Investor Taxation in Open Economies

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Abstract

Despite the rise of foreign portfolio investment (FPI) as a dominant international capital flow, existing international tax policy norms are largely focused on the taxation of FDI. This paper proposes a new principle - global portfolio neutrality (GPN) - for assessing the efficiency of tax policy towards FPI. With respect to outbound FPI, GPN entails imposing the same tax rate on domestic and foreign investment income. With respect to inbound FPI, GPN entails imposing the same tax rate on foreign portfolio investors that they face at home. Unlike existing principles of international taxation that address FDI and worldwide welfare, GPN explicitly addresses national welfare maximization and is derived from a framework that emphasizes risk considerations and portfolio diversification as central motivations for FPI. This principle is violated in practice frequently, particularly with respect to tax-exempt entities. Possible remedies are proposed including reciprocal recognition of tax-exempt status and the implementation of refundable or tradable foreign tax credits. The utility of GPN is reinforced by exploring the legitimate role of the combination of withholding taxes and tax treaties in responding to various forms of tax evasion that employ FPI.

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I. Introduction

In recent years, the world has experienced an unprecedented degree of global financial integration. At the same time, the legal and economic form of international capital flows has undergone a transformation. For decades, the dominant vehicle for capital flows between countries was the acquisition of controlling stakes by multinational firms – known as foreign direct investment (FDI). Accordingly, much attention has been paid to the consequences of FDI on host and home economies and to the appropriate tax policy towards these flows. In the last decade, the overwhelming attention to FDI appears to be in tension with the increasing dominance of an alternative form of investment - foreign portfolio investment (FPI) – which involves the acquisitions of non-controlling stakes in foreign companies by individual and institutional investors.[1] In the late 1970s, FDI constituted over eighty percent of the foreign exposure of American investors and debt instruments constituted nearly eighty percent of the outbound FPI of American investors. As depicted in Figure 1, these ratios have changed dramatically over the last two decades. Over this period, FPI has become the dominant vehicle for foreign exposure and equity instruments now constitute nearly eighty percent of FPI.

Despite the increasing importance of FPI, the principles of international taxation that guide scholars and policymakers were developed in this earlier era.[2] In particular, the notions of capital export neutrality (CEN), national neutrality (NN) and capital import neutrality (CIN) were extremely influential and emerged as guiding lights for taxing capital income in open economies.[3]

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[1] Unlike FDI, FPI typically involves the acquisition of only a small interest in the foreign issuer of the security. Under US tax rules (see IRC § 902), the ownership of over 10% of the stock of a foreign corporation is classified as FDI, while ownership of less than 10% is classified as FPI. In practice, however, FDI typically involves much higher levels of ownership than the 10% threshold (often 100% ownership), while FPI typically involves much lower levels of ownership than the 10% threshold.

[2] See e.g. Michael J. Graetz "The David R. Tillinghast Lecture: Taxing International Income – Inadequate Principles, Outdated Concepts, and Unsatisfactory Policies" 54 *Tax Law Review* 261 (2001). While there has been little analysis by tax policy scholars of these changed realities, an important exception is Michael J. Graetz and Itai Grinberg "Taxing International Portfolio Income" 56 Tax L. Rev. 537 (2003), which is discussed below.

[3] This framework was originally developed in Peggy Brewer Richman *Taxation of Foreign Investment Income: An Economic Analysis*, Johns Hopkins Press, Baltimore (1963) and Peggy Musgrave *United States Taxation of Foreign Investment Income: Issues and Arguments*, Cambridge MA: International Tax Program, Harvard Law School (1969). CEN is the doctrine that the income generated by international investment should be taxed at the same rate regardless of investment location. For example, under CEN, a US-based multinational firm should face the same tax rate whether it builds a factory in the US or in Canada. A system of worldwide taxation with unlimited foreign tax credits satisfies CEN, since then foreign and domestic investments are all effectively subject to the same (home country) tax rate, and firms that maximize after-tax returns under such a system thereby also maximize pretax returns. The principle of CEN was developed with the intention of promotes global welfare, rather than the welfare of any individual country. In contrast, NN is the doctrine that foreign investment income should be subject to home

Each of these principles seeks to establish a norm of "neutrality," under which international taxation is structured so that the decisions of firms undertaking international investment mimic as closely as possible along some relevant dimension those decisions that they would have made in the absence of taxes. These norms have recently come under criticism for failing to capture much of what is central to multinational investment decisions. New efficiency benchmarks - capital ownership neutrality (CON) and national ownership neutrality (NON) – have been proposed, placing productivity differences among multinational owners, and the transfers of control induced by tax rules, in the foreground in analyzing the efficiency of tax policy towards multinational firms.[4] These newer principles, however, are also primarily preoccupied with designing the appropriate taxation of multinational firms.

This paper develops a new framework to analyze policies employed by countries to tax the growing amounts of income generated by foreign portfolio investment. This approach emphasizes risk considerations and portfolio diversification, and is based on the after-tax capital asset pricing model (CAPM).[5] The after-tax CAPM approach is particularly germane for a globally integrated capital market given the benefits of risk reduction available through global portfolio diversification.[6] The framework presented below demonstrates that taxes and diversification

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country taxation with only a deduction for foreign taxes paid. The idea behind NN is that home countries promote their own welfare by subjecting foreign income to double taxation, thereby discouraging all but the most productive foreign investments, and retaining investment capital for use at home. Finally, CIN emphasizes that investment income should be taxed at the same rate regardless of the residence of the investor. Pure source-based taxation is consistent with CIN, as long as individual income tax rates are harmonized to ensure that the combined tax burden on saving and investment does not differ among investors residing in different countries.

[4] See Mihir A. Desai and James R. Hines, Jr. "Evaluating International Tax Reform" 56 *National Tax Journal* 487 (2003).

[5] This approach was first developed by Michael J. Brennan "Taxes, Market Valuation and Corporate Financial Policy" 23 *National Tax Journal* 417 (1970), building on the capital asset pricing model (CAPM) of William F. Sharpe "Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk" 19 *Journal of Finance* 425 (1964). However, it has to date had little impact on discussions of tax policy.

[6] The benefits of global portfolio diversification arise because movements in the economies and stock markets of different countries are not perfectly correlated – see e.g. Kenneth French and James M. Poterba "Investor Diversification and International Equity Markets" 81 *American Economic Review Papers and Proceedings* 222 (1991). It is only in very recent times, however, that investors have begun to avail themselves of these diversification opportunities. This failure of investors to take full advantage of global diversification opportunities is sometimes labeled the puzzle of the "home bias." While significant, the bias towards home country assets appears to have declined substantially in recent years – see e.g. Dhammika Dharmapala "The Impact of Taxes on Dividends and Capital Structure: Lessons from the 2000's" in Alan D. Viard (ed.) *Tax Policy Lessons from the 2000's*, Washington, DC: American Enterprise Press, forthcoming. Marcela Meirelles Aurelio "Going Global: The Changing Pattern of US Investment Abroad" *Federal Reserve Bank of Kanses City Economic Review*, 3rd Quarter (2006), available at www.KansasCityFed.org, documents the growth of US equity FPI and argues that this growth has been particularly concentrated in those countries that offer more risk diversification opportunities. A series of recent studies have also argued that the early literature on home bias may have exaggerated the extent of the

benefits interact to determine portfolio choices and market equilibria. The central distinction between this approach and the underlying logic of existing tax policy norms is that diversification benefits and the portfolio choice problem are placed in the foreground. This emphasis stands in contrast to the marginal investor model, which undergirds much intuition in this arena, but does not emphasize risk considerations. In addition to the emphasis on risk, this paper emphasizes the maximization of national welfare, rather than worldwide welfare.

The emphasis on risk and national welfare leads to a new principle of tax policy – global portfolio neutrality (GPN). In essence, GPN requires symmetry between the tax rates on domestic and foreign income earned by domestic residents. Tax asymmetries create incentives for investors to engage in more risk-taking (or equivalently, less portfolio diversification) than is optimal from the perspective of national welfare. Hence, moving towards symmetry will generally increase national welfare. In practice, violations of GPN arise from a variety of sources, including the existence of tax-exempt investors who are subject to foreign withholding taxes but not to domestic taxation, and partial attempts at integrating corporate and personal taxes that treat domestic dividends more favorably than foreign-source dividends. Empirical evidence on responses to such asymmetries suggests that the resulting portfolio distortions from asymmetries are likely to be large in magnitude.[7] GPN also points towards various means for correcting these asymmetries, including the implementation of refundable foreign tax credits and the reciprocal recognition of tax-exempt status.

Superficially, GPN appears to resemble the traditional international tax policy norms of CEN and CIN noted earlier. However, GPN is derived assuming that the relevant objective is to maximize *national* welfare, whereas these other norms seek to maximize *global* welfare. In this sense, GPN is more robust in its sphere of application because the real-world policymaking process is more likely to prioritize national rather than global welfare. Second, these norms were originally proposed in a world in which cross-border investment flows primarily took the form of

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phenomenon. For instance, Bong-Chan Kho, René M. Stulz and Francis E. Warnock. "Financial Globalization, Governance, and the Evolution of the Home Bias" NBER Working Paper 12389, available at http://www.nber.org/papers/w12389, argue that many foreign firms are characterized by large amounts of insider ownership (by controlling shareholders). The amount of equity available for US portfolio investors to hold is thus limited to the remaining traded shares. Taking this consideration into account reduces the measured extent of home bias (although the phenomenon does not disappear even under this approach).

[7] See Mihir A. Desai & Dhammika Dharmapala, *Taxes and Portfolio Choice: Evidence from JGTRRA's Treatment of International Dividends* (National Bureau of Economic Research Working Paper No. 13281), *available at* http://www.nber.org/papers/w13281.

FDI, whereas GPN is intended to apply to portfolio flows. Finally, GPN is derived from an explicit analysis of the efficiency costs of distortions to portfolio choices for risk-averse investors, whereas risk plays no role in traditional tax policy norms.

GPN would be most straightforwardly satisfied by a system of pure residence-based taxation, in which investors are taxed only by their home countries (and where the same rates and rules apply to both foreign and domestic income). In reality, however, withholding taxes imposed by source country governments are widespread. This raises the question of why these departures from residence-based taxation occur and how policy makers should respond to these departures.

The framework presented in this paper provides a number of explanations for the presence of source-based taxation. For instance, countries may enjoy some degree of market power because they offer foreign investors a unique set of risk characteristics, or because their legal systems make them particularly suitable locations for corporate residence. Perhaps most importantly, residence-based taxation may allow for evasion by investors of home-country taxes on income from foreign investments. Source-based withholding taxes can be used to deter evasion.[8] The nature of such source-based taxation likely depends on the characteristics of the economies as countries that are symmetric in some respects may agree on provisions that asymmetric pairs of countries would not. As described below, responding to two distinct types of evasion requires residence based taxes to be supplemented with a network of source-based withholding taxes that are implemented unilaterally by countries and then selectively reduced by bilateral tax treaties.

These considerations suggest that source-based withholding taxes can play a legitimate role in international taxation. While pure residence-based taxation would be ideal in a perfect world, in an imperfect world in which evasion is potentially widespread, it is important to consider how policy makers should respond to the presence of source-based taxation. The norm of GPN illustrates that the virtues of residence-based taxation can be replicated in a world of withholding taxes by combining foreign tax credits with reforms such as the implementation of

[8] See e.g. Reuven Avi Yonah "The Structure of International Taxation: A Proposal for Simplification" 74 *Texas L. R.* 1302 (1995-1996), and Julie A. Roin *Can Income from Capital be Taxed? An International Perspective*, in TAXING CAPITAL INCOME 211 (Henry J. Aaron, Leonard E. Burman and C. Eugene Steuerle eds., Urban Institute Press, Washington DC, 2007).

refundable foreign tax credits and the reciprocal recognition of tax-exempt status in treaties. These reforms eliminate tax asymmetries and portfolio distortions thereby enhancing national welfare.

There has been relatively little discussion of FPI among scholars of tax policy. Graetz and Grinberg were the first to draw attention to this oversight and have put forward the most comprehensive proposal to adapt international tax rules to these new realities.[9] They begin by emphasizing that the taxation of FPI has no consequences for the location of "real" investment – for instance, where factories end up being built – and that the identity of a corporation's portfolio investors has no impact on the productivity of its assets (unlike in the case of FDI). While acknowledging portfolio diversification motives, they downplay the efficiency costs associated with portfolio distortions. Consequently, they view revenue and fairness considerations as paramount, and recommend a switch from tax credits to deductions for foreign taxes paid. While Graetz and Grinberg concede that this reform would lead to reduced levels of US FPI, they maintain that this outcome would enhance US national welfare via revenue gains without adverse efficiency consequences. GPN recommends a very different policy outcome by highlighting that efficiency costs are indeed relevant for FPI under national welfare considerations. As discussed below, reasonable assumptions also suggest that revenue considerations may be very limited in the case of FPI, further vitiating the case for deductions rather than FTCs.

Graetz and Grinberg view their deduction system as a means for achieving a purely residence-based system, which they (and many other commentators) view as optimal. Specifically, Graetz and Grinberg expect that their proposed reform, if undertaken by the US, would induce other countries to abolish their withholding taxes on US investors, leading ultimately to a residence-based system. Given the desirability of this outcome, proposing a norm such as GPN that recommends, for example, full refundability of FTCs may seem curious. However, as argued earlier, withholding taxes may serve important and legitimate functions within the international tax system. In particular, this paper develops arguments for why, in a world where evasion is potentially widespread, withholding taxes and tax treaties may be necessary and why, consequently, there is a need for a norm that explains how national policies

[9] Graetz andGrinberg *supra* note 2.

should be formulated in their presence.[10] By emphasizing the distinctive underlying motivations for FPI, GPN demonstrates why countries, pursuing their own national interest, may choose to implement withholding taxes, selectively reduce them through tax treaties, and provide tax credits for foreign withholding taxes. In addition to explaining these current realities, GPN suggests a number of relatively simple policies that can further advance national welfare.

Section II of the paper provides a brief review of the policies employed by countries in taxing foreign portfolio income. Section III develops the analytical framework, contrasting the after-tax CAPM approach with the more traditional marginal investor approach. Section IV derives the principle of GPN and elaborates its application in various settings. Section V discusses motivations for why countries may impose source-based taxes on inbound FPI and then elaborates the implications of GPN in a world where source-based taxes are meaningful.Section VI concludes.

II. The Tax Treatment of FPI

This section provides a brief overview of the tax treatment of income generated by FPI. This description is not by any means comprehensive, but is intended simply to establish the main features of the relevant tax landscape in order to set the stage for the analysis developed below. The summary distinguishes between the rules governing a typical outbound investor (an individual resident in the US who earns foreign investment income) and the rules governing a typical inbound investor (a foreign resident individual who earns US investment income), and considers three categories of income – interest, dividends, and capital gains. The most important general lesson is that differences between investors' home country tax status – for instance, whether they are taxable or tax-exempt under the rules prevailing in their home country – and their tax status in the foreign countries where they earn income create the potential for conflicting treatment of a given taxpayer by different governments. Table 1 summarizes the discussion that follows.

Table 1: Tax Rates on Domestic and Foreign Investment Income

[10] Graetz and Grinberg *supra* note 2 acknowledge (and indeed emphasize) the importance of the problem of evasion in the context of FPI. However, they stress information reporting, rather than withholding taxes, as a solution.

	Tax Rates	Taxable Investor		Tax-Exempt Investor	
		Domestic Investment	Foreign Investment	Domestic Investment	Foreign Investment
Capital Return	Interest	35%	35%	0%	0%
	Capital Gain	15%	15%	0%	0%
	Dividend	15%	15%+WT - FTC	0%	0%+WT

Consider first the case of a US resident who is taxable, and is in the highest tax bracket (currently 35%). Assume that she buys bonds issued by a firm domiciled abroad, and receives $100 of interest income. As a general matter, governments assert the right to tax income generated within their borders, and so may impose withholding taxes on payments to foreigners. A withholding tax is imposed at a flat rate on the gross (rather than net) income paid to a foreign person. It is required to be withheld at source by the firm or other party making the payment (hence the term "withholding" tax). However, withholding taxes on interest are now uncommon,[11] so the US investor will typically not face any withholding tax imposed by the foreign government, and only face the 35% tax imposed by the US.

Now suppose that this same US resident buys shares in a foreign firm and receives $100 of dividend income. Typically, the foreign government will impose a withholding tax on this dividend income. Thus, in the example with the US investor, the foreign government will require the corporation that is paying the $100 dividend to remit the withholding tax to it. Withholding tax rates vary across countries, but typically range from 30% (in countries that do not have tax treaties with the US) to 15% or lower (in countries that have tax treaties with the US).[12] In addition to paying the foreign country's withholding tax, the investor would be taxed at 15% by the US.[13] However, the US generally provides a foreign tax credit (FTC) for taxes paid to foreign

[11] See e.g. Graetz and Grinberg *supra* note 8 at 541.
[12] *See, e.g.*, Raymond F. Wacker, *US Taxation of International Dividends Under JGTRRA*, 30 INT'L TAX J. 19, 23-24 (2004).
[13] Note that the 15% rate was established under the 2003 tax reform. Previously, dividend income was taxed at the usual ordinary rate (i.e. the same rate as wage or interest income).

governments.[14] Thus, for instance, if the foreign country imposes a 10% withholding tax, she would pay only an additional $5 in US tax once the FTC is taken into account.[15] The stock in the foreign corporation would also typically generate capital gains income for the US investor. As a general matter, the foreign government would not attempt to tax these capital gains, which would be taxed only by the US (currently at a rate of 15%). Typically, the withholding tax rates range from 15% or less for treaty countries to 30% for nontreaty countries.

The preceding discussion focuses on a taxable top-bracket US investor. A substantial fraction of US FPI, however, is undertaken by tax-exempt investors, such as individuals investing through pension funds, or by charitable foundations or university endowments.[16] These entities are tax-exempt only under US tax law; generally, foreign governments do not confer tax-exempt status on them. Thus, a tax-exempt US investor would pay the foreign withholding tax on dividends, even though it is otherwise not subject to taxes. Moreover, because the investor is tax-exempt in the US, the FTC is not applicable; the tax-exempt entity has no US tax liability against which to offset all or part of the foreign withholding tax (and the FTC is generally not refundable).

Now consider a foreign investor who buys bonds issued by a US corporation. The US imposes no withholding tax on interest paid by US parties to foreigners.[17] However, the foreign investor's home country will typically tax interest income from abroad. For example, if the investor resides in a country that imposes a 25% tax on interest income, then she will pay $25 tax to her home government. If she had instead bought stock in a US firm, she would receive dividends and capital gains rather than interest. The US generally imposes withholding taxes on dividends paid by US corporations to foreigners. Of course, the foreign investor also faces home country taxes, with (in general) a FTC for taxes paid to the US. Like other countries, the US generally does not tax the capital gains of foreigners.[18] Thus, the foreign investor faces only her

[14] Revenue Act of 1918, Ch. 18, § 222(a)(1). Note, however, that the FTC is limited to the amount of US tax liability on the foreign income – see Revenue Act of 1921, Ch. 136, § 222(a)(5).
[15] The $100 dividend would (in this example) result in $10 being remitted to the foreign government and $90 being paid to the US investor. The US investor would have $100 of pretax income, on which the US tax liability would be $15. However, the US would allow a FTC of $10, leaving an additional tax liability of $5.
[16] In 2006, over half of the equity owned by US investors was held by or through these types of tax-favored entities - see Clemens Sialm "Tax Changes and Asset Pricing" *American Economic Review*, forthcoming, available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=472226.
[17] IRC §§ 871(h), 881.
[18] There is an exception to this generalization in the case of real estate. The Foreign Investment in Real

home country's capital gains tax. For a foreign investor who is tax-exempt at home (such as a foreign person investing through a pension fund based in her home country), the situation is analogous to that for a US tax-exempt entity.

As is clear from the preceding discussion, the potential for conflicting treatment of the same investor by different governments arises primarily in the case of dividends, because dividend withholding taxes are common. Thus, although the general principles developed below apply to the taxation of all international investment income, the examples will focus on the case of dividends.

While the preceding gives a general assessment of the nature of the source taxes imposed via the network of bilateral tax treaties, Appendix Table 1 provides details for the worldwide treaty network of the United States in 2009. The three columns capture the major provisions of income tax treaties as they relate to dividends, interest and royalties. Several patterns emerge from this description. First, the coverage of the network is broad but not exhaustive. Major destinations for capital flows and technology – such as Argentina, Brazil, Hong Kong, Singapore and Taiwan – are absent from the treaty network as are many tax havens. Second, treaties are not changed frequently. Of the fifty-six treaties, only 13 have been signed in the last decade and the average age of the treaty is over twenty years old. And, more recent treaties do not appear to differ substantially from older treaties in terms of the rate structure. As such, the U.S. tax treaty network does not appear to be shaped definitively by tax competition or changes in fiscal policy around the world or at home. Said another way, the tax treaty network appears to be addressing dynamics that is fairly fundamental.

Third, the rates vary differentially across the types of income. For royalties, rates vary often by industry, suggesting the use of tax treaties to favor specific industries or sectors. For interest, the 0% rate is fairly common, particularly for large developed economies. Finally, and most interesting for these purposes, the dividend tax rate varies across countries only to a limited degree and ownership stakes are used to discriminate between dividend flows. Dividend tax rates are more limited when control is likely to be present and a tiering of tax rates based on

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Property Tax Act of 1980 (FIRPTA) requires foreign investors in US real estate to pay U.S. income tax on the net capital gains derived from the disposition of US real property (IRC § 897) – see e.g. Richard Kaplan, *Creeping Xenophobia and the Taxation of Foreign-Owned Real Estate*, 71 GEORGETOWN L. J. 1091 (1983). However, FIRPTA is generally not directly relevant to the discussion here, which focuses on equity and debt FPI.

presumed control is the modal manner of taxing dividends. Accordingly, a reasonable theory of taxation in open economies should address why dividend flows are typically treated differentially based on an ownership stake.

III. A Framework for Analyzing Investor Behavior in Open Economies

Understanding the impact of taxation on the behavior of investors in a globally integrated world economy requires a theory that explains both how investors make portfolio choices (i.e. choose which assets to hold, and in what proportions) and how these individual portfolio choices are aggregated into a market equilibrium (i.e. how the prices of assets are determined). This theory must accommodate a complex reality in which tax rates differ both across investors and across types of returns to capital. The default theory employed in analyzing these questions for tax policy is the marginal investor approach, which emphasizes the maximization of after-tax returns by investors. This approach is outlined and then contrasted with an alternative framework – based on the after-tax CAPM approach – that emphasizes the role of risk and diversification in the determination of portfolio choices. These two approaches are contrasted using a graphical representation that is adapted to the portfolio choice setting from the analysis of consumer choice.

III.1 The Marginal Investor Approach

The traditional marginal investor approach to analyzing investor behavior and market equilibrium in this type of setting can be illustrated by the standard treatment of municipal bonds.[19] Interest on bonds issued by US state and local governments is exempt from US Federal tax,[20] whereas interest paid on other bonds (such as those issued by corporations) is generally taxable. Suppose that US corporations issue bonds that pay a riskless pretax interest rate of 10%. As do many US local governments, Yoknapatawpha County, MS, issues bonds to finance new school construction. Both these types of bonds are issued in a market with two categories of investors – US residents and Hong Kong residents. US residents face a 35% tax rate on interest from US corporate bonds (and hence a 6.5% aftertax rate of return) and a zero tax rate on interest

[19] See, for instance, Myron Scholes, Mark Wolfson, Merle Erickson, Edward Maydew and Terry Shevlin *Taxes and Business Strategy: A Planning Approach*, Pearson Prentice Hall, 3rd ed. (2005) at 130.
[20] IRC § 103.

from Yoknapatawpha County's bonds. Hong Kong residents face a zero tax rate on interest from both types of bonds.[21]

In determining the equilibrium rates of return that are possible in this situation, there are two relevant scenarios. In the first case, Hong Kong investors are marginal, meaning that they hold both types of bonds; since their return on corporate bonds is 10%, this implies that Yoknapatawpha County's bonds must also offer a 10% interest rate (so that Hong Kong investors are indifferent between the two types of bonds). Consequently, US investors face a choice between a 6.5% aftertax return on corporate bonds and a 10% aftertax return on Yoknapatawpha County bonds, and so will only hold the latter.

Alternatively, US investors may be marginal. Since their aftertax return on corporate bonds is 6.5%, this implies that Yoknapatawpha County's bonds must offer a 6.5% interest rate (so that US investors are indifferent between the two types of bonds). Hong Kong investors face a choice between a 10% aftertax return on corporate bonds and a 6.5% aftertax return on Yoknapatawpha County bonds, and so will only hold the former.

As this simple example illustrates, the marginal investor approach predicts extreme specialization by investors. Even in the case of the marginal investor, who is indifferent between assets, the theory is silent on what factors determine the investor's actual portfolio choice. The other stark prediction of the marginal investor approach is that security prices and asset returns depend critically on the identity of the marginal investor. For instance, in the second scenario, the return from Yoknapatawpha County bonds reflects the 35% tax rate faced by the marginal investor (who is resident in the US), and is unaffected by the tax treatment of Hong Kong investors. If the government of Hong Kong were to increase its tax rate on its residents from zero to 10%, there would be no effect on asset prices in the second scenario.

The marginal investor approach is ubiquitous in the study of taxation, but it suffers from several drawbacks. First, risk is assumed to play little to no role in the portfolio choices of investors.[22] Second, the extreme specialization predicted by the marginal investor model is not

[21] The assumption here is that the government of Hong Kong imposes a zero tax rate on its residents. As discussed earlier, the US withholding tax on interest income is zero.

[22] To some degree, risk can be incorporated implicitly by restricting comparisons to alternative assets, sometimes referred to as "benchmark assets," belonging to a similar risk class. See e.g. Knoll "Taxation and the Competitiveness of Sovereign Wealth Funds" *supra* note 13; while this is framed as an analysis of sovereign wealth

typically observed in the real world, especially in the case of equities. In an open economy setting, where there are considerably greater opportunities for diversification and risk mitigation, these points are correspondingly more important.

III.2 The Portfolio Choice Problem

In order to further consider the merits of the marginal investor approach and the primary alternative, consider the following example. Suppose that there are two countries, the US and foreign country F. In each country, there is a resident corporation. For now, assume that share prices are given at $10/share for each firm. At the end of the period under consideration, each firm pays a riskless dividend of $5/share but the share price at the end of the period is uncertain. This uncertainty is captured by the stark assumption that there are only two possible states of the world: in State I, the US firm's shares are worth $15/share and the F firm's shares are worth zero. In state II, the opposite is true the US firm's shares are worth nothing and the F firm's shares are worth $15.[23] Each state of the world is assumed to be equally likely.

Consider a US investor who has wealth of $100 that she is allocating between the two risky investments. She can buy a total of 10 shares, but must decide how to allocate this investment across the two firms. To frame the portfolio problem facing this investor, it is useful to construct a diagrammatic representation of this problem that parallels the typical consumer choice problem.[24] In this setting, the two axes are not quantities of two goods but wealth in the two states of the world that may arise in the next period. As such, the typical budget line is replaced with one which represents the set of possibilities that are attainable with different portfolio allocations. Figure 2 depicts the consequences of her portfolio choice for her wealth at the end of the period. The vertical axis represents her wealth in State I and the horizontal axis her wealth in State II. The line AB represents her wealth constraint,[25] analogous to the budget line in the typical consumer choice problem. If she invests exclusively in the US firm, she does well in

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funds, it in fact provides a general framework for analyzing the taxation of portfolio investment, using a marginal investor approach. However, this framework provides little guidance for understanding how investors make portfolio decisions about assets that have significantly different risk characteristics.

[23] The assumption in the example is stark: the two stocks are perfectly negatively correlated. The conclusions, however, are similar as long as the two stocks are somewhat imperfectly correlated as then diversification motives are operative. The problem also generalizes to the case of non-stochastic dividends.

[24] A textbook treatment of the consumer choice problem is provided by Robert S. Pindyck and Daniel L. Rubinfeld *Microeconomics*, Pearson Prentice-Hall, 6th ed. (2005) at 63.

[25] The analysis here does not allow for borrowing or short sales. Borrowing would enable the investor to extend the end points of the wealth constraint outwards in each direction.

State I (with wealth of $200, consisting of $50 in dividends and a value of $150 for her 10 US shares) but poorly in State II (with wealth of only $50, consisting only of the dividends). This outcome is represented by point A. Point B represents the opposite extreme, where she invests only in firm F (and so does well in state II and poorly in state I). Non-extreme points represent interior solutions to the portfolio problem (where she holds some of each asset). Note that at any point along the line AB, her expected wealth is the same ($125);[26] however, the amount of risk she bears varies.

Prior to the introduction of a representation of the investor's risk preferences, it is useful to consider how taxes change this wealth constraint. In Figure 3, the line CD represents the constraint under a symmetric tax on dividends at a rate of 20% (now, for instance, the maximum after-tax wealth attainable in State I is $190). Line AD depicts the wealth constraint when there is an asymmetric tax of 20% on foreign dividends, but no tax on US dividends. Line CB depicts the opposite case of an asymmetric tax of 20% on US dividends, but no tax on foreign dividends. Symmetric taxes result in a parallel shift of the wealth constraint, while asymmetric taxes lead to a pivoting of the wealth constraint.

III.2.1 Portfolio Choices in the Marginal Investor Model

In order to derive the investor's portfolio choice, it is necessary to combine the wealth constraint with a representation of her preferences over wealth in each possible state of the world. These preferences can be represented using "indifference curves," each of which links a set of outcomes among which the investor is indifferent. Thus, the investor is indifferent between any two points that lie along a given indifference curve.[27] As discussed above, marginal investor models do not consider risk. In the setting of these risky assets, that is equivalent to assuming that the investor is risk-neutral. That is, she cares only about her expected wealth and is not concerned with the resolution of the underlying uncertainty. This assumption of risk-neutrality corresponds to set of linear indifference curves, as depicted in Figure 4, much as the assumption of perfect substitutability of goods corresponds to linear indifference curves in the consumer setting.

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[26] Let x be the number of US share she buys (so that $(10 - x)$ is the number of foreign shares she buys). Recall that each state of the world occurs with probability ½, so her expected wealth is given by the expression:
$\frac{1}{2}[15x + 5x] + \frac{1}{2}[15(10 - x) + 5(10 - x)] = \$125$ (regardless of her choice of x).

[27] See Pindyck and Rubinfeld *Microeconomics*, *supra* note 33 at 69.

Given these indifference curves, there are three possible outcomes, depending on the applicable tax regime. Obviously, the investor prefers more wealth to less in each state of the world, and so will choose a portfolio that lies on the highest attainable indifference curve. Under a symmetric tax (as in line CD) or no tax (as in line AB) the portfolio choice will be indeterminate. With an asymmetric tax on foreign dividends only (as in line AD), she will choose point A and only buy US stock. Similarly, with an asymmetric tax on US dividends only (as in line CB), she will choose point B and only buy foreign stock. Thus, risk-neutrality in combination with differential taxes leads to the extreme portfolio allocation that is characteristic of the marginal investor approach.

III.2.2 Portfolio Choices in the After-tax CAPM Model

The extreme specialization of portfolios depicted above contradicts observed patterns in the real world. A more realistic depiction of portfolio choice emphasizes the risk inherent in portfolio choice by considering the case of a risk-averse investor. This approach, known as the after-tax capital asset pricing model (CAPM), has been studied in the theoretical literature in economics and finance for decades, but has to date had limited impact on discussions of tax policy.[28]

With risk-averse investors, the indifference curves, as represented in Figure 5, have the shape that is familiar from the analysis of consumer choice. The curved shape represents the investor's preference for outcomes in which wealth is evenly distributed across states of the world, relative to "feast or famine" outcomes where wealth is high in one state but low in the other. This shape implies that wealth in the two states of the world are not perfect substitutes,

[28] This approach was first developed by Michael J. Brennan "Taxes, Market Valuation and Corporate Financial Policy" 23 *National Tax Journal* 417 (1970), building on the capital asset pricing model (CAPM) of William F. Sharpe "Capital Asset Prices: A Theory of Market Equilibrium Under Conditions of Risk" 19 *Journal of Finance* 425 (1964) and others. The after-tax CAPM framework was subsequently developed by Gordon, R. H. and D. F. Bradford (1980) "Taxation and the Stock Market Valuation of Capital Gains and Dividends" *Journal of Public Economics*, 14, 109-136, David Guenther and Richard Sansing "The Effect of Tax-Exempt Investors and Risk on Stock Ownership and Expected Returns" Working paper, available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=883627, Bond, S. R., M. P. Devereux and A. Klemm (2007a) "The Effects of Dividend Taxes on Equity Prices: A Re-examination of the 1997 UK Tax Reform" Oxford University Centre for Business Taxation Working Paper 0701 (2007), available at: http://www.sbs.ox.ac.uk/Tax/publications/working+papers/Working+Paper+07+01.htm, and Mihir A. Desai and Dhammika Dharmapala "Dividend Taxes and International Portfolio Choice" Working paper, available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1000680.

and that the risk-averse investor must be compensated for bearing risk in the form of a higher expected wealth.

As Figure 5 illustrates, the portfolio choice is now quite different from that in the marginal investor model. First, interior solutions of mixed portfolios are the rule rather than the exception, as assets provide diversification benefits. For instance, when the wealth constraint is AB, the investor will choose a portfolio that lies on the 45 degree line. Here, risk is eliminated as the investor's wealth is the same regardless of which state of the world eventuates. Second, the introduction of differential taxation does not lead to extreme portfolio choices, specialization, and clienteles. Instead, differential taxes reduce the relative value of securities but taxes are not the exclusive consideration in portfolio choice as diversification remains valuable. Figure 5 shows that the introduction of differential taxes on the investor (such that the wealth constraint is AD) would lead her to choose a portfolio that would include more US stock than it otherwise would as US dividends are taxed more lightly; notably, she does not completely abandon foreign stocks, as she achieves a balance between the tax advantage of US stock and the diversification benefits of foreign holdings.

III. 3. Equilibrium in the Alternative Models

The after-tax CAPM model differs from marginal investor models along two dimensions. First, as described above, interior solutions will be the rule rather than exception, with and without taxes. Second, the introduction of taxes will lead to different market outcomes. In marginal investor models, investors typically specialize in particular assets, so all that matters is the tax that is faced by the marginal investor; if that tax changes, then prices will necessarily change. Notably, the aggregation of individual demand curves is generally not required in order to determine the effects of taxes on market prices. In contrast, an after-tax CAPM framework with risk-averse investors is characterized by the relevance of the average tax rate faced by all investors as market equilibrium is determined in a more traditional manner.

In order to see this, drop the initial assumption that the prices of stocks are fixed, and instead consider how these prices are determined in the market equilibrium. Suppose that, in addition to the US investor whose behavior has already been discussed, there is an investor resident in country F with similar risk-averse preferences. The wealth constraint for the US

investor drawn in Figure 2 is based on the assumed structure of share prices. Varying the price of the US stock while holding the prices of other assets, the investor's wealth, and taxes all fixed leads to shifts in the wealth constraint, and to corresponding changes in the US investor's optimal holdings of US stock. This traces out the US investor's demand curve for US stock – how many shares of the asset she would buy at each feasible price. An analogous demand curve can be drawn for the foreign. These demand curves are shown in the left panel of Figure 6. In this example, the foreign investor is depicted as being wealthier and so her individual demand curve lies to the right of that of the US investor. These individual demand curves are aggregated in the right panel of Figure 6 to represent the global demand for US stocks (denoted D^G). This aggregation sums the demand of the US investor and the foreign investor at each feasible price. The supply of US stock is assumed to be fixed (at S^{US}). The market equilibrium and price for the U.S. firm's shares then are given by the intersection between D^G and S^{US}.

What happens if the US government now introduces a tax on US dividend income earned by the US investor? Assuming nothing else changes, this tax would induce the US investor to hold more foreign stock and less US stock, shifting her demand curve for US stock downwards to the dashed line depicted in the left panel of Figure 6. This shift would be reflected in the aggregate global demand for US stock. The magnitude of the shift in D^G will, in relative terms, be smaller because only one of the two investors is affected by the tax change. As the foreign investor is assumed to be wealthier, the tax rate faced by the foreign investor (on US dividend income) will be relatively more important in determining the equilibrium price than will the tax rate faced by the US investor.

This process of aggregating market demand stands in contracts to the predictions of the marginal investor approach where the price is affected only by the tax rate of the marginal investor. In contrast, when risk-averse investors make portfolio decisions about risky assets, the dividend taxes faced by *all* investors matter. In particular, in a simple formulation of the after-tax CAPM framework, the price of the US stock will depend on a weighted average of the tax rates faced by all investors (US and foreign) who have the ability to buy this asset. The weights are given by each investor's wealth, relative to the aggregate wealth of all investors. Algebraically, the equilibrium price will depend on the expression:

$$\bar{t}_{US} = \frac{t_{US}^{US} W_{US} + t_{US}^{F} W_F}{W_{US} + W_F} \qquad (1)$$

where $\bar{t}_{US}$ is the weighted average tax rate on dividends paid by the US firm, t_{US}^{US} is the tax rate on US dividends faced by the US investor, t_{US}^{F} is the tax rate on US dividends faced by the foreign investor, W_{US} is the wealth of the US investor, and W_F is the wealth of the foreign investor.[29]

This logic appears to stand in contrast to the idea that prices are determined at the margin. Why does the after-tax CAPM framework lead to a role for the *average* tax rate in the determination of asset prices? In this framework, *every* investor is marginal, in the sense of being indifferent among all available assets given the tax and risk environment that she faces. Consider what happens if the US firm were to issue an additional share of stock. Each investor would be equally likely to buy the newly issued stock, conditional on her wealth. This is the relevant margin on which the price of the stock is determined and entails taking account of all investors' tax characteristics.

While the simple example described here only considers two countries, the real world of course consists of many countries. Moreover, for most if not all countries, the wealth of their residents is small relative to aggregate global wealth. Thus, a policy implication that flows from this approach is that, in a setting with globally integrated financial markets, governments generally have only a limited capacity to influence domestic firms' stock prices and cost of equity capital through their taxation of domestic residents. When a government reduces the dividend tax that it imposes on its residents, the impact on the price of domestic firms depends on the wealth of domestic residents relative to aggregate global wealth. Typically, the effect will

[29] To establish this, consider the very simple case of linear demand curves in Figure 5:

$$N_{US}^{US} = W_{US}[G_{US} + (1 - t_{US}^{US})X_{US} - P_{US}]$$
$$N_{US}^{F} = W_F[G_{US} + (1 - t_{US}^{F})X_{US} - P_{US}]$$

where N_{US}^{US} is the demand for US stock by the US investor, N_{US}^{F} is the demand for US stock by the foreign investor, G_{US} is the expected future increase in the value of the US stock, X_{US} is the dividend paid by the US firm, and P_{US} is the price of US stock. Aggregate global demand for US stock is given by the sum $N_{US}^{US} + N_{US}^{F}$. Equating this sum to the fixed supply of US stock, and rearranging to find the equilibrium P_{US}yields an expression for P_{US} that depends on the average tax rate defined in Equation (1).

thus be small. Moreover, to the extent that there is any effect, it will be dispersed around the world and increase the prices of foreign as well as domestic firms.[30]

The after-tax CAPM model outlined here has several advantages over other approaches, especially in the international setting. First, the extreme specialization predicted by marginal investor models does not typically characterize individual portfolios. Instead, taxes interact with diversification benefits to produce mixed portfolios. Second, abstracting from risk in portfolio choice problems misses a critical aspect of the underlying problem. Finally, the transition to an open economy setting introduces important additional diversification benefits and the introduction of investor bases that are very large relative to a domestic set of investors. In the open-economy setting, this model has some striking implications for tax policy. In particular, under reasonable assumptions, and in a setting where global financial markets are integrated, it implies that dividend taxes imposed on domestic investors will have little impact on domestic firms' cost of capital. In these circumstances, the primary efficiency issue relates to portfolio diversification benefits. Accordingly, the after-tax CAPM serves as the foundation for devising optimal tax policy rules for outbound and inbound FPI in the subsequent sections.

IV. Global Portfolio Neutrality

The central lesson that emerges from the application of the after-tax CAPM to the international portfolio choice setting is that asymmetries in the taxation of domestic and foreign asset returns lead to inefficiencies that have real welfare consequences. These distortions suggest a novel welfare benchmark – global portfolio neutrality – that entails correcting various current asymmetries in the taxation of foreign and domestic asset returns in order to advance national welfare.

IV.1. The Inefficiency of Portfolio Distortions and the Principle of GPN

As argued in Section III, the taxation of domestic investors has limited effects on the price of domestic assets in a small open economy. This does not imply that the taxation of

[30] The extent to which this conclusion can be applied to the US is ultimately an empirical question. However, it would be a reasonable presumption that even US investors' wealth is small in relation to global wealth. This is especially so because what is relevant here is only the wealth of *taxable* investors; a large fraction of US stock market wealth is held by or through tax-exempt entities such as pension funds, university endowments and foundations. Provide rough estimate of US wealth as fraction of global wealth?????

domestic investors has no efficiency consequences. As is well understood, the general level of taxation of investment returns will affect domestic residents' incentives to save. In addition, *differences* in how the returns from different kinds of assets are taxed will influence domestic residents' portfolio choices. Because of the diversification consequences of changed portfolio choices, tax-induced changes in portfolio composition can have important efficiency implications.

To illustrate this point, recall the example in Section III, and consider a wealth constraint such as the line AD depicted in Figure 5. This represents a situation in which the US investor faces an asymmetric tax regime. Assume in particular that a 50% tax is imposed by the US on dividends received from abroad, while no tax is imposed on US dividends. As argued in Section III, this tax asymmetry will in general induce the investor to tilt her portfolio towards the tax-favored asset (US stock), without completely abandoning the tax-disfavored asset (F stock). For concreteness, suppose that the investor chooses a portfolio where she buys 8 shares of the US firm and 2 shares of the F firm.

How can this outcome be evaluated from the standpoint of maximizing the national welfare of the US?[31] For now, assume that there are no withholding taxes imposed by the government of country F. A straightforward formulation of US national welfare would take into account three components: the expected end-of-period wealth of the US investor, the risk borne by the investor to attain that expected wealth, and the tax revenue collected by the US government.[32] Given the portfolio assumed above, the investor's wealth will be $165 in State I and $75 in State II, so her expected wealth is $120.[33] Tax revenue is $5 in each state of the

[31] The maximization of national welfare is the criterion favored by Graetz and Grinberg, *supra* note 8, and is adopted throughout this analysis.

[32] Tax revenue is relevant for national welfare because it can be used to finance government services that are valuable to US residents. An example of a specific formula for US national welfare is the sum of expected investor wealth and tax revenue, minus the variance of investor wealth. However, the policy conclusions do not depend on using this particular formula.

[33] This is calculated as follows. In State I, the 8 US shares are worth $120 ($15 each) and the 2 foreign shares are worth zero. In addition the investor receives $40 in US dividends ($5 per share), which are untaxed. She also receives $10 in foreign dividends, taxed at 50% (and so receives $5 after tax). In State II, the 8 US shares are worth zero, and the 2 foreign shares are worth $30($15 each). As in State I, the investor receives $40 in US dividends ($5 per share), which are untaxed, and $10 in foreign dividends, taxed at 50% (and so receives $5 after tax). The expected value of $120 is the mean of $165 and $75 (recalling that each state of the world occurs with probability ½).

world.[34] Thus, expected national welfare, is $125. However, this outcome is associated with substantial risk being borne by the investor given the variability in the investor's wealth across states of the world.

Now consider a tax reform that imposes the same 20% tax on both US and foreign dividends. This situation is depicted by the wealth constraint CD in Figure 5. As discussed in Section III, this tax regime will induce the investor to choose the same portfolio as when there are no taxes – i.e. to buy 5 shares in the US firm and 5 shares in the foreign firm. Given this portfolio, the investor's wealth will be $115 in either State I or State II, so her expected wealth is $115, with no associated uncertainty.[35] Tax revenue is $10 in each state of the world.[36] Expected national welfare is still $125, but there is now no risk given that the investor's wealth is identical in either state of the world. By definition, a risk averse US resident is better off obtaining the same expected payoff with a lower level of risk, so this reform clearly improves national welfare.[37]

Why does asymmetric taxation lead to a reduction in national welfare? The simple intuition is that it creates a divergence between the portfolio that is optimal from the investor's private perspective and the portfolio that is optimal from society's perspective. In particular, the investor cares about *after-tax* returns, while society cares about *pretax* returns. This is because the difference – i.e. the taxes paid by the US investor to the US government – are merely a transfer (rather than a loss) from the perspective of US national welfare. As the investor cares

[34] This is calculated as follows. The US government imposes a 50% tax on the US investor's foreign dividends. The US investor earns $10 of foreign dividends (pretax) in either state of the world, generating $5 of tax revenue.
[35] This is calculated as follows. In State I, the 5 US shares are worth $75 ($15 each) and the 5 foreign shares are worth zero. In addition the investor receives $25 in US dividends ($5 per share), which are taxed at 20% (so she receives $20 after tax and the government receives $5 of revenue). She also receives $25 in foreign dividends, taxed at 20% (and so receives $20 after tax, while the government receives $5). In State II, the 5 US shares are worth zero and the 5 foreign shares are worth $75 ($15 each). In addition the investor receives $25 in US dividends ($5 per share), which are taxed at 20% (so she receives $20 after tax and the government receives $5 of revenue). She also receives $25 in foreign dividends, taxed at 20% (and so receives $20 after tax, while the government receives $5).
[36] This is calculated as follows. The US government imposes a 20% tax on the US investor's dividends. The US investor earns $50 of dividends (pretax) in either state of the world, generating $10 of tax revenue.
[37] The arguments above assume that US residents value a dollar of personal wealth and a dollar of government services equally, but the logic of GPN does not require this. In particular, the argument holds even when a requirement of revenue-neutrality is imposed. Suppose that instead of taxing both types of dividend income at 20%, the US government taxes both types of dividend income at 10% (the corresponding wealth constraint would be parallel to CD and lie to its right). Then, tax revenue will be $5 in each state of the world (just as under the asymmetric tax), while the investor's wealth will be $120 in each state of the world. Thus, the government will raise the same amount of revenue, while the investor is unambiguously better off (in that she receives the same expected wealth with lower risk).

only about after-tax returns, however, she will tilt her portfolio towards tax-favored assets that offer a higher after-tax expected return. This is optimal from her point of view, because the greater risk associated with this unbalanced portfolio is offset by the higher expected after-tax return. From society's point of view, however, the pretax return is what matters, and there is no increase in pretax returns to offset the greater risk. Thus, the inefficiency of asymmetric taxation is that it induces a higher level of risk-taking by the investor than is socially optimal.[38] Indeed, her portfolio choice exposes society to greater risk than is needed to generate the expected value of the portfolio.

The general lesson from this example is that national welfare will generally be higher with symmetric taxes than with asymmetric taxes. Asymmetric taxes induce investors to bear risks they would not have borne otherwise - by holding more of the tax-favored asset than they otherwise would. This is individually rational but the taxes that the investor saves by switching to the tax-favored asset would have been a transfer to the government, rather than a loss to society. As a consequence, society does not benefit from the tax-induced shift in the investor's portfolio. Indeed, her portfolio choice exposes society to greater risk than is needed to generate the expected value of the portfolio. The tax policy prescription that follows is that governments should seek to impose the same tax rate on investment returns earned by their residents, whether these returns are generated at home or abroad – a principle of global portfolio neutrality (GPN) in taxation. Superficially, this prescription resembles the traditional international tax policy norms of CEN and CIN. These norms require that investors face the same tax rate wherever they invest or that the total tax burden on savings be equalized.

There are a number of important differences between GPN and these norms. First, GPN is derived assuming that the relevant objective is to maximize *national* welfare, whereas these other norms seek to maximize *global* welfare. In this sense, GPN is more robust in its sphere of application because the real-world policymaking process is more likely to prioritize national rather than global welfare.[39] Second, these norms were originally proposed in a world in which cross-border investment flows primarily took the form of FDI, whereas GPN is intended to apply

[38] This distortion is analogous to the one emphasized in the taxation of labor income where the asymmetric taxation of wage income and leisure leads to inefficiencies that can be corrected by *either* reducing the tax on wages or by imposing a corresponding tax on leisure.

[39] See e.g. Graetz and Grinberg, *supra* note 8. But, see Daniel N. Shaviro "Why Worldwide Welfare as a Normative Standard. in U.S. Tax Policy?" 60 Tax. Law Review 155 (2007).

to portfolio flows. Finally, GPN emphasizes a completely distinct mechanism from these other norms. GPN is derived from an explicit analysis of the efficiency costs of distortions to portfolio choices for risk-averse investors. In contrast, risk plays no role in traditional norms of efficiency. Said another way, traditional norms emphasize return equalization without incorporating either risk or the portfolio setting while GPN places the riskiness of returns at the heart of the efficiency discussion.

IV.2. Achieving GPN in the Presence of Foreign Taxes

The principle of GPN could easily be satisfied if all countries chose to implement residence based systems. The principal asymmetry that arises in the international setting arises, however, from the imposition of withholding taxes at source. These transfers across governments are irrelevant from a global welfare perspective, but they matter for national welfare. In particular, it may be argued that when the US tax system induces US residents to hold more US assets, this may create a portfolio distortion, but also reduces the amount of tax withheld from US residents by foreign governments. The latter effect represents a gain to US national welfare, because revenue that would previously have been collected by the foreign government is now collected by the US.

When considering withholding taxes, it is necessary to consider *both* withholding taxes on US investors by foreign governments and withholding taxes on foreign residents imposed by the US. Returning to our example of the asymmetric tax, assume that both the governments of the US and F impose a 10% withholding tax on dividends paid to foreigners (and allow a foreign tax credit for taxes paid to foreign governments).[40] Then, in the asymmetric tax scenario, 2 shares in the US firm are owned by F residents,[41] generating $1 in revenue for the US. This is exactly offset by $1 of withholding taxes imposed on the US investor by the government of F (on dividends paid on the 2 shares of F stock owned by the US investor). Moving to the symmetric tax, 5 US shares are owned by F residents, generating $2.50 in revenue for the US. Again, this is

[40] For countries that have tax treaties with the US, a common withholding tax rate (generally no higher than 15%) is typically imposed on dividend income flowing in either direction. *See, e.g.*, Raymond F. Wacker, *US Taxation of International Dividends Under JGTRRA*, 30 International Tax Journal 19 (2004). Thus, for most cross-border portfolio flows, the US imposes the same dividend withholding tax on foreign residents that the foreign residents' government imposes on US investors.

[41] Note that in the example, the world is assumed to consist only of two countries (the US and F), and any US shares not owned by US residents must necessarily be owned by residents of F. In a more realistic world of many countries, however, it will still be true that any US shares not owned by Americans must be owned by foreigners.

exactly offset by $2.50 of withholding taxes imposed on the US investor by the government of F. Thus, even when withholding taxes are imposed, moving from asymmetric to symmetric taxes will unambiguously increase US national welfare. The GPN principle will thus hold unless the withholding tax rate that the US can impose on foreigners is substantially lower than the withholding tax rate that foreign governments impose on US residents.[42]

The foregoing discussion is of particular relevance in analyzing the recent proposal of Graetz and Grinberg to reform the taxation of FPI.[43] As explained earlier, Graetz and Grinberg argue that the taxation of FPI has no consequences for the location of "real" investment – for instance, where factories end up being built – and that the identity of a corporation's portfolio investors has no impact on the productivity of its assets, unlike in the case of FDI. Thus, they argue for a policy of "national neutrality" with respect to FPI. This entails allowing US investors who engage in FPI a deduction (rather than a credit) for withholding taxes imposed by foreign governments on dividends paid out to US portfolio investors by foreign corporations. Graetz and Grinberg concede that this reform would lead to reduced outbound US FPI; however, while acknowledging the relevance of portfolio diversification motives for FPI, they downplay the efficiency consequences of distortions to portfolio choices.

To clarify the implications of this proposal, suppose that the US tax rate on dividends (both foreign and domestic) is 20%, and that both the US and F impose dividend withholding tax at 10% on foreigners. However, instead of allowing US residents a credit for withholding taxes paid to F, under the Graetz-Grinberg proposal the US would merely allow US residents to deduct the withholding taxes they pay to F. Thus, for instance, if the US investor is paid a (pretax) dividend of $1 by firm F, the government of F will withhold a tax of $0.10, so that only $0.90 is actually received by the US investor. Under a foreign tax credit regime, the US would impose a tax of $0.20, but allow a $0.10 credit for the tax paid to F. Under the Graetz-Grinberg proposal, on the other hand, the US would allow the investor to deduct the $0.10 tax paid to F, so that her

[42] It might seem that the relative size of countries would also matter to the applicability of GPN. However, it does not, at least to a first approximation. In the example, it is assumed that the US and F have exactly the same economic weight. Suppose instead that the US is 80% of the world economy – i.e. that US investors hold $160 in wealth and F investors hold only $40, and that the US firm issues 16 shares at a price of $10/share while the F firm issues 4 shares at $10/share. Then, when portfolios are perfectly diversified, US investors will hold 80% of US stock and 80% of F stock. Thus, 20% of US dividend income will be subject to foreign withholding taxes, while 80% of the F investor's dividend income will be subject to US withholding taxes. Cross-border dividend flows will still be equal in this scenario, and so will withholding tax revenue, unless there is a divergence in withholding tax rates.

[43] *Supra* note 2.

taxable dividend is $0.90, and impose a 20% tax (i.e. a tax of $0.18). Thus, the overall tax rate on foreign dividends is in effect 28% (as the US investor is left with $0.72 after all taxes from a pretax dividend of $1), whereas the tax rate on US dividends is 20%.

This situation can be represented diagrammatically by a pivoted wealth constraint such as AD in Figure 5. As shown earlier, this scenario is inefficient, in the sense that national welfare can be unambiguously increased by moving to a symmetric tax regime. In this case, a symmetric tax regime could be achieved by moving from the proposed deduction system to a foreign tax credit regime. This would reduce US government revenue, but (using the argument for the GPN principle above) national welfare would unambiguously increase. If revenue-neutrality is desired, the tax rate on dividends from *both* F and the US can be increased sufficiently to maintain the initial level of revenue, while eliminating the distortion to the investor's portfolio choice. Moving to an FTC regime would also not result in a transfer of revenue to the government of F: for each foreign share owned by the US investor, the F government collects $0.50 of revenue, regardless of whether the US allows a FTC or merely a deduction (the difference between these systems can be characterized as a transfer between the US government and the US investor, with the F government being unaffected). It is true that the US investor would end up holding more foreign stock under the FTC regime; however, the extra withholding tax revenue this generates for the F government is exactly offset by the extra withholding tax revenue earned by the US government from the correspondingly higher foreign holdings of US stock.

It has long been recognized under the traditional principles of international tax policy that global welfare is best served by allowing a FTC rather than merely a deduction for taxes paid to foreign governments. The analysis in this paper goes further and argues that allowing US investors only a deduction rather than a credit for foreign withholding taxes would reduce the *national* welfare of the US. This is because a deduction system creates higher effective tax rates on foreign relative to domestic dividends and hence distorts portfolio choices and, if the stock of domestic equity is approximately fixed, this would be accompanied by no revenue loss. The principle of GPN developed here thus entails a FTC rather than a deduction. This conclusion would be modified only if the US were for some reason forced to impose withholding taxes on foreigners at rates much lower than those imposed by foreign governments on US residents. Then, the negative tax revenue consequences of US FPI would have to be traded off against the

positive diversification benefits. Even in these circumstances, however, the Graetz-Grinberg proposal to allow only a deduction for foreign taxes would not be optimal; rather, national welfare would be maximized by a partial credit.

IV.3 Assumptions and Caveats

It is worth underscoring the most important assumptions that are implicit in the preceding discussion of GPN, along with some associated caveats. First, as has been emphasized above, this framework is only relevant to the extent that the economies of different countries exhibit imperfect correlation with each other. This assumption, however, appears consistent with the empirical evidence on the existence of international risk diversification opportunities, and the recent literature on the home bias suggests that investors are responding to an increasing extent to these opportunities. The growing integration of the world's financial markets has been accompanied by integration of real economic activity through, for instance, the activities of multinational firms. Such integration may ultimately result in the economies of different countries exhibiting greater correlation. However, the time when this process eliminates all international diversification benefits appears quite distant. Moreover, such an eventuality would vitiate the underlying premise of FPI – risk reduction through diversification.

Second, in the example developed above, corporate residence is assumed to correspond to real economic activity (in the sense that the representative US firm does not operate in country F, and *vice versa*). This assumption ensures that investing in a US firm entails substantive exposure to the US economy. In reality, of course, multinational firms operate across many countries – buying shares in General Electric provides exposure to much more than the US economy alone, and buying shares in Siemens to much more than the German economy alone. Such firms provide exposure to an entire slice of the world's economy rather than simply to their country of residence. However, as long as not all firms operate in all countries to the same degree (a situation that is quite far removed from current realities, despite the growth of multinational activity), some diversification benefits from FPI will remain.[44]

[44] There is a literature premised on the idea that investing in domestic multinational firms can provide investors with some degree of foreign exposure – see e.g. Mihir A. Desai and Dhammika Dharmapala "Taxes, Institutions, and Foreign Diversification Opportunities" 93 *Journal of Public Economics* 703 (2009). However, this does not vitiate the diversification benefits of FPI as long as multinational firms' operations do not precisely mirror the global economy.

Third, it is assumed that the aggregate amount of equity capital in the U.S. is fixed by economic fundamentals such as investment opportunities. Under this assumption, when a policy shift towards tax symmetry induces US investors to hold more foreign stock, the US capital stock does not decline; instead, its ownership merely shifts towards foreigners, so that portfolio reallocations occur without changing the amount of equity investment in a country.[45] If this assumption were not fully satisfied, then achieving GPN would entail a cost in terms of lower real investment (which would have to be balanced against considerations of portfolio efficiency). The key issue here is whether the price of US equity would fall when US investors sell some of their domestic holdings to foreigners (thereby increasing the cost of capital for US firms and inducing them to undertake less real investment). This would clearly not be the case as long as US investors' wealth is sufficiently small relative to global wealth.

Fourth, this analysis assumes that transferring a dollar from a government to its citizens happens at zero social cost. In particular, suppose that a government initially imposes high taxes on its residents' foreign-source income. Achieving symmetry by reducing the tax on foreign income will entail a revenue cost. While symmetry will achieve GPN, tapping alternative sources of revenue will entail some other efficiency cost. For example, the tax rate on domestic investment income could be increased to achieve symmetry, but the higher overall tax rate on investment income may discourage savings. Alternatively, the revenue loss could be made up by higher taxes on wage income, but this may discourage labor supply and effort on the part of workers. These types of inefficiencies would have to be balanced against the benefits of portfolio diversification. Note, however, that most governments have access to sources of revenue, such as the value-added tax (VAT), that economists typically view as being highly efficient relative to taxes on dividend income. Even so, using these alternative revenue sources may affect the distribution of income, and these effects must also be factored into the decision.

Fifth, it is assumed that there are no strategic interactions between countries, as would be true if all economies can be conceptualized as small open economies. Traditionally, the US has

[45] This logic resembles that implicit in the CON/NON framework (see Desai and Hines, *supra* note **???**). In the FDI setting, this assumption corresponds either to the idea of reallocations of ownership with no change in investment or with the complementarity of domestic and foreign investment by multinational firms. In the FPI setting, complementarity is not a possibility but it is more feasible that there are other factors which fix the amount of equity investment in an economy.

been viewed as a large country and a leader in the international arena.[46] However, today's economic realities have led commentators to suggest that all countries (including the US) can most usefully be viewed as small, open economies.[47] In this setting, strategic interactions are thus of limited relevance.

Finally, the previous discussion argues that national welfare will generally be promoted by unilaterally neutralizing (at least in part) the withholding taxes levied by foreign governments. Recall that the reason is that withholding taxes serve as a barrier to domestic individuals' access to foreign diversification opportunities. However, there are a variety of other characteristics of foreign economies and foreign government policies that influence the return and risk from FPI. Most obviously, foreign governments levy corporate taxes on firms that operate within their borders. Moreover, foreign governments' levels of infrastructure investment affect the returns that their firms will earn.

Does GPN imply seeking to neutralize foreign corporate taxes or inadequate foreign infrastructure, in addition to foreign withholding taxes? There are both practical and conceptual differences between the former and the latter. At the practical level, withholding taxes can be readily observed and their effects straightforwardly analyzed, whereas the impact of corporate taxes and infrastructure development is less clear, and their neutralization less feasible. The framework in Section III also suggests a conceptual distinction. It is well-known that corporate taxes and infrastructure development lead to changes in real investment, whereas a withholding tax imposed by a small open economy generally does not affect the cost of capital faced by its firms (and so does not affect real investment).[48] For example, if the UK imposes a (small) withholding tax on US investors, this will leave real economic activity in the UK largely unaffected, but will hinder US individuals' access to British diversification opportunities. Since these opportunities already exist, a US policy of neutralizing British withholding taxes on Americans is quite different in character from a policy of seeking to increase the number of

[46] For instance, Roger Gordon "Can Capital Income Taxes Survive in Open Economies?" 47 *Journal of Finance* 1159 emphasizes the possibility of tax policies that are guided by leader-follower dynamics in the presence of a large capital exporting country.

[47] For example, James R. Hines, Jr. and Lawrence H. Summers "How Globalization Affects Tax Design" NBER Working Paper 14664, available at http://www.nber.org/papers/w14664, argues that: "Globalization means that in some sense all countries are becoming smaller." (at 1).

[48] Note, however, that this is the case only if the withholding tax does not exceed foreign investors' home country tax rates. Also, the average level of dividend taxation around the world will affect firms' cost of capital.

factories in the UK (through, for instance, subsidies to British firms to offset the UK corporate tax, or to the British government to encourage infrastructure development).

IV.4 Remedying Tax Asymmetries to Achieve GPN

While the example used above is only a stylized illustration, asymmetries in the taxation of cross-border dividends often arise in practice. This section briefly outlines some of the most important types of circumstances in which portfolio distortions may arise and where the GPN principle may be violated. Various policy alternatives to correct these inefficiencies are then discussed.

The most widespread examples of portfolio inefficiencies arise due to the presence of investors who are taxed at preferential rates at home, most notably tax-exempt investors. Consider a US tax-exempt or tax-favored entity such as a pension fund, university endowment, or charitable foundation. If this entity invests part of its portfolio in a foreign country that imposes a withholding tax on dividends paid to US shareholders, then the entity will face a zero tax rate on US dividends and a positive tax rate on foreign dividends. This gives rise to a pivoted wealth constraint similar to the line AD in Figure 5. As discussed above, this situation gives rise to a distortion in the tax-exempt entity's portfolio choices that violates GPN. Given the large amount of wealth managed by tax-exempt entities, and the importance of these funds to the retirement security and well-being of large numbers of ordinary people, the potential costs of such distortions are sizable.

There are a number of potential solutions to the problem created by domestic tax preferences for certain investors. Most obviously, the universal abolition of withholding taxes would solve this distortion and the resulting transition to universal residence based system would correct all asymmetries. A less drastic solution that would correct asymmetries for tax-exempts is the reciprocal recognition of tax-exempt status. For instance, the US could grant tax-exempt status to Canadian pension funds in exchange for Canada granting tax-exempt status to US pension funds. Such reciprocity could be feasibly implemented through modifications to tax

treaties. Indeed, a regime of reciprocal exemption of sovereign entities from withholding taxes already exists to a significant degree through the principle of sovereign immunity.[49]

While the reciprocal recognition of tax-exempt status requires international coordination through tax treaties, there are other ways in which governments can eliminate these portfolio distortions unilaterally, and the principle of GPN suggests that doing so would raise national welfare. For instance, modifying the FTC so that it becomes refundable would eliminate this distortion; a US pension fund would effectively be reimbursed for the withholding taxes that it pays to foreign governments. Of course, this would entail a revenue cost to the US government. From the perspective of national welfare, this revenue cost is primarily a transfer to the beneficiaries of the tax-exempt entities,[50] while the elimination of the portfolio distortion raises national welfare. A less explicit but economically similar approach would be to allow the FTC to become tradable – i.e. to allow US pension funds to sell the right to use their foreign tax payments to other parties (such as US corporations or individuals) with sufficient tax liability.[51]

To some extent, taxpayers have devised a self-help solution through cross-border dividend-stripping transactions that effectively involve the sale of FTC's. In essence, the idea is the following. Suppose a US pension fund holds stock in a dividend-paying Dutch corporation, but wishes to avoid the withholding tax on foreigners imposed by the Netherlands. Immediately prior to the ex-dividend date (on which shareholders qualify to receive a dividend), it sells its Dutch shares to a taxable US entity, and then buys the stock back shortly afterwards. The taxable

[49] This principle is given effect in the US by IRC §892. Sovereign wealth funds – i.e. government-owned investment vehicles – have grown rapidly in recent years. For discussions of the appropriate tax treatment of these funds, see Victor Fleischer, *Should We Tax Sovereign Wealth Funds?*, 118 YALE L.J. POCKET PART 93 (2008), http://thepocketpart.org/2008/11/17/ fleischer.html, Mihir A. Desai & Dhammika Dharmapala, *Taxing the Bandit Kings*, 118 Yale L.J. Pocket Part 98 (2008), http://thepocketpart.org/2008/11/17/desaidharmapala.html, Victor Fleischer, *A Theory of Taxing Sovereign Wealth*, 84 N. Y. U. L. Rev. (forthcoming 2009), available at http://papers.ssrn.com/pape.tar?abstract_id=1234410, Ruth Mason *Efficient Management of the Wealth of Nations* (Tax Notes, forthcoming), available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1242447, and Michael S. Knoll "Taxation and the Competitiveness of Sovereign Wealth Funds: Do Taxes Encourage Sovereign Wealth Funds to Invest in the United States?" U. of Penn., Inst. for Law & Econ. Research Paper No. 08-28 (2008), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1291878.

[50] However, this redistribution may raise concerns about fairness, if for instance the savers whose funds these institutions manage are wealthier than the rest of the US population. This concern can be addressed by combining the refundability of the FTC with a general increase in the overall progressivity of the income tax system, in such a way the combination of the two reforms maintains the same after-tax income distribution as prevailed originally. This "distribution-neutral" approach to analyzing policy reforms is developed at length in Louis D. Kaplow *The Theory of Taxation and Public Economics*, Princeton University Press (2008).

[51] This would be somewhat analogous to the current operation of the Low-Income Housing Tax Credit (LIHTC) – see Mihir A. Desai, Dhammika Dharmapala, and Monica Singhal "Investable Tax Credits: The Case of the Low-Income Housing Tax Credit" NBER Working Paper #14149 (2008).

US entity becomes the "shareholder of record" for the dividend, and bears the Dutch withholding tax. However, assuming it has sufficient US tax liability, it is indifferent to the Dutch tax because it is offset by the US FTC. This transaction effectively permits the pension fund to avoid the Dutch withholding tax and so reduces the portfolio distortion that would otherwise exist, without imposing significant risk on either party because the transactions are virtually instantaneous.

Cross-border dividend stripping transactions have attracted considerable attention as a result of the *Compaq*[52] case, in which the Fifth Circuit reversed a lower court decision and upheld the foreign tax credits claimed by Compaq as a result of such a transaction. Subsequently, however, Congress enacted a rule requiring a 15-day unhedged holding period for stocks in order for the holder to be eligible for a FTC.[53] Clearly, as presumably intended by Congress, this imposes considerable risk on the party seeking to buy FTCs, making it difficult for US tax-exempt entities to find counterparties for the sale of their foreign tax liabilities. The analysis above suggests that partially repealing this provision and creating a safe harbor for cross-border dividend-stripping transactions between tax-exempt and taxable US entities may promote national welfare by enabling more efficient portfolio allocation by US tax-exempt entities.[54] It is

[52] *Compaq Computer Corp. v. Commissioner*, 277 F. 3d 778 (5th Cir. 2001). Briefly, the facts are the following. On September 16, 1992, Compaq bought 10 million shares of a Dutch corporation, Royal Dutch Shell, for $887.5 million. Compaq held these shares for only about an hour, but thereby became the "shareholder of record" for Shell's October 1992 dividend (i.e. ownership for the purposes of receiving that dividend was determined during the brief interval in which Compaq was the owner; this entitled Compaq to receive a dividend of $22.5 million). Shortly afterwards, Compaq sold all its Shell shares for $868.4 million. Compaq also incurred $1.4 million in fees and other costs. The Netherlands imposes a 15% withholding tax on dividends paid to foreigners, so when the $22.5 million dividend was paid to Compaq, $3.4 million was withheld by Shell and paid to the Dutch government (with the remaining $19.1 million being received by Compaq). Compaq owed about $7.9 million in US tax on the dividend (35% of $22.5 million). However, it received a foreign tax credit of $3.4 million for the tax paid to the Dutch government. In addition, Compaq suffered a capital loss of $20.5 million (taking into account fees and other costs as well as the decline in Shell's price). However, Compaq had a large amount of capital gains from other (unrelated) transactions in 1992, and so was able to deduct the entire $20.5 million capital loss against its capital gains. The case generated considerable interest among commentators – see e.g. Michael S. Knoll, "*Compaq* Redux: Implicit Taxes and the Question of Pre-Tax Profit" 26 Va. Tax Rev. 821 (2007), William A. Klein and Kirk J. Stark "*Compaq v. Commissioner* – Where is the Tax Arbitrage?" 94 *Tax Notes* (March 11, 2002) and Daniel N. Shaviro and David A. Weisbach "The Fifth Circuit Gets it Wrong in *Compaq v. Commissioner*" 94 *Tax Notes* (January 28, 2002).

[53] IRC § 901(k), which reads in part:
"In no event shall a credit be allowed under subsection (a) for any withholding tax on a dividend with respect to stock in a corporation if— **(i)** such stock is held by the recipient of the dividend for 15 days or less during the 31-day period beginning on the date which is 15 days before the date on which such share becomes ex-dividend with respect to such dividend, or **(ii)** to the extent that the recipient of the dividend is under an obligation (whether pursuant to a short sale or otherwise) to make related payments with respect to positions in substantially similar or related property."

[54] This would be somewhat analogous to the safe harbor leasing provisions introduced as part of the Economic Recovery Tax Act (ERTA) of 1981. This removed most obstacles for the transfer of tax benefits through leasing arrangements - see Alvin C. Warren, Jr. and Alan J. Auerbach "Transferability of Tax Incentives and the Fiction of

important, however, that similar transactions between taxable US entities and *non-US* entities, which would have the effect of draining funds from the US Treasury without offsetting gains to national welfare, be restricted.

Even with the effective prohibition of cross-border dividend stripping, it is (at least in theory) fairly straightforward for tax-exempt entities to use self-help to avoid foreign withholding taxes. In particular, derivative financial instruments such as a "total return equity swap" (TRES) offer exposure to a given foreign stock or portfolio of stocks, without the payment of withholding taxes. For example, suppose that a US pension fund wishes to include Royal Dutch Shell in its portfolio, without paying withholding taxes to the Netherlands. It would contract with a Dutch counterparty who buys Shell stock and pays the US pension fund the total returns. Dividends paid by Shell go to the Dutch counterparty, who (by virtue of being Dutch) is not subject to withholding tax by the Netherlands. Ordinarily, of course, she would be liable for regular Dutch taxes on these dividends. However, because she pays these dividends to the US pension fund as part of the total return from Shell, they are deductible as a business expense. Thus, the Dutch counterparty's taxable income consists only of the fee paid by the US pension fund. The Dutch withholding tax is thus easily avoided, and the US pension fund's portfolio decisions are not distorted.[55]

If equity swaps are the routine vehicle for tax-exempt entities to hold foreign stock, then the portfolio distortions discussed above would be rather less important.[56] However, it should be borne in mind that even when equity swaps are widely available, the fees and associated transactions costs may act as an implicit "tax" on entities that wish to use them. Thus, for instance, the US pension fund may be discouraged from holding as much Shell stock as it otherwise would, even if it uses a TRES. Consequently, the remedies discussed above (such as refundable FTCs or reciprocal recognition of tax-exempt status) are still relevant, as they allow

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Safe Harbor Leasing" 95 *Harvard Law Review* 1752 (1982). This provision proved to be short-lived because of perceived abuses but the leasing market continues to serve the function of transferring tax benefits among parties.

[55] Discussion of mark-to-market treatment.

[56] Note that it appears that tax-exempt entities often hold stock directly in foreign corporations. For example, Dhammika Dharmapala and Vikramaditya S. Khanna "Corporate Governance, Enforcement, and For Value: Evidence from India" U. of Michigan Law & Economics Olin Working Paper No. 08-005 (2008), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1105732, document direct holdings by the California state employees' pension fund (CalPERS) in Indian firms. The apparent failure of tax-exempt entities to avail themselves of a straightforward method of avoiding foreign withholding taxes represents a puzzle that appears not to have been remarked on previously.

tax-exempt entities to avoid both foreign withholding taxes and the transactions costs of using derivative instruments.

Tax asymmetries and portfolio inefficiencies also arise from attempts at the partial integration of corporate and personal taxes. For instance, many European countries traditionally granted imputation credits to shareholders for corporate taxes paid by domestic corporations. Under an imputation system, shareholders receive a credit for corporate taxes paid at the firm level. This credit can be used to offset shareholders' personal tax liability on their dividend income. Imputation credits, however, are typically restricted to corporate taxes paid by domestic firms, resulting in a lower tax rate on domestic equity returns than on foreign equity returns. This creates a tax incentive to invest in domestic rather than foreign corporations, potentially violating GPN.[57] For instance, the German government would grant imputation credits to German shareholders in German firms, but not for German shareholders in French firms. In addition, the French government would not grant German shareholders of French firms imputation credits for corporate taxes paid by those firms to France. Recent judicial decisions as well as the practical difficulties of implementing such a system have led to a movement away from dividend imputation towards shareholder-level dividend exclusion.[58]

IV. 5. The Magnitude of Portfolio Distortions

The relevance of the GPN principle rests on the magnitude of the distortions induced by tax asymmetries in the international setting. A recent effort by the U.S. to provide for shareholder dividend tax relief illuminates the degree to which asymmetries can have significant effects. The United States has implemented a system of partial shareholder-level dividend exclusion as part of the 2003 tax reform, known as the Jobs and Growth Tax Relief Reconciliation Act (JGTRRA). The primary theme of JGTRRA was a reduction in the taxation

[57] Indeed, Clemens Fuest and Bernd Huber, "The Optimal Taxation of Dividends in a Small Open Economy" CESIfo Working Paper 348 (2000) show that under fairly general conditions, the integration of corporate and personal taxes is not desirable in an open economy.

[58] Both these practices have, in the European setting, been found by the European Court of Justice to violate the European Union's nondiscrimination principles. As a result of European Court decisions and other factors, there has been a movement away from dividend imputation towards shareholder-level dividend exclusion. For example, the German tax reform of 2001 abandoned dividend imputation in favor of partial dividend exclusion – see Clemens Fuest and Bernd Huber, "Can Corporate-personal Tax Integration Survive in Open Economies? Lessons from the German Tax Reform" 57 *Finanzarchiv* 514 (2001). On the development of European Court jurisprudence on dividend tax discrimination, see e.g. Michael J. Graetz and Alvin C. Warren, Jr. "Dividend Taxation in Europe: When the ECJ Makes Tax Policy" Harvard Public Law Working Paper No. 07/18 (2007).

of dividend income. Thus, JGTRRA lowered the tax rate on dividends received by US residents from US corporations to a maximum of 15%. The initial proposal for dividend tax reform made by President Bush would have restricted favorable treatment to US dividends only.[59] However, the legislation that was eventually passed by Congress extended favorable treatment to most but not all dividends received by US residents from foreign corporations. In particular, JGTRRA established three tests – the "Possessions Test," the "Market Test," and the "Treaty Test" - that determined whether foreign dividends qualified for the lower rate.[60] Most importantly, the Treaty test establishes that dividends from a corporation resident in a country with which the United States has a tax treaty meeting certain criteria qualifies for the lower dividend tax rate.[61]

The Treaty Test implies that dividends from firms located in some significant destinations for US investment – such as Argentina, Brazil, Hong Kong, Malaysia, Singapore, and Taiwan – do not qualify for favorable treatment. The portfolio responses to JGTRRA's differential treatment of certain foreign dividends appear to have been substantial in magnitude. Desai and Dharmapala conduct an empirical analysis that examines how the location (by country) of US FPI changed after JGTRRA.[62] They use data on US FPI from the Treasury International Capital (TIC) reporting system, which reports the portfolio holdings of foreign securities by US investors, based on periodic surveys of banks, other financial institutions, securities brokers and dealers, carried out by the Treasury. The distinction drawn by JGTRRA between treaty and nontreaty countries enables a comparison across these two groups of countries. It is important to note that an advantage of this approach is that it controls for any factors that caused changes in the levels of US FPI in general (i.e. for both groups of countries).

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[59] See Reuven S. Avi-Yonah, "The Pitfalls of International Integration: A Comment on the Bush Proposal and its Aftermath" 12 *International Tax and Public Finance* 87 (2005) for a discussion of this proposal.

[60] Under the first test, corporations resident in a US possession (such as Puerto Rico) automatically qualify, as do corporations resident in certain former US territories that are treated as possessions for tax purposes. Under the second test, dividends from corporations whose shares are traded in the US are also eligible for the favorable dividend tax treatment. This includes, for instance, corporations that are cross-listed in the US, or whose shares are tradable in the US through American Depositary Receipts (ADRs). *See* e.g. Hale. E. Sheppard, *Reduced Tax Rates on Foreign Dividends under JGTRRA: Ambiguities and Opportunities*, 15 *Journal of International Taxation* 14 (2004).

[61] The IRS released a list of 52 countries that qualified under the Treaty test in October 2003 - see IRS Notice 2003-69 ("United States Income Tax Treaties That Meet the Requirements of Section 1(h)(11)(C)(i)(II)").

[62] *See* Mihir A. Desai & Dhammika Dharmapala, *Taxes and Portfolio Choice: Evidence from JGTRRA's Treatment of International Dividends* (National Bureau of Economic Research Working Paper No. 13281), *available at* http://www.nber.org/papers/w13281.

Figure 7 illustrates the response of US portfolio investors to JGTRRA. The figure reports the ratio of US equity FPI to aggregate stock market capitalization for the two groups of countries, before and after JGTRRA. Clearly, it appears that US FPI (relative to aggregate stock market capitalization) rose in treaty countries after JGTRRA, while falling in nontreaty countries. A more rigorous econometric analysis, controlling for various other relevant factors, confirms this basic conclusion, and also implies that the portfolio reallocation undertaken by US investors was large in magnitude.[63] This effect cannot be explained by various potential alternative hypotheses, including differential changes to the preferences of US investors, differential changes in investment opportunities, differential time trends in investment, changed tax evasion behavior, or changes in stock prices associated (or contemporaneous) with JGTRRA. This large response suggests that portfolio investors are highly sensitive to tax rate differences across assets, and hence that the costs associated with portfolio distortions may be substantial.

V. Source-Based Taxation of Inbound FPI

The previous section has analyzed how governments should tax the investment income received by their resident individuals, and derived the principle of GPN. As discussed earlier, this principle would most straightforwardly be satisfied by pure residence-based taxation. GPN can thus be viewed as providing a new rationale for preferring residence-based taxation in the context of FPI.[64] Nonetheless, as discussed in Section II, governments routinely impose withholding taxes on dividends earned by foreign investors, and GPN can be achieved (albeit somewhat less straightforwardly) in the presence of these source-based taxes. The presence of source-based taxation, however, raises the question of *why* these taxes exist, and what efficiency consequences they are likely to have. This section thus turns to the issue of *inbound* FPI – i.e. how governments tax the income derived by foreign individuals from the ownership of corporate stock– using the theoretical framework developed in Section III, along with some straightforward extensions.

The analysis begins by elucidating the implications of withholding taxes for equity prices and the cost of capital for domestic firms. This framework suggests a number of rationales for

[63] The estimated elasticity of equity FPI holdings with respect to the tax rate is -1.6.
[64] There is a long series of arguments for residence-based taxation in the international setting. For instance, Avi Yonah *supra* note ?? at 1336 argues that "residence-based taxation of individuals is to be preferred on the grounds of equity (redistribution), efficiency (CEN), and political accountability."

the imposition of withholding taxes, including the desire of source countries to redistribute revenues towards themselves, and the existence of market power (derived from various possible sources). Perhaps the most important rationale in practice, though, arises when the framework is extended to allow for the possibility of investors' evasion of home country taxation. In these circumstances, withholding taxes can serve as a "backstop" to residence-based taxation, reducing the payoff to investors from evading home country taxes.

Many commentators have advocated pure residence-based tax systems; Graetz and Grinberg, for example, endorse a deduction for foreign taxes as a means of forcing countries eager for American capital flows to abolish their withholding taxes.[65] However, in a world where withholding taxes serve a valuable function, a more limited and practical alternative is to use the principle of GPN as a guide to eliminating potential inefficiencies caused by source-based taxation. In effect, this approach would replicate the virtues of residence-based taxation, without creating the danger of greatly increased levels of tax evasion.

V.1 Withholding Taxes, Market Power, and the Cost of Capital

What does the theoretical framework developed in Section III imply about the efficiency consequences of withholding taxes on dividends earned by foreign investors? To establish a benchmark case, assume initially that foreign investors cannot easily avoid withholding taxes, and that they also cannot evade home country taxes on dividends. Suppose also that the foreign investor's home country allows a FTC for US withholding taxes; then, one very obvious rationale for imposing withholding taxes is to collect revenue that would otherwise have gone to the foreign investor's home government.[66]

Figure 8 depicts the consequences of different rates of withholding tax. Here, t_w is the withholding tax rate imposed by the US, while t_{US}^F is the foreign country's dividend tax rate on dividends paid to its residents by US firms. Recall that Equation (1) establishes that (in a globally integrated world economy) the dividend tax burden facing US firms is a weighted average of the asset-specific tax rates facing investors around the world on their US dividends. As long as t_w is less than t_{US}^F, the relevant dividend tax burden will be given by Equation (1), and

[65] Graetz and Grinberg *supra* note 2.
[66] Cite Gordon 1992

the price of US stock will be independent of t_w. The only effect of the withholding tax is to redistribute revenue from foreign treasuries to the US government.

If t_w exceeds t_{US}^F, however, then it becomes the relevant tax rate facing foreign investors in US firms. The equilibrium price of US stocks will now depend on the weighted average tax rate:

$$\bar{t}_{US} = \frac{t_{US}^{US} W_{US} + t_w W_F}{W_{US} + W_F} \qquad (2)$$

where $\bar{t}_{US}$ is the weighted average tax rate on dividends paid by the US firm, t_{US}^{US} is the tax rate on US dividends faced by the US investor, t_w is the tax rate on US dividends faced by the foreign investor (i.e. the withholding tax rate imposed by the US), W_{US} is the wealth of the US investor, and W_F is the wealth of the foreign investor. Suppose that US wealth is small relative to the wealth of the rest of the world. Then, $\bar{t}_{US}$ will depend primarily on t_w and any further increases in the US withholding tax will lead to significant declines in the price of US stock, as shown by the equity price curve in Figure 8. In the theoretical framework developed in Section III, any increase in t_w (once it already exceeds t_{US}^F) will induce foreign investors to hold less US stock, but will not induce them to abandon US assets completely. Thus, the withholding tax will raise revenue even when t_w exceeds t_{US}^F, but will do so at a diminishing rate as foreigners switch away from US stock. This yields the revenue curve shown in Figure 8.

Why does it matter if high withholding taxes reduce the price of US stock? The fundamental reason is that the price affects how much financing a firm can obtain by issuing shares. The higher the price, the lower is the cost of raising equity capital. Moreover, the consequences of changes in the cost of equity capital also affect US workers. The mechanism through which this occurs is shown in Figure 9. The upper panel of Figure 9 depicts the marginal product of capital. Here, capital should be interpreted as "real" capital (e.g. how much machinery firms install in their factories or how many computers are provided by firms to their employees). The marginal product (i.e. how much extra output is produced by using an additional machine or computer) provides a measure of the rate of return to real capital investment. Firms must, however, raise funds to finance these real investments. When withholding taxes increase and the price of US stock falls, the implied rate of return increases (i.e. the marginal product required to

justify a new investment rises). For instance, suppose that equity prices fall and the required rate of return increases from 10% to 16%, as shown in Figure 9. Then, the amount of real capital investment (shown on the horizontal axis) will fall, and there will be fewer machines, computers and other forms of physical capital in the US economy. Note that the marginal product of capital is a downward-sloping curve because additional units of machinery encounter diminishing returns.

The implications for workers are shown in the lower panel of Figure 9, which depicts the marginal product of labor (the extra output produced by the use of an extra worker). This is an upward–sloping curve, because workers are more productive when they have a greater number of machines or computers to work with. A decline in the amount of physical capital will make workers less productive. In a perfectly competitive labor market, equilibrium wages are determined by workers' marginal productivity; thus, workers' wages will fall, and they will bear part of the burden of withholding taxes on foreign shareholders.

What determines the extent to which the burden falls on US workers or foreign investors? An important factor is the degree of "market power" that the US exerts. There are a number of possible sources of market power in this setting. The one that is most closely tied to the theoretical framework in Section III is that each country (even if the wealth controlled by its residents is small relative to global wealth) may offer investors a unique pattern of risk characteristics and hence unique diversification benefits that are unavailable elsewhere. This enables each country to impose a withholding tax on inbound FPI.[67]

Another potential source of market power is corporate residence. Suppose that the US has a set of corporate laws and governance institutions that render it uniquely suitable as a place of incorporation. Then, foreign investors prefer US-resident corporations, enabling the US to impose relatively high withholding taxes on these investors without driving them away. Of course, in reality, it is not clear that any country has a substantial degree of market power over corporate residence – many jurisdictions today have highly developed systems of corporate law and governance, fostering a high degree of competition for corporate charters.[68] Nonetheless, at least in theory, it is possible that the US enjoys market power. If so, some of the burden of US

[67] Cite Gordon and Varian
[68] Cite Kane and Rock

withholding taxes will be borne by foreign investors (as well as by US workers). It may then be optimal to set $t_w > t_{US}^F$ if the deadweight losses from other sources of revenue (such as taxing US workers directly) are sufficiently high.

However, when foreign investors can readily access total return equity swaps (the derivative instrument introduced in Section IV) they will never actually pay a withholding tax that exceeds their home country tax liability. Whenever $t_w > t_{US}^F$, foreign investors will obtain their desired exposure to US stocks through equity swaps rather than through direct holdings of US stock. This has two significant implications, both illustrated in Figure 10. First, the price of US stocks (and hence the cost of equity capital) for US firms cannot change as a result of withholding taxes. The price of US stocks is fixed at the level implied by the weighted average dividend tax rate characterized in Equation (1). If the US seeks to impose a withholding tax that exceeds the foreign investor's home country tax rate, the investor will no longer hold US stock directly. The tax rate that is relevant for the foreign investor's decision regarding how much US stock to hold indirectly through equity swaps is always the home country tax rate (note that income from derivative instruments is typically deemed to be sourced in the investor's country of residence). Second, a withholding tax rate that exceeds the foreign rate will result in no revenue being collected (as foreign investors switch to equity swaps). As the cost of capital for domestic firms is unaffected by withholding taxes, the only relevant consideration is revenue; the optimal policy is to set $t_w = t_{US}^F$.[69]

Strictly speaking, this analysis implies that the source country would vary its withholding tax rate in accordance with each individual foreign investor's home country rate. Of course, this is likely to create prohibitive administrative costs in practice. However, it is likely that most of the benefits from this prescription can be captured by the types of simple reforms outlined in

[69] Even if equity swaps are widespread, they may involve transactions costs that are greater than those for direct holdings of stock. These transactions costs (such as the fees paid to counterparties) may act as an implicit "tax" on the foreign investor, and so raise the cost of equity capital for domestic firms. Thus, governments may have an incentive to put in place policies that do not discourage direct holdings of stock by foreigners, in order to avoid these transaction costs. For example, in a frictionless world, it would not matter whether the US imposed a zero withholding tax on foreign tax-exempt investors, or a 60% withholding tax on these entities. In either case, revenue would be zero. Faced with a 60% withholding tax, these investors will switch to holding US stocks solely through equity swaps. In a frictionless world, they would hold the same amount of US stock. However, in reality, the fees they pay to US counterparties (and any other transactions costs they face) will in essence replace the t_w term in Equation (2), so the price of US stocks will be lower than when $t_w = 0$ (to an extent that depends on how much wealth is controlled by foreign tax-exempt entities). For this reason, the US should prefer the zero withholding rate to any positive rate, even though both would generate zero revenue.

Section IV (such as the reciprocal recognition of tax-exempt status). The most important instances where a foreign investor faces $t_w > t_{US}^F$ occur when the foreign investor is a tax-exempt entity at home. Imposing US withholding taxes on such entities can potentially increase the cost of capital for US firms (to an extent that depends on the amount of wealth controlled by foreign tax-exempt entities and the degree of US market power), either because the foreign tax-exempt entities bear the US withholding tax or because they incur fees and other transactions costs to use equity swaps to avoid the US withholding tax. Abolishing the US withholding tax (for instance, as part of a reciprocal recognition of tax-exempt status) would solve this problem, without any negative revenue consequences for the US when the foreign entities have access to equity swaps.

V.2 Withholding Taxes as a Backstop to Residence-Based Taxation

The preceding discussion assumed that home country taxes on investors' foreign income can be perfectly enforced. In the real world, this is of course far from being the case, and the evasion of home country taxes on investment income looms large.[70] Thus, perhaps the most important rationale for source-based withholding taxes in practice is as an instrument for combating evasion. In this view, source-based taxes can be viewed as a "backstop" for residence-based taxation, rather than as necessarily being an alternative form of taxation in conflict with residence taxation. To elucidate this point, it is useful to distinguish between two different forms of evasion that investors could undertake using FPI in a world with a pure residence based system (and without withholding taxes and information sharing). These different forms of evasion are associated with different policy responses, referred to here as the "bilateral" and "unilateral" settings.

In the bilateral case, investors are assumed to hold both domestic and foreign assets (as in the analysis of Section III), but are able to evade home country taxes on foreign income through the simple expedient of failing to report this income to their home government. Indeed, individuals without a preference for domestic assets can invest exclusively in foreign countries and not report their income to their domestic taxing authorities. In the unilateral case, investors are even bolder and evade home country taxes on both foreign and domestic investment income by pretending to be residents of a foreign jurisdiction (typically a tax haven). Specifically,

[70] For example, Graetz and Grinberg (*supra* note 2 at 578) state that: "The major difficulty for any regime of taxing FPI . . . is the widespread underreporting and evasion of home country taxes."

individuals wanting to access domestic investment opportunities without paying taxes can set up a conduit entity in a tax haven and "roundtrip" their investment through the tax haven, masquerading as a tax haven resident.[71] In both cases, pure residence-based taxes are evaded.

The latter form of evasion can be combated by unilaterally imposing withholding taxes, thereby reducing the payoff to masquerading as a tax haven resident. These withholding taxes, however, may be overly punitive for "legitimate" destinations for FPI. Accordingly, these withholding taxes can be reduced selectively by a bilateral tax treaty with accompanying provisions for information sharing to reduce incentives for the evasion of foreign income. For example, consider a US investor who buys assets in France. A high withholding tax may be imposed by France in order to prevent French residents from masquerading as residents of Monaco. However, in the context of a treaty relationship between France and the US that involves information exchange, it will generally not be necessary to impose this high rate on the US investor holding French assets to deter her from evading US tax on her French income. This would justify lowering the withholding tax by treaty. However, in a world of imperfect enforcement, a reduction by treaty to a zero rate may not be optimal. The reason is that in practice, both information exchange and deterrence through withholding taxes are imperfect instruments. As long as each instrument is productive in terms of reducing tax evasion, it will generally be optimal to use both to some degree. This elaboration of evasion dynamics also helps explain why withholding rates discriminate on the basis of ownership status as non-controlling stakes in the bilateral may be the setting where taxes on foreign income are most easily avoided.

Thus, responding to the two types of evasion outlined above requires residence based taxes to be supplemented with a network of source-based withholding taxes that are implemented unilaterally by countries and then selectively reduced by bilateral tax treaties. In this view, source-based taxes serve a vital function as a backstop preventing the erosion of residence-based taxation through widespread evasion using FPI.

V.3 Replicating the Effects of Residence-Based Taxation by Applying GPN

[71] Julie A. Roin *supra* note ??? at 214 argues that: "It is relatively easy for a U.S. resident to masquerade as a foreigner by holding assets, including stocks and bonds issued by US entities, indirectly through an artificial entity such as a corporation created in a foreign jurisdiction."

Some commentators on international taxation have endorsed a pure residence-based system on various grounds including fairness, efficiency and political accountability. Graetz and Grinberg,[75] for example, advocate a deduction for foreign taxes as a means of forcing countries eager for American capital flows to abolish their withholding taxes. This proposal (discussed in detail earlier) is ultimately intended to lead to a regime of universal residence-based taxation with no source-based taxes. This paper has provided a new efficiency rationale that is consistent with a pure residence-based system, namely the principle of GPN. It is important to note, however, that GPN can also be achieved in the presence of source-based taxes, as discussed in Section IV. Indeed, from the perspective of advocates of residence-based taxation, GPN could be challenged as justifying, or at least accommodating, the taxation of capital income at source, because it suggests policy reforms such as refundable FTCs that take as given the fact that foreign governments impose withholding taxes. However, in a world where withholding taxes serve valuable purposes (such as the deterrence of evasion), GPN can serve as a guide to understanding how to deal with this common asymmetry. Indeed, GPN demonstrates that it is possible to replicate many of the efficiency benefits of residence-based taxation by using a combination of residence and source-based taxes, FTCs and some simple reforms to eliminate existing asymmetries and portfolio inefficiencies.

The principle of GPN highlights the central efficiency cost of asymmetries in the taxation of domestic and foreign investment income streams - distortions to portfolio choices. Residence-based taxation (as long as it treats foreign and domestic income symmetrically) would achieve efficiency along this dimension, which is arguably the most important when considering FPI. However, there are other tax regimes that are equally efficient. Imagine, for instance, that governments impose source-based withholding taxes, perhaps in order to combat evasion, as discussed above. In accordance with the principles derived above, suppose that these rates are set no higher than the home country tax rate faced by the investor, through for example the reciprocal recognition of tax-favored status. Then, if all governments were also to offer FTCs for foreign withholding taxes, the resulting regime would involve each investor paying her home country tax rate on both domestic and foreign income (albeit, in the latter case, possibly to a foreign government rather than her own). There would be no portfolio distortions, and so the regime would be as efficient as a perfectly enforced system of pure residence-based taxation.

[75] Cite

However, it has the advantage that the source-based taxes (in conjunction with information-sharing) offer a strong disincentive for tax evasion, whereas a system of pure residence-based taxation would be highly vulnerable to the evasion of home country taxes.

Proponents of residence-based taxation are of course fully cognizant of the problem of evasion. Indeed, Graetz and Grinberg[76] strongly emphasize its importance in the context of FPI. Even so, they advocate a system of pure residence-based taxation, relying solely on information exchange as a tool to combat evasion. If information exchange can be made sufficiently extensive as to deter most tax evasion, this proposal would work well, and satisfy the principle of GPN. However, in practice, information exchange is typically imperfect, and so supplementing it with another policy instrument – source-based taxes – is likely to be optimal.[77] Moreover, as argued above, there need not be any efficiency cost to the use of source-based taxes, as long as they are effectively neutralized by FTCs and other mechanisms.

VI. Conclusion

In international taxation, the relatively neat prescriptions that emerge from economic theory often depart noticeably from the messy world of policies that is manifest today. For example, the simple prescription of residence based taxation stands in contrast to the widespread use of source taxes, bilateral tax treaties and use of foreign tax credits. For FDI, policymakers faced with this disjunction have turned to tax policy norms that provide guidance on how to tax multinational firms depending on the nature of the welfare maximization problem (national or global) and the economic functions provided by FDI (capital reallocation or ownership-driven productivity differences).

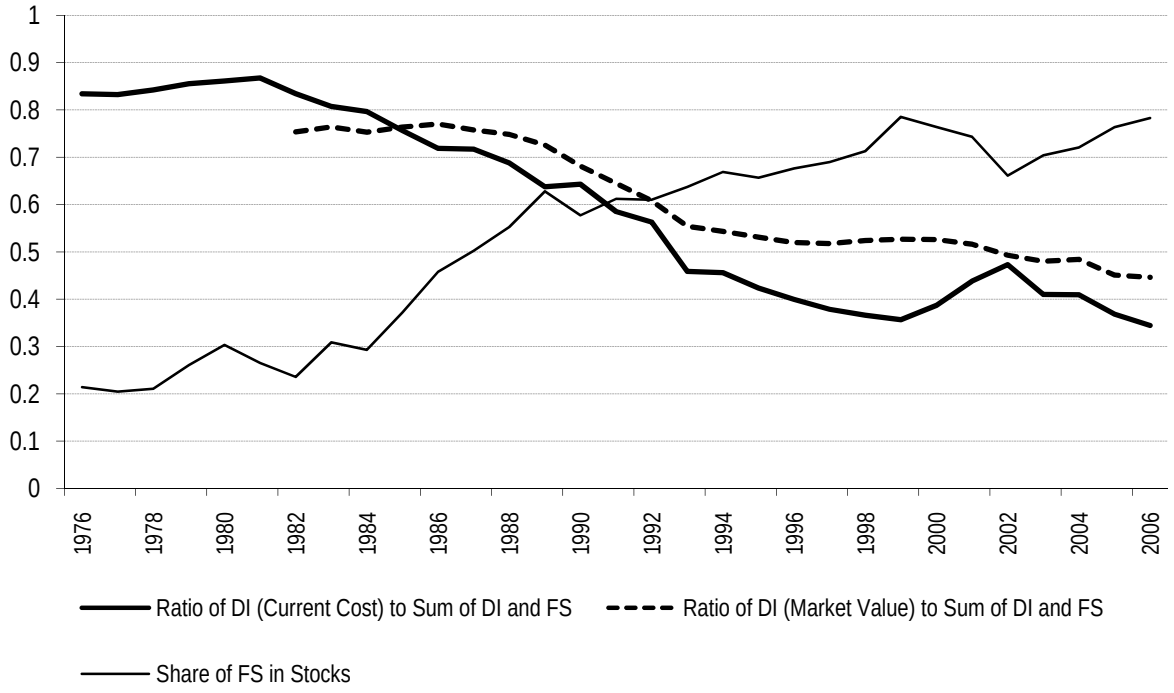
The ascent of FPI demands an equivalent set of norms that emphasize the distinctive economic function provided by FPI – risk reduction through portfolio diversification. GPN provides a first step in that direction. In its simplest form, its emphasis on symmetric treatment of domestic and foreign income can be viewed as a reinforcement of the logic of residence based taxes. By highlighting the efficiency implications of the taxation of FPI, GPN goes further and explains why governments may choose, for example, to offer credits for foreign withholding taxes. In addition to explaining why these policies are utilized, GPN also recommends furthering

[76] cite
[77] Note analogy to the "two instruments are better than one" principle e.g. in environmental economics

symmetry through mutual recognition of tax-exempt status and by creating refundable or transferable foreign tax credits.

If source based taxes are infrequently used or mere nuisances on the inevitable march toward residence based taxation, then the value of GPN is limited to providing a new appreciation for residence based taxation. In contrast, the rationales for source based taxes provided above suggest that the messy world that is evident today - imposition of withholding taxes with selective reduction by treaty – may well have several sound justifications. In turn, GPN provides a roadmap for policymakers interested in maximizing national welfare in this more complicated setting.

Figure 1: The Changing Nature of International Investment, 1976-2006



Note: DI represents Direct Investment and FS represents Foreign Securities. This data is drawn from Table 2 of the International Investment Position data available from www.bea.gov

Figure 2:

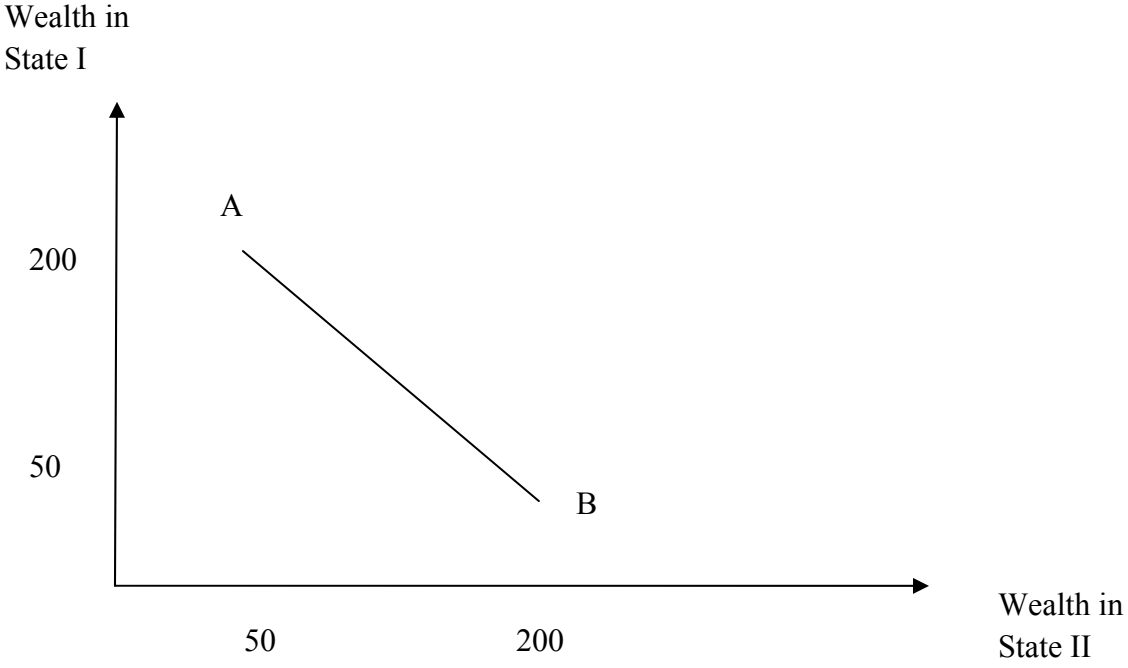


Figure 3:

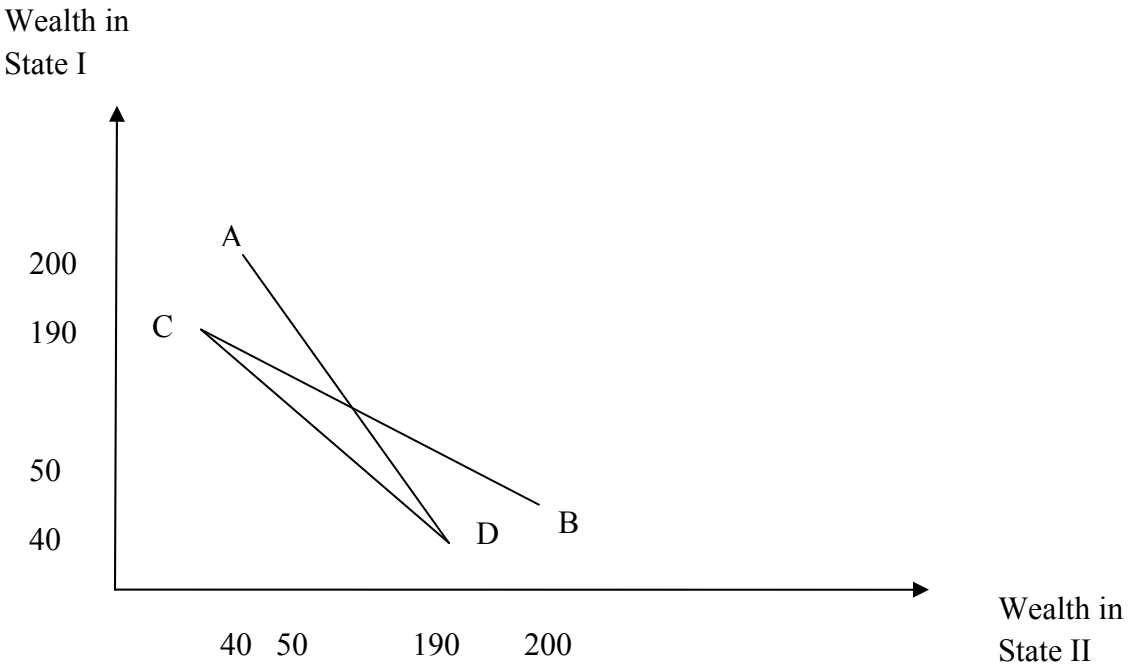


Figure 4:

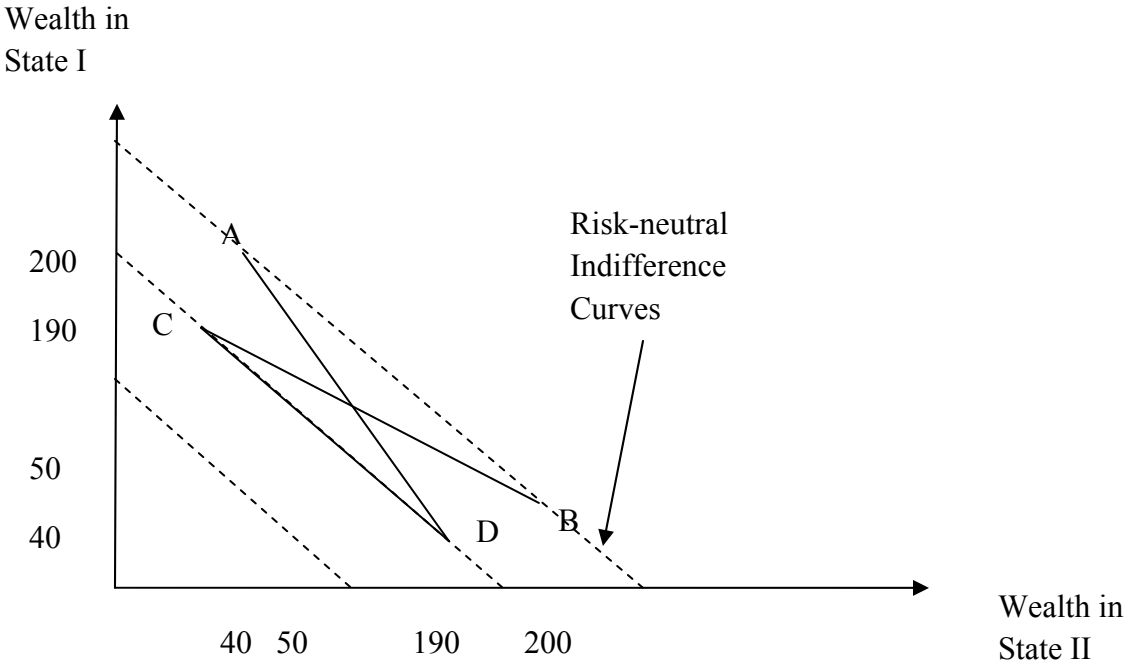


Figure 5:

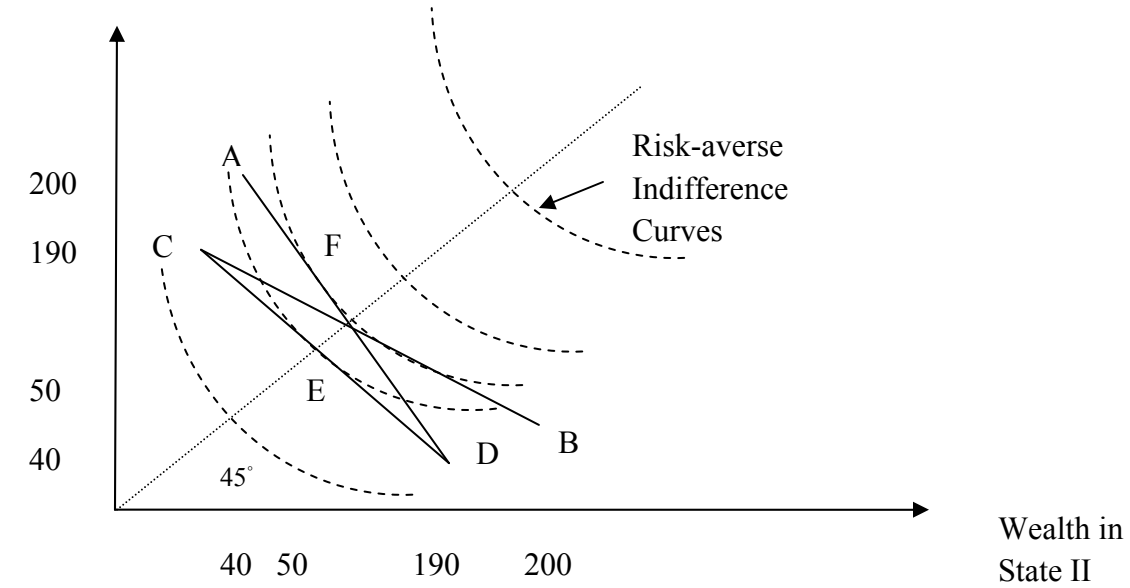


Figure 6:

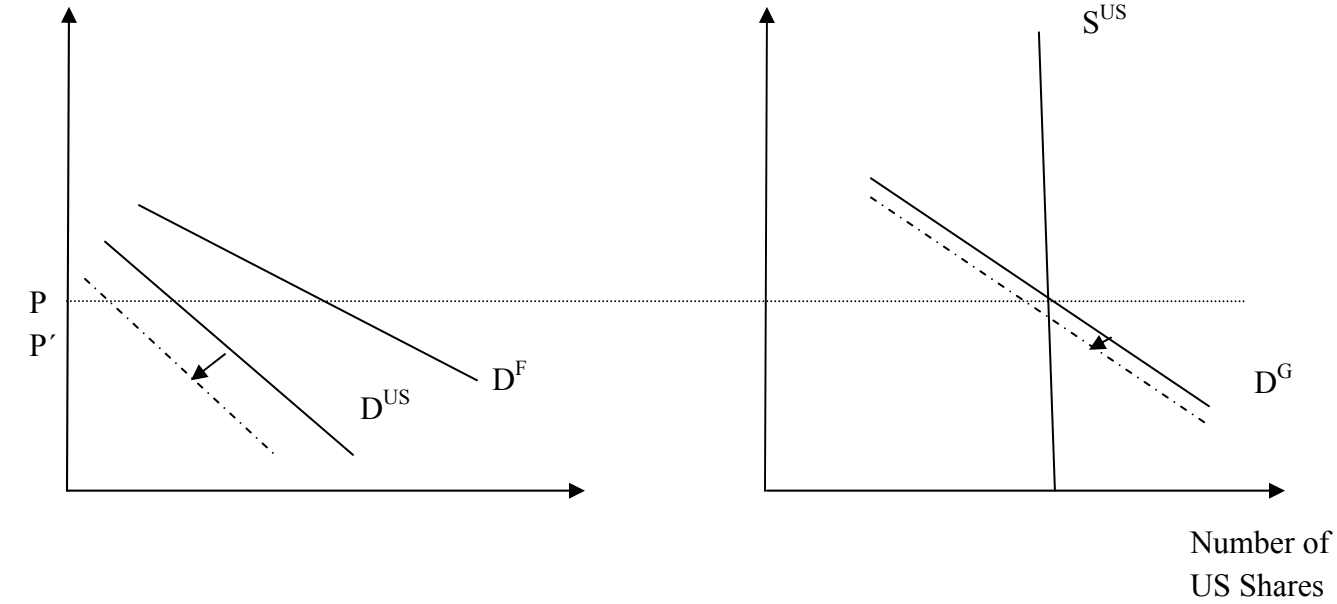
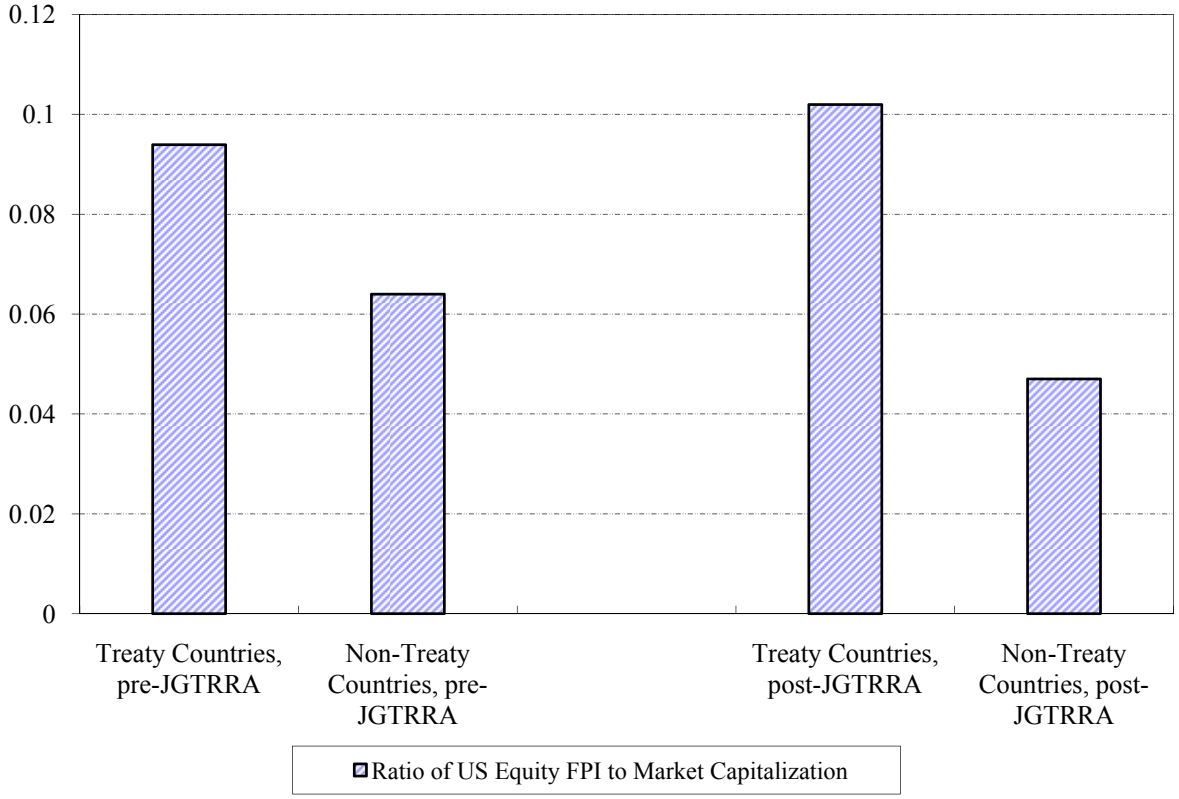


Figure 7: JGTRRA and the Location of US Equity FPI



Source: Mihir A. Desai & Dhammika Dharmapala, *Taxes and Portfolio Choice: Evidence from JGTRRA's Treatment of International Dividends* (National Bureau of Economic Research Working Paper No. 13281), *available at* http://www.nber.org/papers/w13281, Figure 1. The figure provides the average ratio of aggregate U.S. Equity FPI to Market Capitalization for Treaty and Nontreaty countries for the years prior and subsequent to JGTRRA. This ratio is a weighted average across countries in each year and then averaged across the three years prior to JGTRRA that are available in the sample (1994, 1997 and 2001) and subsequent to JGTRRA (2003, 2004 and 2005).

Figure 8:

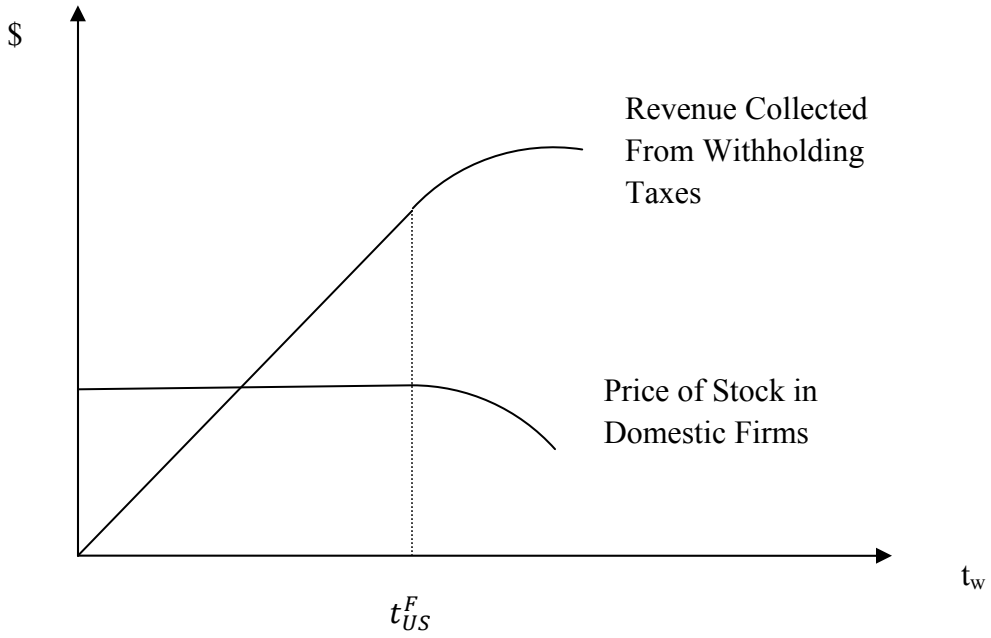

$
Revenue Collected From Withholding Taxes
Price of Stock in Domestic Firms
t_w
t_{US}^F

Figure 9:

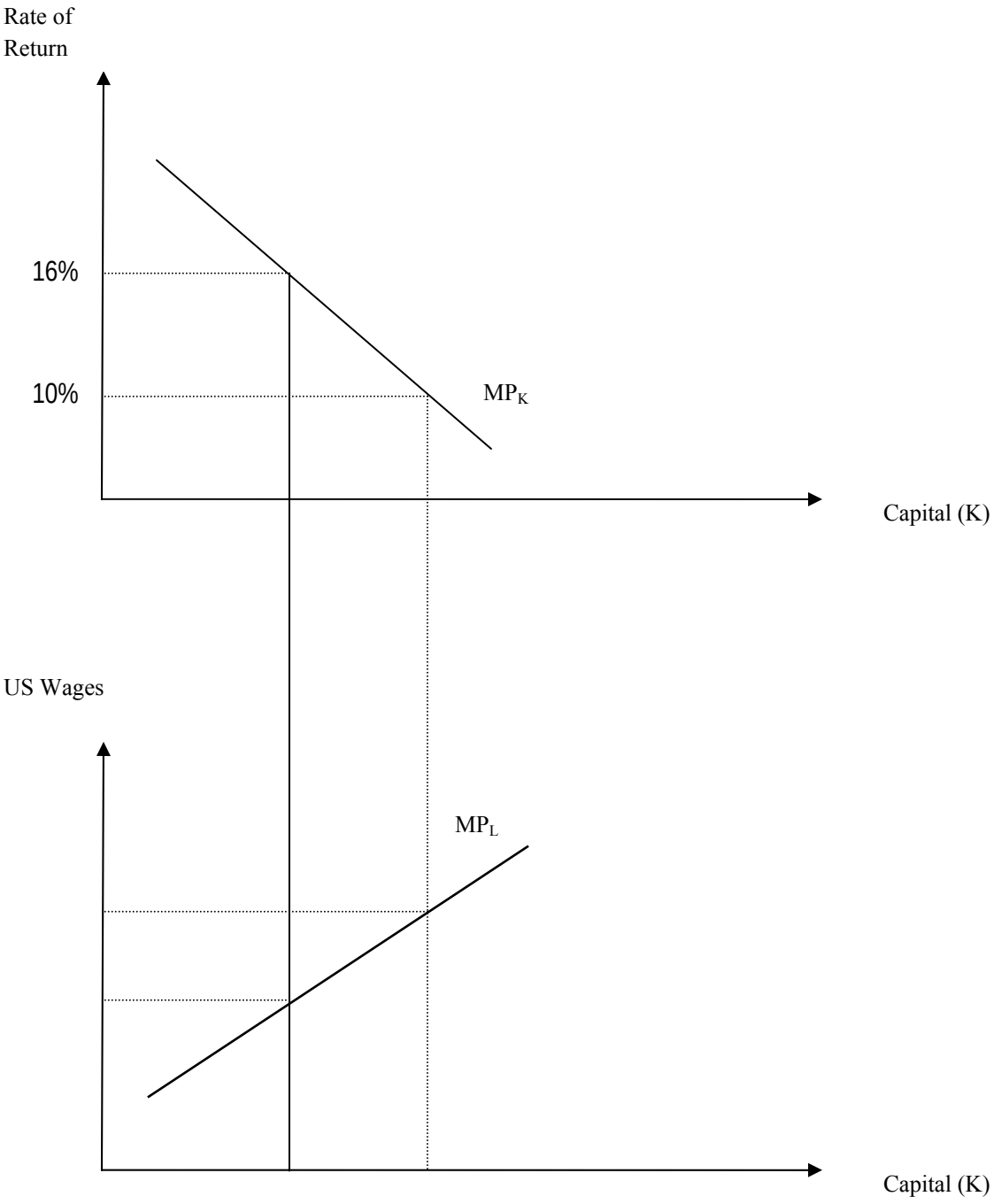
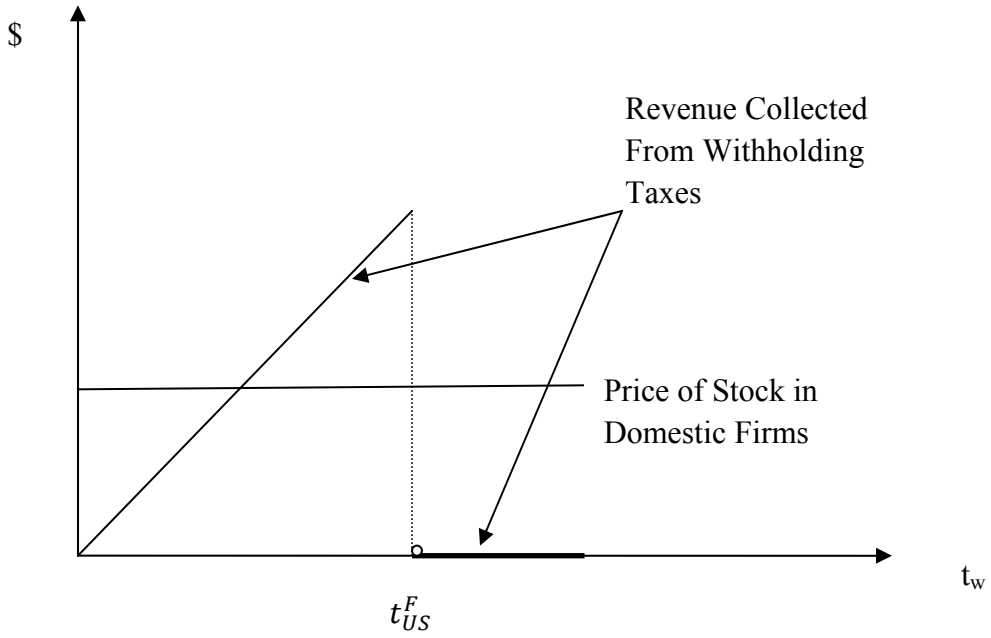


Figure 10:


$
Revenue Collected From Withholding Taxes
Price of Stock in Domestic Firms
t_w
t_{US}^F

Appendix Table 1: U.S. Income Tax Treaty Network, 2009

Treaty Partner	Maximum Tax on Dividends	Maximum Tax on Interest	Maximum Tax on Royalties	Treaty Signed
Australia	0% for >80% ownership, 5% for >10% ownership, and 15% for <10% ownership	0% for interest on loans granted by a financial institution, 10% otherwise	5%	1982
Austria	5% for >10% ownership, and 15% for <10% ownership	0%	10% for broadcasting copyright royalties, and 0% otherwise	1996
Bangladesh	10% for >10% ownership, and 15% for <10% ownership	10%	10%	2004
Barbados	5% for >10% ownership, and 15% for <10% ownership	5%	5%	1984
Belgium	5% for >10% ownership, and 15% for <10% ownership	15% on interest that does not qualify as portfolio interest (charged by the US), or 15% on interest related to active conduct of business (charged by Belgium), and 0% otherwise	0%	2006
Bulgaria	5% for >10% ownership, and 10% for <10% ownership	5%	5%	2007
Canada	5% for >10% ownership, and 15% for <10% ownership	0%	0% for artistic copyright, computer software, industrial and scientific information royalties, and broadcasting royalties, and 10% otherwise	1980
China (P.R.C.)	10%	10%	10% for all royalties, but the 10% is charged on 70% of the gross amount for industrial, commercial, and scientific equipment royalties	1984
Cyprus	5% for >10% ownership and not more than 25% of gross income from profits on interest and dividends from non-financial activities, and 15% for <10% ownership	10%	0%	1984
Czech Republic	5% for >10% ownership, and 15% for <10% ownership	0%	10%	1993
Denmark	5% for >10% ownership, and 15% for <10% ownership	0%	0%	1999
Egypt	5% for >10% ownership and not more than 25% of gross income from profits on interest and dividends from non-financial activities, and 15% for <10% ownership	15%	15%	1980
Estonia	5% for >10% ownership, and 15% for <10% ownership	10%	5% for industrial, commercial, and scientific equipment royalties, and 10% otherwise	1998
Finland	5% for >10% ownership, and 15% for <10% ownership	0%	0%	1989
France	5% for >10% ownership, and 15% for <10% ownership	0%	5%	1994
Germany	5% for >10% ownership, and 15% for <10% ownership	0%	0%	1989
Greece	The source state may tax the income at its domestic rate	0% on all interest unless the recipient has >50% ownership	The source state may tax the income at its domestic rate	1950
Hungary	5% for >10% ownership, and 15% for <10% ownership	0%	0%	1979
Iceland	5% for >10% ownership, and 15% for <10% ownership	0%	0% for trademark, film, and television royalties, and 5% otherwise	2007
India	15% for >10% ownership, and 25% for <10% ownership	10% for interest on loans granted by a financial institution, and 15% for all other cases	10% for industrial, commercial, and scientific equipment royalties, and 15% for copyright, patent, and trademark royalties	1989

Appendix Table 1: U.S. Income Tax Treaty Network, 2009

Indonesia	10% for >25% ownership, and 15% for <25% ownership	10%	10%	1988
Ireland	5% for >10% ownership, and 15% for <10% ownership	0%	0%	1997
Israel	12.5% for >10% ownership and not more than 25% of gross income from profits on interest and dividends from non-financial activities, and 25% for <10% ownership	10% for interest on loans granted by a financial institution, and 17.5% otherwise	10% for copyright and film royalties, and 15% for industrial royalties	1975
Italy	5% for >50% ownership or 10% for >10% ownership, as long as not more than 25% of gross income from profits on interest and dividends come from non-financial activities, and 25% for <10% ownership	15%	5% for copyright, artistic, and literary royalties, 8% for motion pictures and films, and 10% otherwise	1984
Jamaica	10% for >10% ownership, and 15% for <10% ownership	12.50%	10%	1980
Japan	0% for >50% ownership, 5% for >10% ownership, and 10% for <10% ownership	0% for interest to to financial institutions and pension funds, and 10% otherwise	0%	2003
Kazakhstan	5% for >10% ownership, and 15% for <10% ownership	10%	10%	1993
Korea (R.O.K.)	10% for >10% ownership and not more than 25% of gross income from profits on interest and dividends from non-financial activities, and 15% for <10% ownership	12%	10% for copyright, artistic, and literary royalties, and to motion picture films, and 15% otherwise	1976
Latvia	5% for >10% ownership, and 15% for <10% ownership	10%	5% for industrial, commercial, and scientific equipment royalties, and 10% otherwise	1998
Lithuania	5% for >10% ownership, and 15% for <10% ownership	10%	5% for industrial, commercial, and scientific equipment royalties, and 10% otherwise	1998
Luxembourg	5% for >10% ownership, and 15% for <10% ownership	0%	0%	1996
Mexico	5% for >10% ownership, and 10% for <10% ownership	4.9% for interest on loans by banks and insurance companies and for interest paid on publicly traded securities,10% for interest paid by banks and paid for equipment financing, and 15% otherwise	10%	1992
Morocco	10% for >10% ownership and not more than 25% of gross income from profits on interest and dividends from non-financial activities, and 15% for <10% ownership	15%	10%	1977
Netherlands	5% for >10% ownership, and 15% for <10% ownership	0%	0%	1992
New Zealand	15%	10%	10%	1982
Norway	15%	0% for some interest, including interest paid on bank loans, and 10% may apply otherwise	0%	1971
Pakistan	15%	The source state may tax the income at its domestic rate	0% for all royalties, except for royalties derived from motion pictures	1957
Philippines	20% for >10% ownership, and 25% for <10% ownership	15%	15% charged the US for royalties, and 25% charged by the Phillipines for royalties	1976

Appendix Table 1: U.S. Income Tax Treaty Network, 2009

Poland	5% for >10% ownership, and 15% for <10% ownership	0%	10%	1974
Portugal	5% for >25% ownership, and 15% for <25% ownership	0% for government debt and government-assisted debt and to interest paid on a long-term loan (5 or more years), and 10% otherwise	10%	1994
Romania	10%	10%	10% for cultural royalties, and 15% for industrial royalties	1973
Russia	5% for >10% ownership, and 10% for <10% ownership	0%	0%	1992
Slovakia	5% for >10% ownership, and 15% for <10% ownership	0%	0% for copyright royalties, and 10% otherwise	1993
Slovenia	5% for >25% ownership, and 15% for <25% ownership	5%	5%	1999
South Africa	5% for >10% ownership, and 15% for <10% ownership	0%	0%	1997
Spain	10% for >25% ownership, and 15% for <25% ownership	0% for interest paid in connection with the sale on credit of any industrial, commercial, or scientific equipment, and 10% otherwise	5% for copyright royalties, 8% for films and for industrial, commercial, or scientific equipment, and 10% otherwise	1990
Sri Lanka	15%	10%	5% for rentals for the use of tangible personal (moveable) property, and 10% otherwise	1985
Sweden	5% for >10% ownership, and 15% for <10% ownership	0%	0%	1994
Switzerland	5% for >10% ownership, and 15% for <10% ownership	0%	0%	1996
Thailand	10% for >10% ownership, and 15% for <10% ownership	10% for interest by a financial institution or for financing the sales of equipment, merchandise, or sales, and 15% otherwise	5% for copyrights of literary, artistic, or scientific work, 8% for industrial, commercial, and scientific royalties, and 15% for patent and trademark royalties	1996
Trinidad and Tobago	10% for >10% ownership and not more than 25% of gross income from profits on interest and dividends from non-financial activities, and 25% for <10% ownership	15%	0% for artistic and literary royalties, and 15% otherwise	1970
Tunisia	14% for >25% ownership, and 20% for <25% ownership	15%	10% for industrial, commercial, and scientific equipment royalties, and 15% otherwise	1985
Turkey	15% for >10% ownership, and 20% for <10% ownership	10% for interest on loans granted by a financial institution, and 15% for all other cases	5% for industrial, commercial, and scientific equipment royalties, and 10% otherwise	1996
Ukraine	5% for >10% ownership (for Ukraine, nonresidents must have >20% ownership), and 15% for <10% ownership	0%	10%	1994
United Kingdom	0% for >80% ownership, 5% for >10% ownership, and 15% for <10% ownership	0%	0%	2001
Venezuela	5% for >10% ownership, and 15% for <10% ownership	4.95% for interest on loans granted by a financial institution, and 10% for all other cases	5% for industrial, commercial, and scientific equipment royalties, and 10% otherwise	1999

Source: Various Tax Treaties