms were significant at the .01 level for all periods and financial statement items. For the items listed as totals on the statements (total assets, total liabilities, and total sales) or net total (net income), there has to be a significant difference as per definition of the firm size. All differences between small and large firms was significantly higher for large firms for all calculations of foreign tax rates and US tax rates as well as all calculations of EPS.

For foreign tax rates, larger firms exceeded small firms by .09, .09, .09, .06, and 03, in each period, respectively. For US tax rates, large firms average taxes exceeded those of small firms by .09, .12, .12, .15, and .11 for each period represented. In all periods except for 1990-1995, there was a larger difference in US tax rates between small and large firms than foreign tax rates. However, 1990-1995 occurred before many foreign countries started to reduce their marginal tax rates, and thus the difference between US and foreign tax rates was the same for both small and large firms.

The overall result for the 25 years (Total 1990-2015) demonstrates that for small firms the rates are not only smaller than for the large firms, but also that for small firms the US tax rate is lower than the foreign tax rate for all periods except 1996-2000. The opposite is true for large firms with the US rate higher for three of the periods (1996-2000, 2006-2010, and 2011-2015); tied for one of the periods (2001-2005); and smaller for one of the periods (1990-1995). As mentioned previously, 1990-1995 occurred before many foreign countries started to reduce their marginal tax rates.

TABLE 5
UNIVARIATE STATISTICS PARTITIONED BY FIRM SIZE AND TIME PERIOD FOR THE PERIOD FROM 1990 TO 2015

Variables	1990-1995		1996-2000		2001-2005		2006-2010		2011-2015		Total 1990-2015	
	Sm.	Lrg.	Sm.	Lrg.	Sm.	Lrg.	Sm.	Lrg.	Sm.	Lrg.	Sm.	Lrg.
TA	100.071	5669.05	138.64	8047.39	195.25	16110.65	252.71	20858.05	341.21	22401.43	189.65	15256.05
TL	52.19	4215.36	68.33	5901	90.15	12182.49	113.63	15835.29	157.60	16595.38	90.21	11416.37
SALE	133.40	4330.77	163.69	5529.25	203.8	8242.93	269.6	10046.34	369.9	10782.14	210.56	8041.86
NI	2.62	157.62	2.23	326.74	-2.35	432.70	-0.042	647.61	2.04	750.56	0.33	483.78
BEPS	0.28	1.39	0.18	1.31	-0.03	1.11	0.10	1.61	0.17	1.99	0.14	1.50
NEWBEPS	0.36	1.39	0.20	1.34	-0.03	1.10	0.14	1.56	0.18	2.00	0.17	1.50
DEPS	0.28	1.38	0.16	1.28	-0.05	1.07	0.08	1.57	0.15	1.95	0.13	1.47
NEWDEPS	0.36	1.38	0.18	1.31	-0.04	1.06	0.12	1.52	0.18	1.96	0.16	1.46
FRATE	0.22	0.31	0.20	0.29	0.17	0.26	0.17	0.23	0.18	0.21	0.19	0.25
USRATE	0.21	0.30	0.20	0.32	0.14	0.26	0.12	0.27	0.11	0.22	0.16	0.27

Two-tailed t-tests for differences in means are conducted for each pair of variables listed in the first two columns for each time period. Unsurprisingly, differences in the means between large and small firms were significant at the .01 level for all periods and financial statement items.

Univariate Statistics, Tax Rate Differences by Size and Time Period
*Small Firms*

In Table VI, univariate statistics for tax rate and EPS computations for each period and the differences between large and small firms are presented. There are three different measures: comparison of foreign tax rate with the US tax rate; the comparison of the basic EPS with the new basic EPS when US tax rates are assumed applied to foreign income also; and last the comparison of Diluted EPS with New Diluted EPS when the US tax rates are assumed applied to both US income and foreign income.

For smaller firms, the effective tax rate on foreign operations has been significantly higher than the effective tax rate on US operations for the last three time periods as well as for the whole period 1990-2015. For the first two periods (1990-1995 and 1995- 2000), there were no significant differences between the US and foreign tax rates for small firms. These results can be easily observed on Figure 2 where US and foreign tax rates are graphed by year. It becomes quite obvious when observing Figure 2 that the US rate starts to fall below the foreign rate in the early 2000's. Even for the whole 25-year period the average foreign rate was significantly larger than US rate. There could be two reasons for this phenomenon. First, there are more deductions or exclusions in the US tax code. Second, the graduated tax

brackets are steeper in the US or do not exist as much in foreign countries. Thus H6 cannot be proven false and is significant.

The overall result for the period 1990-2015 (panel 6) strongly suggests that for small firms, the US tax rate is lower than foreign tax rates. However, the effect is different depending on the time period, as can be observed from panels 1-5 in Table VI as well as Figure 2. The US rate only started to become significantly smaller than the foreign rate for small firms starting in 2001.

FIGURE 2
AVERAGE US AND FOREIGN TAX RATES BY YEAR, FOR SMALL (LESS THAN MEDIAN ASSETS WITHIN EACH YEAR) FIRMS
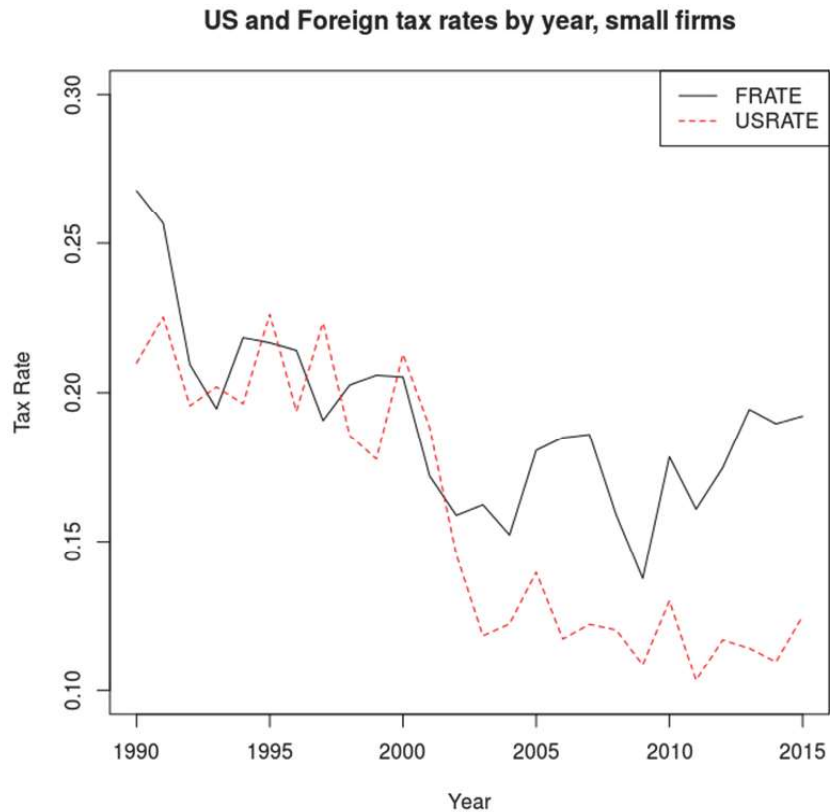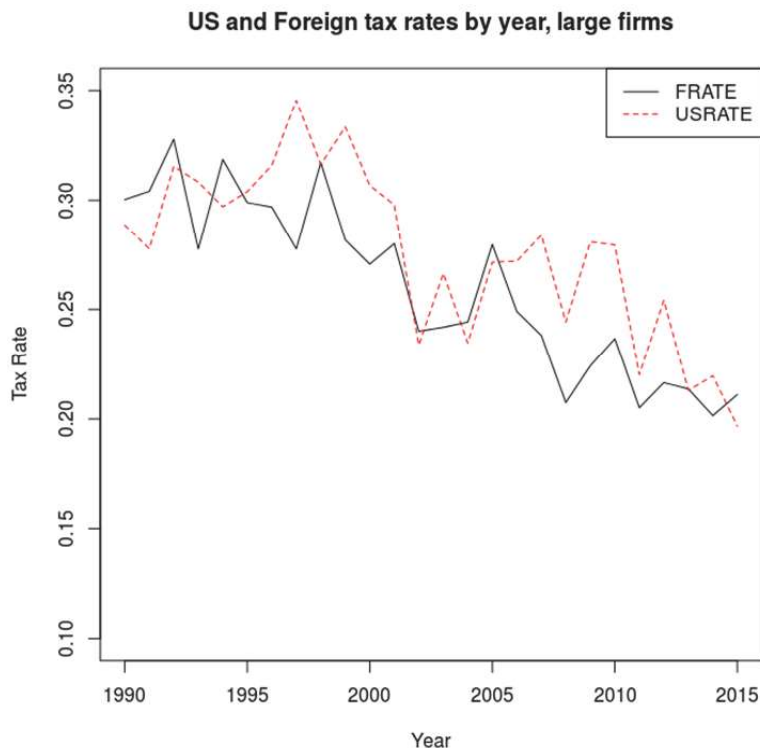

Both the BEPS/NEWBEPS and DEPS/NEWDEPS variables are insignificant across the board. Thus, for smaller firms, the means of the basic earnings per share when compared to the basic EPS when the US tax rates are applied to all operations is not significantly different. In addition, the means of the Diluted EPS compared to the Diluted EPS when the US tax rates are applied to all operations is also not significant. For smaller firms, these results are reasonable. The mean effective tax rate on foreign operations is larger than that on US operations. Thus, the lower US rate increases both basic earnings per share and diluted earnings per share. However, since smaller firms do not have as much opportunity to take advantage of the tax deductions and loopholes, we would assume that much of the difference between foreign and US rates is immaterial to make a significant difference in computing BEPS/NEWBEPS and DEPS/NEWDEPS. We cannot accept H7 or H8 as true since the hypothetical tax effect does not have enough materiality be considered significant.

Large Firms

There is a significant difference in the foreign tax rate and US tax rate for the periods of 1996-2000 and 2006-2010 periods for larger firms. For these two time periods, as well as the total period from 1990-2015, the effective tax rate on US operations is significantly higher than the tax rate on foreign

operations. One can easily observe these two areas in Figure 3, which graphs the tax rates of US and foreign tax rate by year. The graphs of the foreign and US tax rates are closer together during the last period (2010-2015), with the two lines intersecting at the end of the period. The results are consistent with H9 of this study.

FIGURE 3
AVERAGE US AND FOREIGN TAX RATES BY YEAR, FOR LARGE (GREATER THAN MEDIAN ASSETS WITHIN EACH YEAR) FIRMS

The BEPS/NEWBEPS and DEPS/NEWDEPS variables are also insignificant across the board for larger firms. Since US tax rates are larger for both the statutory rates and the computed tax rates, one would expect the BEPS/NEWBEPS and DEPS/NEWDEPS variables to be significantly smaller if their pretax income from foreign operations is subject to the higher US corporate tax rate. The reason for this is that if pretax income from foreign operations is subject to the higher US corporate tax rate, then their income tax is higher, and their basic earnings per share and diluted earnings per share should be lower. However, for larger firms, the basic earnings per share when US rates are applied to all operations is not significantly different for both Basic EPS and Fully-Diluted EPS. The results are inconsistent with H10 and H11 in this study. The higher US statutory rates should have decreased both basic earnings per share and diluted earnings per share. This should have been especially true for the 1996 to 2000 and 2006 to 2010 periods, when the US rate was significantly larger than the foreign rate. However, even in these years, there was no significant difference for the BEPS/NEWBEPS and DEPS/NEWDEPS variables to be significant when the US rates are applied to all operations.

TABLE 6
UNIVARIATE STATISTICS, TAX RATE DIFFERENCES BY SIZE AND TIME PERIOD

	Small Firms			Large Firms		
	Mean 1	Mean 2	T-stat	Mean 1	Mean 2	T-stat
Panel 1: 1990 – 1995 (N = 6934)						
FRATE/USRATE	0.2245	0.2096	1.3115	0.3052	0.2991	0.5454
BEPS/NEWBEPS	0.283	0.36	-1.2978	1.3912	1.3881	0.0606
DEPS/NEWDEPS	0.2815	0.3586	-1.3053	1.3791	1.377	0.0431
Panel 2: 1996 - 2000 (N = 7312)						
FRATE/USRATE	0.2034	0.2008	0.2356	0.2894	0.3216	-2.8111***
BEPS/NEWBEPS	0.1826	0.1954	-0.3542	1.3141	1.3456	-0.6256
DEPS/NEWDEPS	0.1637	0.1762	-0.3517	1.2801	1.3118	-0.6382
Panel 3: 2001 - 2005 (N = 7682)						
FRATE/USRATE	0.1655	0.1416	2.0827**	0.2571	0.2607	-0.2981
BEPS/NEWBEPS	-0.0315	-0.0275	-0.1268	1.1098	1.0962	0.2835
DEPS/NEWDEPS	-0.0492	-0.0425	-0.214	1.071	1.057	0.2947
Panel 4: 2006 - 2010 (N = 8504)						
FRATE/USRATE	0.1687	0.1198	4.4546***	0.2317	0.2725	-3.7877***
BEPS/NEWBEPS	0.0984	0.1366	-1.1929	1.6077	1.5563	0.9201
DEPS/NEWDEPS	0.0834	0.1215	-1.2038	1.5668	1.5168	0.909
Panel 5: 2011 - 2015 (N = 8962)						
FRATE/USRATE	0.1812	0.1146	6.1094***	0.2108	0.2203	-0.8781
BEPS/NEWBEPS	0.1659	0.1875	-0.6815	1.993	2.0008	-0.1415
DEPS/NEWDEPS	0.1535	0.1751	-0.6881	1.9547	1.9604	-0.107
Panel 6: 1990 - 2015 (N = 39394)						
FRATE/USRATE	0.1923	0.1581	6.8622***	0.2504	0.2678	-3.4195***
BEPS/NEWBEPS	0.1419	0.1694	-1.6064	1.5003	1.496	0.1804
DEPS/NEWDEPS	0.1294	0.1574	-1.6535*	1.466	1.4616	0.1876

CONCLUSION

This paper examines twenty-five years of effective US and foreign tax rates for both large and small firms in five-year intervals. We also examined the effect of US-foreign tax differential to determine if there was a significant difference between the BEPS and the hypothetical calculated BEPS using only the US tax rate. We made these computations for both BEPS and DEPS and made the comparison for both large and small firms.

This study's results indicate that the US firms' tax rate is lower than foreign firms' overall mean effective tax rate. The US tax rate reached its lowest point of 17% for the period during 2011-2015 and a high rate of 26% from 1996 to 2000. The foreign rate since 2001 has remained at a relatively constant rate of 20% to 21% for the period from 2001-2005 to 2011-2015. Even though the US has one of the highest marginal tax rates in the world, for the last three periods starting with 2001-2005, the US rate has been either the same or lower than the foreign rates. The anecdotal evidence suggests that US corporations have many devices in terms of tax loopholes and deductions or have the ability to engage in rent-seeking activities.

We found that the difference between the foreign tax rates and the US tax rates had no effect on Basic EPS and Diluted EPS using either the US or foreign tax rates. We were also not surprised that all differences between small and large firms were significantly higher for large firms. However, when we

compared US tax rates with the foreign tax rates for small firms, the US tax rate has been lower or the same rate than foreign tax rates.

The tax rates of US large firms was significantly higher than the tax rates for foreign larger firms for two periods, 1996-2000 and 2006-2010. In the period 1990-1995, the foreign rates were actually higher by one percentage point, probably because many countries were just starting to lower their tax rates. The larger US firms were only one percentage point larger than the foreign firms for the last period from 2011-2015. Since the US has one of the largest tax rates, does this indicate numerous loopholes and deductions or rent-seeking activities?

Recently, a substantial amount of attention has been given to statutory corporate rates, especially the last bracket of 35%. This rate has many times been compared to the smaller foreign rates. One may argue that increasing taxes on corporations may hinder economic growth and business efficiency. There are numerous arguments for both raising and decreasing taxes on corporations.

The political left claims that the corporate tax rate should be raised because large corporations are greedy and pay too little in taxes. It was not that long ago that the US was below the international average for taxes, but since the 1980's the top marginal tax rates for most countries around the world have dropped, leaving the US with one of the highest statutory rates in the world. Keightley and Sherlock (2014) argue that the US rates should be compared to a weighted average of foreign tax rates. The US would be much more in line with the rest of the world.

However, the answer is not just a matter of reducing or increasing taxes. It is important to close loopholes and other corporate rent seeking opportunities as well as considering the tax rates. Clausing (2016), Keightley and Sherlock (2014) agree that corporate tax reforms could strengthen our economic system by lowering the statutory rate and at the same time closing loopholes. Thus, it is important to consider both the statutory rate and the actual taxes paid. Rent-seekers that lobby tax law writing congressional committee members for favorable tax legislation should have their fundraising and contributions limited, which in turn would allow lobbyists to change from activist to information provider (Hasen, 2011).

The US may consider reducing the top corporate tax rate of 35% to an amount more in line with the rest of the world. However, the new statutory rate would not stop the criticism of corporate rates if the tax policies continue to be complex and burdensome for corporations. The level of tax avoidance in the US is a signal to the legislation not to misuse its tax raising authority (Dowling, 2014) and that it should consider both tax rates and tax loopholes. Based on the results of this paper, the tax burden on most US corporations is not as heavy as the statutory law implies it is. Thus, the most important policy to derive from this paper is that future tax policy must consider not only the statutory rate, but the actual US tax rates when implementing corporate tax laws.

END NOTES

1. The tax brackets in the US do not increase steadily with each bracket. For the period of 2005 to 2016, there are two bubbles, one between $100,000 and $335,000 in which the marginal tax rate increases from 34% to 39% and then goes back down to 34%; and the bracket between $15,000,000 and 18,333,333 in which the bracket jumps from 35% to 38% and then decreases to 35%. Other than these two bubbles, the tax rates climb from the lowest bracket of 15% to the last bracket of 35%.

REFERENCES

Barnett, V. & Lewis, T. (1994). *Outliers in statistical data* (3rd ed.). New York: Wiley.

Beckal, B. (2014, September 1). *The Five* [Television broadcast]. New York: Fox News Channel.

Clausing, K. (2016). *Profit shifting and U.S. corporate tax policy reform*. Retrieved from
    http://equitablegrowth.org/report/profit-shifting-and-u-s-corporate-tax-policy-reform/

Desai, M. (2012). A better way to tax U.S. business. *Harvard Business Review*, July-August, 7-8.

Dixon, K. (2012). *Microsoft, HP skirted taxes via offshore units: U.S. Senate panel.*
    Retrieved from http://www.reuters.com/article/us-usa-taxes-offshore-idUSBRE88J0VY20120920

Dowling, G. (2014). The curious case of corporate tax avoidance: Is it socially irresponsible? *Journal Business Ethics,* 124, 173-184.

Hasen, R. (2011). Lobbying, rent-seeking, and the constitution. *Stanford Law Review*, 64 (191), 191-253.

Hillman, A. (2009). *Public Finance and Public Policy* (2nd ed.). New York: Cambridge University Press.

Keightley, M. & Sherlock, M. (2014). *The corporate income tax system: overview and options for reform.* Congressional Research Service Report. https://fas.org/sgp/crs/misc/R42726.pdf

Kennedy, J. (2014). *Assessing U.S. corporate tax reform in an age of global competition.* Retrieved from https://itif.org/publications/2014/03/24/assessing-us-corporate-tax-reform-age-global-competition

Kocieniewski, D. (2001, March 24). G.E.'s strategies let it avoid taxes altogether. *The New York Times.* Retrieved from http://www.nytimes.com/2011/03/25/business/economy/25tax.html

MAPI Foundation, National Association of Manufacturers. (2015). *The United States needs a more competitive corporate tax system.* Retrieved from http://www.nam.org/Data-and-Reports/Reports/MAPI---Tax-Competitiveness.pdf

Pomerleau, K. (2015). *Corporate income tax rates around the world, 2015.* Retrieved from http://taxfoundation.org/article/corporate-income-tax-rates-around-world-2015

Pomerleau, K. & Potosky E. (2016). *Corporate income tax rates around the world, 2016.* Retrieved from http://taxfoundation.org/article/corporate-income-tax-rates-around-world-2016

Sahadi, J. (2016, April 13). 20% of big companies pay zero corporate taxes. *CNN Money.* Retrieved from http://money.cnn.com/2016/04/13/pf/taxes/gao-corporate-taxes/

Watts, R. & Zimmerman, J. (1978). Towards a positive theory of the determination of accounting standards. *The Accounting Review*, 53, 112-134.