



# International Diversification and Dividend Taxes

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## Abstract

*International diversification can reduce the risk of investment portfolios, but the optimal allocations are affected by taxes. This paper examines taxation of dividends received from equity securities. Two important studies are reviewed, and five other studies are outlined. Ongoing research with simpler models will give useful guidance to individual investors.*

**Keywords:** International diversification, Financial assets, Dividend taxation, Tax Relief

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## I. Introduction

International diversification occurs when investors own financial assets, especially equity securities, from both domestic and foreign countries. Stock markets are not perfectly correlated across countries, so international diversification can reduce portfolio risk. Grubel (1968) and Levy and Sarnat (1970) are among the first academic studies to explicitly model this. Investment practitioners became aware of the potential benefits from Solnik (1974).

As is typically the case in economics and finance, the simplest models of international diversification assume zero taxes. However, investors often must pay income tax on their investment income. Tax rates vary depending on both investor and investment characteristics. Equity securities have two return components, dividends and capital gains, which may receive different tax treatments. All of these differences should affect investor behavior.

This study examines situations where dividends from some countries' stocks are taxed differently than dividends from other countries. This is currently the case for investors in both the United States and Canada. Compared to "ordinary income" such as wages and interest, the U.S. has a long history of applying lower tax rates to long-term capital gains. Since 2003, the long-term capital gain tax rates are also applied to dividends from U.S. stocks and some foreign countries. Another example of differential taxation is in Canada, where a dividend tax credit applies only to Canadian equities.

This study is the first part of a research program which will show implications of dividend taxation for individual investors. The emphasis of the current paper is to report what is already known from two important studies, Desai and Dharmapala (2011) and Amiram and Frank (2016). After discussing U.S. and Canadian dividend taxation in Section II below, Section III summarizes Desai and Dharmapala, and Section IV discusses Amiram and Frank. Section V provides an overview of five other academic studies. Section VI outlines how our further research will provide guidance for individual investment decisions. Concluding remarks are made in Section VII.

## II. Dividend Taxation in the United States and Canada

In 2003 the United States Congress enacted a Tax Relief Act which lowered a variety of taxes. The full name of this legislation is the Jobs and Growth Tax Relief Reconciliation Act, hereafter identified by its abbreviation JGTRRA. Harden, Biggart, and Richmond (2003) report that the Act accelerated previously enacted benefits for married taxpayers, expanded the lowest income tax bracket, reduced individual income tax rates, and lowered the maximum rate for capital gains and most dividends to 15%. Dennis-Escoffier (2003) notes that the Act was the third-largest tax cut package in US history.

Only "qualified dividends" are eligible for the lower tax rate. These include dividends from U.S. stocks, and from companies domiciled in countries with tax treaties meeting various requirements. IRS Notice 2003-69 ("United States income tax treaties that meet the requirements of section 1(h)(11)(C)(1)(II)") lists 52 countries that met the requirements as of October 2003.

The provisions of JGTRRA were originally scheduled to expire at the end of 2008. Subsequent legislation continued the preferential treatment of dividends. During 2003 through 2012, the top tax rate remained at 15% on qualified dividends, compared to 35% on ordinary income and ordinary dividends. In 2013 a new top tax bracket of 39.6% was introduced, with taxpayers in that bracket facing a 20% rate on qualified dividends. Also introduced in

2013 was a Net Investment Income Tax of 3.8% on most types of investment income received by higher-income taxpayers. These rate changes did not alter the basic principle of significantly lower tax rates on qualified dividends compared to ordinary income.

Canada is another country with a tax distinction between domestic and foreign dividends. For Canadian taxpayers, dividends from foreign stocks are taxed the same as ordinary income. Only Canadian companies' dividends receive a lower tax rate because of a Dividend Tax Credit. The philosophy behind this provision is that personal taxation should be reduced because some tax was already paid at the corporate level. Taxpayers initially report grossed-up dividend amounts on an early line in their tax returns, and then on a later line they receive a dividend tax credit. In 2020, the top federal tax rate was 33% on ordinary income, and 24.81% on eligible Canadian dividends (see PwC Canada 2020).

### III. Desai and Dharmapala, 2011

Desai and Dharmapala (2011) is the first major academic journal article to examine the impact of JGTRRA on international portfolio decisions. They present a theoretical model which shows why JGTRRA should lead investors to re-allocate their international equity investments, increasing holdings in the treaty countries eligible for the lower dividend tax rate, and reducing holdings in the non-treaty countries. Their empirical results confirm that such re-allocations occurred, in aggregate.

Desai and Dharmapala's theoretical model is an open-economy version of the after-tax capital asset pricing model (CAPM) developed by Brennan (1970). Brennan's model, in turn, is derived from the basic CAPM of Sharpe (1964), Lintner (1965), and Mossin (1966).

Desai and Dharmapala assume that all U.S. investors have utility functions of the form:

$$U_{US} = E[\mathbf{Z}_{US}] - \frac{\gamma}{2W_{US}} \text{Var}[\mathbf{Z}_{US}]$$

where  $W_{US}$  is the initial endowment of wealth,  $\mathbf{Z}_{US}$  is the investor's wealth at the end of the second period, and  $\gamma$  is a risk aversion parameter. The  $US$  subscripts on  $W$  and  $\mathbf{Z}$  indicate investors resident in the United States.  $\mathbf{Z}$  is boldfaced to indicate it is a random variable.

In the first period, a representative investor chooses a portfolio allocation among three assets.  $T_{US}$  and  $N_{US}$  are the number of shares held in stock from treaty and nontreaty countries, respectively, and these have period 1 prices of  $p_T$  and  $p_N$ . After choosing the stock holdings, all remaining money is allocated to bonds. With the first-period bond price normalized to 1, the bond holdings  $B_{US}$  must be:

$$B_{US} = W_{US} - p_T T_{US} - p_N N_{US}$$

For the second period, the bonds pay a rate of return  $r$  and the stocks pay dividends of  $D_T$  and  $D_N$ , with these amounts all known in the first period. Second-period stock prices are  $\mathbf{P}_T$  and  $\mathbf{P}_N$ , boldfaced to indicate they are random variables, and also uppercase to further distinguish them from the first-period stock prices. These prices have expected values  $E[\mathbf{P}_T]$  and  $E[\mathbf{P}_N]$ , and variances  $\sigma_T^2$  and  $\sigma_N^2$ .

The first-period stock choices maximize the utility function shown above. The second-period ending wealth depends on the rates of return after paying taxes at rates  $t_{US}^T$  and  $t_{US}^N$  on treaty and nontreaty country dividends. All other taxes are assumed to be zero.

Desai and Dharmapala derive equations for equilibrium period 1 equity prices  $p_T^*$  and  $p_N^*$  which involve the capitalization of a global average of dividend tax rates weighted by wealth endowments. The magnitude of the price effect of JGTRRA depends on the wealth of U.S. investors relative to aggregate global wealth.

To test their model, Desai and Dharmapala obtain data from the U.S. government's Treasury International Capital (TIC) system. Bertaut, Griever, and Tryon (2006) note that the TIC system contains monthly and quarterly cross-border data including holdings of both short-term and long-term securities, reported by banks and broker-dealers. Although the financial press gives greatest attention to data on foreign holdings of U.S. securities, TIC also reports holdings of foreign securities by U.S. investors. Bertaut, Griever, and Tryon argue that the country attribution of the latter data should be extremely accurate. Desai and Dharmapala use data from three years (1994, 1997, 2001) prior to JGTRRA, and three years (2003, 2004, 2005) afterward, with 213 countries in the full sample. Consistent with their hypothesis, after JGTRRA foreign equity holdings rose in the treaty countries and fell in the non-treaty countries.

In econometric tests using the full sample, the effect of JGTRRA on U.S. foreign portfolio investment is positive and statistically significant at the 1% level. Restricting the sample to observations where stock return indices are available (38 treaty countries and 11 nontreaty countries), the coefficient estimate is similar although slightly less significant (at the 5% level). Adding control variables (ratio of stock market value traded to GDP, stock market turnover ratio, ratio of financial deposits to GDP, exports and imports as percentages of GDP, and the corporate tax rate) restores the significance to the 1% level.

#### IV. Amiram and Frank, 2016

Amiram and Frank (2016) is another major journal article which examines the effects of dividend taxes on foreign equity portfolio holdings. This study examines both the 2003 JGTRRA in the U.S., and the 2005 elimination of “full imputation” systems in Finland and France. For both policy changes, Amiram and Frank consider the indirect effects on foreign investors, as well as the direct effects on domestic investors explored by Desai and Dharmapala (2011).

The Amiram and Frank hypothesis about JGTRRA proceeds as follows. U.S. investors increase their demand for U.S. equities because of the lower tax rate on dividends. This drives up equity prices, lowering future pre-tax returns. Foreign investors who already own U.S. equities will sell some of their holdings, because their after-tax returns are now lower. The prediction is that foreign investors reduce their allocations to the U.S. after JGTRRA.

Before 2005, domestic taxpayers in Finland and France received tax credits to offset taxes already paid at the corporate level before earnings were paid out as dividends. Those tax credits were removed in 2005, affecting domestic investors but not foreign investors. Faced with a tax increase (in contrast to the tax decrease described in the previous paragraph), Finnish and French investors reduce their demand for domestic securities. This drives down equity prices, increasing future pre-tax returns. Foreign investors are attracted by the higher return, so they should increase their allocations to Finland and France.

Amiram and Frank’s capital market equilibrium model is an extension of Guenther and Sansing (2010), which is in turn an extension of Brennan (1970). There are three representative investors (denoted by  $i$ ), three firms (denoted by  $k$ ), and three countries. Each investor has an initial wealth endowment  $E_{i0}$  and a negative exponential utility function:

$$U_i = -e^{-\gamma_i E_{i1}}$$

where  $\gamma_i$  is a risk aversion parameter, and end-of-period wealth  $E_{i1}$  is normally distributed with mean  $\lambda$  and variance  $\theta^2$ . Each investor buys  $x_i$  shares in the first country,  $y_i$  shares in the second country, and  $z_i$  shares in the third country, choosing quantities to maximize expected utility. The share prices are  $P_x$ ,  $P_y$ , and  $P_z$ . Amiram and Frank go on to derive demand functions, market clearing conditions, and comparative statics.

The results show that the equilibrium holdings of investor  $i$  in equity  $k$  are negatively related to their dividend tax rate on that equity (the direct effect), and positively related to the weighted average of worldwide investors’ dividend tax rates in country  $k$  (the indirect effect).

Data on foreign portfolio investments are obtained from the Coordinated Portfolio Investment Survey (CPIS) website of the International Monetary Fund. The first CPIS included 29 countries in 1997. By 2001, participation expanded to 73 countries, with each reporting holdings in about 240 countries. International tax data affecting dividends are obtained from the OECD and the International Bureau of Fiscal Documentation, an independent non-profit foundation based in Amsterdam. Among the 73 CPIS countries, many do not have tax information, so the final sample consists of 28 countries. All 28 are JGTRRA treaty countries so it would not be possible to replicate the Desai and Dharmapala tests on this sample.

The empirical tests involve a difference-in-differences (DID) research design. This methodology uses data from a treatment group and a control group, from a time period before the treatment and a second time period after the treatment. Bertrand, Duflo, and Mullainathan (2004) provide further discussion of the DID method.

Amiram and Frank estimate similar models on the two policy changes. For the 2005 elimination of the imputation systems in Finland and France, two variables are  $ELIMINATE_i$  for the investments of country  $i$  in Finland and France, and the indicator value  $POST05$  which is 0 for 2004 and 1 for 2005. Of greatest interest is the estimated coefficient on the interaction term computed from the product of those variables. As predicted by their hypothesis, the 0.112 coefficient estimate is indeed positive, and it is significant at the 1% level. This confirms that Finland and France experienced an increase in inbound foreign investment, relative to the inbound investment in other countries.

For the 2003 tax rate cut on dividends in the U.S., two variables are  $US_i$  for the investments of country  $i$  in the U.S., and the indicator value,  $POST03$ , which is 0 for 2002 and 1 for 2003. Like above, the interaction term is the product of those variables. Again as predicted by their hypothesis, the coefficient on the interaction term,  $US * POST03$ , is negative (-0.058) and significant at the 1% level. Thus the US experienced a decrease in inbound foreign investment, relative to other countries.

#### V. Other Academic Research

The two articles discussed in Sections III and IV are the most comprehensive studies about dividend taxation and international investment. This section outlines five additional articles in the topic area.

##### 1. Möhlmann, 2013

In all models discussed in previous sections, investors are influenced solely by the amount of taxes, regardless of whether those taxes are collected by the investor’s home country or by a foreign country. Möhlmann (2013) shows that investors prefer to avoid taxes levied by foreign tax collectors. In a laboratory experiment, participants

constructed portfolios choosing among five domestic stocks and ten foreign stocks. Participants increased their domestic stock proportions when a greater proportion of tax was allocated to the foreign countries. Möhlmann interprets these results as providing a new explanation for “home bias,” the phenomenon that investors’ portfolios are overweighted in stocks from their home countries (see Lewis 1999).

## **2. Lee, 2017**

Lee (2017) examines how portfolio decisions were affected by the JGTRRA change in dividend taxation. The emphasis is on domestic investments, with little explicit consideration of the amounts of foreign equity holdings. A further focus is on dividend clientele effects, the notion that investors in the highest tax brackets avoid securities with the highest dividend yields. The phrase “dividend clientele” was introduced by Miller and Modigliani (1961). Subsequent studies of dividend clienteles include Miller (1977), Miller and Scholes (1978), and Litzenberger and Ramaswamy (1979, 1980).

Data are obtained from the Public Use Tax File which contains detailed information from U.S. personal income tax returns for every year since 1960. Lee uses data from 1999-2006 to study the years immediately before and after JGTRRA. The National Bureau of Economic Research’s TAXSIM program is used to calculate marginal tax rates.

Lee’s model is an after-tax CAPM based on Brennan (1970). Households maximize expected utility by choosing optimal holdings in two types of stocks, one with qualified dividends and the other with ordinary dividends. The result is that a household with a greater tax rate differential between ordinary and qualified dividends will invest a greater proportion in stocks paying qualified dividends.

The key results from the empirical tests are that the estimated coefficient on tax rate differentials is negative ( $\beta_1 = -0.040$ ) and significant at the 1% level, and the estimated coefficient on the interaction term between the tax rate differentials and the post-treatment dummy variable is positive ( $\beta_4 = 0.028$ ) and significant at the 5% level. Of those two estimates, the first confirms the existence of dividend clienteles, and the second shows that households became less sensitive to the difference between dividends and capital gains after JGTRRA.

## **3. Mishra and Anwar, 2017**

Like the studies from Sections III and IV, Mishra and Anwar (2017) examine the influence of taxation on foreign portfolio equity holdings, but in their study it is capital gains rather than dividends that are being taxed. They develop a model amenable to empirical estimation by two alternative techniques. The first technique is dynamic panel estimation based on two studies, Arellano and Bover (1995) and Blundell and Bond (1998). The second technique is Least Squares Dummy Variable Corrected (LSDVC) estimation, originated by Nickell (1981) and extended by Kiviet (1995).

Cross-border equity data are obtained for 23 countries over 2001-2011, from the IMF’s Coordinated Portfolio Investment Survey (which is also used by Amiram and Frank, see Section IV). Tax data are obtained from several sources including Ernst & Young, PricewaterhouseCoopers, and the OECD.

The study finds that capital gains taxes have a negative and statistically significant impact on foreign portfolio equity holdings. On average, a 1 percentage point increase in the capital gains tax rate leads to a 0.018% decrease in foreign equity holdings.

## **4. Kenchington, 2019**

The two studies reviewed in Sections III and IV focus on allocating proportions invested in foreign and domestic stocks. In contrast, Kenchington (2019) is primarily interested in short-run stock price reactions. All three studies examine responses to the 2003 dividend tax cuts from JGTRRA. Based on the Desai and Dharmapala (2011) models, Kenchington predicts that the U.S. tax cut will reduce the tax penalty for high-dividend firms in treaty countries, and thus their stock prices should rise.

The research methodology is an event study, a technique with a long history in finance research beginning with the Fama, Fisher, Jensen, and Roll (1969) study of stock splits. In every event study, it is crucial to ascertain when news of the event became publicly known. Auerbach and Hassett (2007) identify eight event windows preceding the passage of JGTRRA. Kenchington narrows this down to a single window, May 21-28, 2003, when investors first learned that the dividend tax cut would also apply to treaty countries.

Foreign stock returns, dividend yields, and market values are obtained from Compustat Global. The sample contains 6,722 treaty firms, with a large proportion from Canada, France, Germany, Japan, and the United Kingdom. Firms are divided into quartiles based on dividend yield. The top quartile is defined as high-dividend, and the bottom quartile (including zero-dividend stocks) is defined as low-dividend. The two middle quartiles are combined to be the medium-dividend group.

Supporting Kenchington’s prediction, for treaty country firms there is a significant positive relation between abnormal returns and dividend yields during the event window. Using a Europe/Asia market return, there is a 1.04% difference between the cumulative abnormal returns (CARs) of the high- and low-dividend portfolios, and this is

significant at the 1% level. Using a global market return to determine the CARs somewhat reduces the difference (0.81%) and the significance (5% level).

Multivariate analyses show that the association between dividend yield and CAR is stronger for larger firms. This is expected because the smallest firms, which Kenchington calls microcaps, have more limited capital market integration, as suggested by Fama and French (2012). A firm is a microcap if its market value is below the 20<sup>th</sup> percentile of NYSE firms.

### 5. Runger, 2021

Runger (2021) examines how taxation influences individual stock ownership in Europe. Like the U.S., in many European countries the personal tax rate on interest from bonds is higher than the rates on dividends and capital gains. However, this is more than offset by corporate taxation when interest payments are tax-deductible and dividends are not. Thus, considering all taxes, individuals face a tax penalty on equity investments.

Runger defines the personal equity tax penalty  $\theta$  as

$$\theta = \frac{\tau_i - \tau_e}{1 - \tau_i}$$

where  $\tau_e$  is the tax rate on equity investment and  $\tau_i$  is the tax rate on bond interest. The equity tax rate  $\tau_e$  depends on corporate taxes, dividends and capital gains taxes, and the firm-specific dividend payout ratio.

The hypothesis is that individual stock ownership in a firm will be lower, the higher is the personal equity tax penalty  $\theta$ . This is supported from a multitude of tax changes in 20 European countries over 2001 to 2015. Financial data on 9,055 firms are obtained from the Osiris database of Bureau van Dijk. Tax data are obtained from the European Tax Handbook published by the International Bureau of Fiscal Documentation.

The  $\theta$  tax penalty values are calculated for each of the 20 countries in each of the 15 years. Median values are -0.1250 for long-term investments and -0.1964 for short-term investments. Across the entire sample, 22.31% of stock shares are owned by individuals. In countries (and years) with a long-term tax penalty larger than the median, 19.43% of shares are owned by individuals. When the long-term penalty is smaller than the median, 24.93% of shares are owned by individuals. A difference in means test shows that this 5.5 percentage point difference is significant at the 1% level. A larger difference, 7.85%, is obtained when the sample is divided based on the short-term investment penalty.

Regression tests further confirm the relation between tax penalty and individual ownership. The coefficient estimate implies that a one-standard-deviation (0.1760) increase in the long-term tax penalty will decrease individual stock ownership by 0.53 percentage points. The effect is larger for short-term investments.

Besides the analysis across 20 countries, the author also considers a single event in her home country of Austria. Before 2012, individual investors in Austria did not pay any tax on long-term capital gains. Starting in 2012, the tax rate was 25%, thus increasing the equity tax penalty. A difference-in-differences research design, with Germany as the control, shows that individual stock ownership in Austria decreased by 10.25 percentage points relative to Germany.

## VI. Implications for Future Research

Studies discussed in previous sections provide compelling evidence that taxation affects international investment decisions. Nevertheless, it is difficult for an individual investor to use this research for determining their asset allocations. General equilibrium conditions from the research may not inform decisions of any one particular investor. And the complexity of the theoretical models is a further barrier to implementation.

We believe that a simpler approach will give useful guidance to individual investors. Our continuing research is adapting the Markowitz (1952, 1959) framework to show risk and return of international diversification. Financial planners and investment advisors have some familiarity with the Markowitz approach, as it is taught in every college and university business program.

## VII. Conclusion

Tax policies affect investment decisions. This study focusses on one particular component, the taxation of dividend income that investors receive from owning equity securities. Furthermore, the focus is on international investment decisions about allocations between domestic and foreign stocks. In the United States, the reduction in dividend tax rates from the Jobs and Growth Tax Relief Reconciliation Act (JGTRRA) of 2003 provides a natural experiment.

Two academic studies are highlighted. Desai and Dharmapala (2011) find that JGTRRA produced substantial portfolio reallocation by U.S. investors toward equities in countries eligible for the lower tax rate. Amiram and Frank (2016) find both direct and indirect effects. Five other studies are outlined.

Our continuing research will guide individual investors in their asset allocation decisions. A simpler approach, based on the traditional Markowitz models, will be easier to interpret.

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