FIXING THE SYSTEM: AN ANALYSIS OF ALTERNATIVE PROPOSALS FOR THE

REFORM OF INTERNATIONAL TAX

by

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ABSTRACT

We evaluate proposals for the reform of the U.S. system of taxing cross-border income including dividend exemption, full current inclusion, a Japanese type version of dividend exemption with an effective tax rate test subject to an exception for an active business, dividend exemption combined with a minimum tax, and repeal of check-the-box. We consider two versions of dividend exemption with a minimum tax: one in which the minimum tax is imposed on a country by country basis and another in which the minimum tax is based on overall foreign income. In addition we evaluate versions of minimum taxes that allow current deductions for tangible investment against the minimum tax base.

To compare these schemes with current law, we reevaluate the efficiency cost of the dividend repatriation tax using evidence from the response to the 2005 repatriation tax holiday. We find that the burden of avoiding repatriations is higher than found in previous estimates, particularly for high tech profitable foreign businesses, and rises as deferrals accumulate. We simulate the effect of the various alternatives on effective tax rates for investment in high and low tax countries with inclusion of the importance of parent developed intangibles and their role in shifting income from the United States.

Our analysis demonstrates that it is possible to make improvements to the system across many dimensions including the lockout effect, income shifting, the choice of location and complexity. The goals are not necessarily in conflict. Compared to the other schemes, we find the per country minimum tax with expensing for real investment has many advantages with respect to these margins. The per country minimum tax offsets (at least in part) the increased incentives for income shifting under pure dividend exemption and is better than full inclusion in tailoring companies' effective tax rates to their competitive position abroad. No U.S. tax burden will fall on companies that earn just a normal return abroad. The minimum tax is basically a tax on large excess returns in low tax locations, cases in which the company probably has less intense foreign competition. The investment will still be made. Unlike the Japanese type dividend exemption alternative considered, there is no cliff in which the income is subject to the full home country rate if it fails the minimum effective tax rate and active business test. Under the minimum tax with no cliff the company has more of an incentive to lower foreign taxes and will often prefer paying the U.S. minimum tax to paying a higher foreign tax. Finally, the minimum tax with expensing is more effective in discouraging income shifting than repeal of check-the-box. In summary, the per country minimum tax with expensing combines the advantages of the extreme alternatives, dividend exemption and full inclusion, and reduces their shortcomings.

Our comparison of the overall and per country minimum tax suggests that the overall version deserves serious consideration. While it is not as thorough as the per country minimum tax in targeting tax haven income, it is a substantial move in that direction and is much simpler.

I. INTRODUCTION

Recent developments necessitate taking another look at alternative reforms of the U.S. system for taxing cross-border income. Discontent with the U.S. worldwide system for taxing the international income of U.S. corporations has focused policy makers on possible reforms. Both Senator Mike Enzi and House Ways and Means Chairman Dave Camp have released draft proposals of dividend exemption systems. Provisions that would tighten international tax laws have been part of every Obama Administration budget and the President's Economic Recovery Advisory Board (PERAB) has issued a report that includes an extensive discussion of international tax reform options (PERAB 2010).[1]

There is also additional evidence regarding the costs and benefits of the current U.S. system. One of the most important features of the current system in evaluating the incentives for foreign investment and the location of income is the burden of the repatriation tax on dividends. This burden includes both the U.S. residual tax on actual dividend repatriations, which due to effective tax planning by corporations tends to be small, and more importantly the efficiency cost or 'implicit' tax attributable to the avoidance of the repatriation tax. The unexpectedly large repatriations under the 2005 tax holiday suggest that this implicit cost of additional deferrals is larger than is reflected in previous estimates.

Furthermore both the international environment and U.S. tax laws have changed. The two other major industrial countries with worldwide systems, Japan and the United Kingdom, have converted to dividend exemption. In addition, both statutory and effective tax rates around the world have continued to decline relative to U.S. rates, sharpening the 'competitiveness' issue

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[1] On February 22, 2012, the White House and the Department of the Treasury released a joint report outlining a framework for business tax reform that includes, among other proposals, elimination of a number of business tax expenditures, a reduction in the corporate statutory tax rate to 28 percent, and a new minimum tax on foreign earnings within the current worldwide system. This paper does not analyze this specific proposal.

(Devereux et al., 2009).[2] The decline in foreign rates can also be expected to reduce the amount of excess foreign tax credits under the current system with important implications for company behavior.

The reduction in the frequency of excess credit positions will gain added impetus by the enactment in 2010 of the new foreign tax credit 'anti-splitter' rules. In the past, multinational corporations (MNCs) have been able to use various devices such a hybrid entities and foreign partnerships to separate the foreign tax from the income that gave rise to it. They have thereby been able to magnify the amount of foreign tax credits relative to the income being repatriated. The new Section 909 in the Internal Revenue Code limits this type of credit manipulation. The resulting decline in excess foreign tax credits will substantially revise the comparison of the current system versus its alternatives.

Taking these developments into account, we evaluate proposals for reform of the U.S. tax system for taxing cross-border income including dividend exemption, full inclusion, and a Japanese type version of dividend exemption with an effective tax rate test with an exception for active business. We also study versions of a dividend exemption system that include either country by country or overall minimum taxes with no active business exceptions. As an alternative to an active business test, we consider a current deduction against the minimum tax for real investment in the location as an option. Given the importance of the check-the-box rules to tax planning, we also include their repeal as one of the options for reform within current law.

To compare dividend exemption proposals with current law we reevaluate the burden of the current repatriation tax taking the response to the 2005 tax holiday into account. The implicit

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[2] Devereux, Elschner, Endres, and Spengel (2009) find that average effective tax rates across all European Union countries fell almost 8 percentage points over the period 1998 to 2009 from 29.3 percent to 21.5 percent. The authors report an average effective tax rate for the United States of 37.4 percent in 2009 and a rate of 38.3 percent in 2005 (they did not calculate U.S. effective tax rates for years prior to 2005). Over the same 1998 to 2009 period, the average effective statutory rate (including local statutory rates) for all European Union countries fell almost ten percentage points from 33.5 percent to 23.8 percent while the U.S. effective statutory rate fell less than two percentage points from 39.8 percent to 37.4 percent. The decrease in the U.S. rate was entirely due to reductions in statutory tax rates at the state level since the federal statutory rate remained at 35 percent throughout this time period.

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cost of avoiding repatriation turns out to be higher than found in previous estimates and increases as deferrals accumulate abroad. This finding has significant implications for our analysis.

We evaluate the proposals using a number of criteria. We examine the impact of the proposals on the lockout effect, changes in the incentives to shift income, the distortion of investment incentives and whether the reform is consistent with a more efficient allocation of worldwide capital, revenue, complexity, tax planning incentives beyond income shifting, and incentives to expatriate. We simulate effective tax rates for low and high tax investments abroad to show how the various alternatives work and illustrate their consequences. To highlight how the various systems affect income shifting alternatives we consider investments that produce high tech goods using U.S. developed intangible assets.

The analysis suggests that the per country minimum tax with expensing has many advantages compared to the other schemes. The per country minimum tax we propose offsets (at least in part) the increased incentives for income shifting under a pure dividend exemption system. Unlike the Japanese type dividend exemption alternative considered, under the minimum tax option there is no cliff in which the income is subject to the full home country rate if it fails the minimum tax and active business test. The company has more of an incentive to lower foreign taxes and will often prefer paying the U.S. minimum tax to paying a higher foreign tax. The minimum tax also seems more advantageous than the repeal of check-the-box. It is more effective in discouraging income shifting.

Finally, the per country minimum tax with expensing for real investment is better than full inclusion in tailoring companies' effective tax rates to their competitive position abroad. No U.S. tax burden will fall on companies that earn just a normal return abroad appropriately preserving capital import neutrality (CIN). The minimum tax with expensing is basically a tax on large excess returns in low tax locations, cases in which the company probably has less intense foreign competition. The minimum tax combines the advantages of the extreme alternatives, dividend exemption and full inclusion, and reduces their shortcomings.

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Our comparison of overall and per country minimum taxes suggests that the overall version deserves serious consideration. While it is not a thorough as the per country minimum tax in targeting tax haven income, it is a substantial move in that direction and is much simpler.

The paper is organized as follows. We start by briefly discussing problems with the traditional criteria used to evaluate international tax proposals. We stress that the optimal tax on foreign income is a 'Second Best' problem and that alternatives should be judged based on whether they move the system towards the 'Second Best' answer. We then highlight problems with the current U.S. worldwide with deferral system and describe both the proposals we analyze and criteria we use to judge the alternative proposals. To evaluate reforms against current law it is necessary to reevaluate the efficiency cost of accumulating deferrals. After presenting new estimates of the implicit burden of deferrals, we present the results of our effective tax rate simulations. This analysis is followed by a discussion of the revenue consequences of the current system and the various alternatives, the overall versus the per country minimum tax, incentives to expatriate under the various alternatives, and how the reform alternatives differ in terms of complexity. Before concluding we discuss two reform alternatives that have been advanced as possible fixes to our current system: formulary apportionment (with specific emphasis on sales) and a destination-based income tax.

II. ALTERNATIVE CRITERIA FOR FOREIGN INVESTMENT

There is an extensive literature on the alternative standards that should guide the process of evaluating international tax reform proposals including Capital Export Neutrality (CEN), Capital Import Neutrality (CIN), and, more recently, Capital Ownership Neutrality (CON). However, as indicated in Grubert and Altshuler (2008), the usual evaluation of reforms relative to these norms is not very helpful because each proposed standard is based on very special assumptions. Furthermore, none of the standards addresses the most important issues in designing

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an international tax system such as the taxation of excess returns and royalties, income shifting, and the allocation of parent expenses to foreign income.

The optimal tax on foreign income is in general a 'Second Best' problem because there are existing foreign and domestic taxes.[3] The Second Best answer depends on which investments a potential foreign investment competes with, those in high tax jurisdictions abroad and in the United States, for example, or those in low tax locations. It is difficult to have a single rule that will fit all cases. Some investments are highly mobile, serving a worldwide market, with many possible alternative locations. Others are more closely tied to a given location because of the importance of being close to customers or to a source of raw materials. Some investments compete with U.S. production while others compete with low tax production abroad. None of the standards will be appropriate in all cases and it is not feasible to design a policy with different rules for different cases.

It may, however, be possible to design relatively simple rules that move policy towards the Second Best answer. One of the alternatives we evaluate is a minimum tax on foreign income, on either a country by country or overall basis, with a current deduction for real investment against the U.S. minimum taxable base in the location. The minimum tax therefore applies only to excess returns in the foreign location. Investments with large excess returns probably do not have very close foreign competitors so imposing a minimum tax is not likely to put them at a competitive disadvantage abroad. Also, some of the tax would be on rents and thus be non-distortionary (ignoring any possible expatriation responses). The investment would take place even with the minimum tax, which just acts to reduce the tax considerations in the choice of where it is located.

On the other hand, companies that make basic real investments that do not earn much more than a 'normal' return probably have more intense foreign competition. Imposing a U.S. tax could put them at a competitive disadvantage even though they are more efficient than their rivals. A minimum tax with expensing therefore has the virtue of moving the system towards

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[3] See Grubert and Mutti (1995) for a discussion of the general second best rule.

CEN for foreign investments with large excess returns and little competition, and towards CIN for more basic real investments that compete with close rivals in foreign locations for normal returns.

It should be noted that designing a set of international tax rules is mainly a question of how excess returns attributable to U.S. developed intellectual property are taxed. If the investment simply involves standard real capital like an aircraft or a ship, it can be leased from foreign investors since the rental price will not reflect any U.S. tax. A company can therefore already exempt the normal return from U.S. tax by leasing the capital.

In discussing criteria for foreign investment, one issue is whether worldwide or national efficiency is the objective. As we note below, a minimum tax with expensing seems to improve both so there is no ambiguity as to which proposal is superior. The choice of investment location is less distorted and U.S. revenue increases at the same time. Besides, the extent to which the two goals conflict is never very clear because relationships between governments involve a complex series of transactions. Policy changes cannot be considered in isolation. Foreign governments may have ways of compensating the home government for any policy changes that improve their welfare.

III. PROBLEMS WITH THE CURRENT WORLDWIDE SYSTEM

The present system raises little revenue, is complicated, creates incentives for aggressive income shifting, and interferes with companies' efficient use of capital as they try to avoid the dividend repatriation tax. It is hard to argue that the current system is based on any coherent concept of how an optimal system should be designed. Consider the following problems:

1. Income shifting. The evidence on income shifting under the current U.S. system is extensive, and it seems to be getting worse, in part because of the generous tax planning opportunities opened up by the check-the-box rules in 1997 (Grubert 2012). As evident in the

effective tax rate simulations presented below, this aggressive tax planning distorts investment decisions by magnifying the benefits of low tax locations.

2. The 'lockout' effect attributable to both actual and 'implicit' tax costs. U.S. companies use various techniques for avoiding the repatriation tax, such as having the U.S. parent borrow using accumulated financial assets abroad as implicit collateral (Altshuler and Grubert 2002). But these repatriation avoidance schemes come at a cost, such as a ballooning balance sheet that raises the company's cost of capital. The avoidance of the repatriation tax may also induce U.S. companies to acquire foreign companies in part because of the cheap source of locked out capital available.

3. Complexity. The current system requires extensive calculations and adjustments involving foreign tax credits, allocated expenses, etc.

4. Competitiveness. While the current system provides many advantages to a low tax foreign location, there may be cases where the potential repatriation tax and other rules discourage real investments that are consistent with an efficient worldwide allocation of capital. This may be the case when U.S. companies may not expect to earn much more than the normal cost of capital. Any new system should not prejudice productive real investments abroad.

The main question in this paper is whether improvements can be made in all of these areas or if the goals are in conflict. Must eliminating the lockout of foreign earnings exacerbate incentives for income shifting? Can income shifting be limited without an unnecessary burden on productive foreign investment?

IV. PROPOSALS FOR REFORM

The baseline for our analysis is the current worldwide system but at a 30 percent corporate rate. There seems to be a growing consensus that the United States should reduce its corporate statutory rate in response to the dramatic and continuing decline in corporate statutory

rates abroad. Accordingly it seems appropriate to consider the current system with a lower rate. We analyze five proposals for reform against this baseline.

1. Full inclusion. The worldwide system is retained and the deferral privilege for active business income is repealed.[4]

2. Dividend exemption. Dividends derived from active business income can be repatriated free from U.S. tax. Royalties and other payments deductible abroad, and export sales income are fully taxed. We consider a system in which there are no allocations of parent overhead expenses to exempt foreign income.[5] Capital gains from the sale of an active foreign asset would be exempt on the grounds that the price is based on future dividends. We assume that passive income and other income now taxed currently under subpart F would continue to be subject to current tax.

3. Dividend exemption with a version of the Japanese effective tax rate test. This is one of the anti-base-erosion alternatives in Chairman Camp's dividend exemption proposal (Ways and Means 2011). If the country effective tax rate is below the threshold --- 20 percent in the Japanese plan and 15 in the dividend exemption option we consider --- the income is currently included in U.S. taxable income and is subject to the full corporate rate. But the subsidiary's income can escape inclusion if it passes an active business test. As a result, the taxation of the subsidiary's income faces a cliff if it doesn't pass the test. If the effective foreign tax rate is below the threshold, the income faces the full home country rate. Companies therefore will not shift income to a pure tax haven as they do now with check-the-box planning.

4.a. A country by country minimum tax of 15 percent on active income with a credit for the effective foreign tax rate up to the 15 percent threshold. As in plan 3, effective tax rates are computed for income in each jurisdiction, so the income and tax in disregarded entities under

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[4] This can be done in two ways. One is the 'Branch Method' which treats each subsidiary as a branch of the parent. Losses in some CFCs can therefore offset positive income elsewhere including in the parent. An alternative is the 'Subpart F Method' in which only positive income is included in the worldwide base.
[5] Domestic expenses *directly allocable* to exempt foreign income are not deductible from the U.S. tax base.

check-the-box are placed in the location in which they are taxed and not consolidated with its Controlled Foreign Corporation (CFC) owner. The country tax base is Earnings and Profits (E&P) less intercompany dividends because that income has already been taxed in other jurisdictions.[6] Payments that are deductible elsewhere such as royalties and interest are included in the base. The effective tax rate is the ratio of foreign taxes paid to this net E&P income base.[7] Dividends both from countries subject to the minimum tax and those above the minimum are fully exempt. There is no active business exception to the minimum tax and no allocations of parent overhead expense to foreign income. As under dividend exemption, royalties, interest and export sales income are fully taxed at the U.S. rate.[8] Capital gains on the sale of an operating foreign asset are taxed at a 15 percent rate net of a credit for foreign taxes.

4.b. The same as 4a but the company can deduct real investment in the country from the minimum tax base. Therefore there is no U.S. tax on the company's normal return abroad, the rate with which it discounts cash flows from real investments. Only the excess return is taxed at the U.S. rate and even then only in part because there is still some incentive for income shifting from the United States. In this option, the E&P of the foreign entity in a location would first be calculated in the normal way and also its effective tax rate based on that E&P. If the effective tax rate is below 15 percent, minimum tax would be due but the new investment could be deducted from the tentative taxable base. In future years the process would be repeated for the investment except now the taxable base would be increased by normal E&P depreciation to recapture the initial expensing.

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[6] Earnings and Profits is defined in the Internal Revenue Code and regulations and is close to book or economic income. It is not local taxable income.

[7] The precise definition of E&P is net of foreign taxes paid, so foreign taxes are added to the denominator in the effective tax ratio to get pre-tax income. Similarly, foreign taxes are added to E&P to construct the taxable base.

[8] It is not quite correct to characterize the minimum tax as the equivalent of eliminating deferral but taxing the income at a lower rate. As in any dividend exemption scheme, royalties and interest are fully taxable and there is no flow over of excess credits to shield them. There is no cross-country crediting.

4.c. Same as 4a but with a minimum tax calculated on an overall instead of country by country basis. A company would be subject to a tax of 15 percent on active foreign income with a credit for the company's overall effective foreign tax rate up to the 15 percent threshold. The company's effective foreign tax rate is calculated by taking the ratio of total foreign taxes to total foreign E&P net of dividends received.

4.d. As in the case of the country by country minimum tax, we also consider an option that allows a deduction from the tax base for all real investment abroad.

5. Repeal of check-the-box within current law. Under repeal, most hybrids would be unwound because firms would prefer to pay the lower foreign tax rather than the U.S. tax that would be due under subpart F. The result would be a return to pre-1997 income shifting, and would in part address the problem of "stateless income" that has been referenced in the literature (see Kleinbard 2011).

A. The Operation of the Per Country Minimum Tax

As indicated above, the minimum tax is imposed on a country by country basis, not a CFC by CFC basis. If the company uses check-the-box to pay interest and royalties from one entity in the consolidated CFC to another, the interest and royalties are deductible from the payor and are assigned to the country in which they are subject to tax. Thus, for example, an entity incorporated in Ireland which is resident in Bermuda under the Irish place of management rule has its income assigned to Bermuda. Wherever the foreign income is, it bears a (U.S. plus foreign) tax of at least 15 percent. Companies could elect to consolidate the income and tax of all of their entities within a given location.[9]

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[9] Companies are now required to attach a Form 8858 for each of the disregarded entities (DREs) owned by the CFC for which the Form 5471 is being filed. The Form 8858 gives the DRE's Earnings and Profits, the country under whose laws it is organized, and the country in which its principal business activity is conducted.

In calculating the effective tax rate in any location, using a single year could lead to erratic perturbations over time because of the timing of deductions and credits, losses, etc. We therefore propose using a five year average of foreign taxes paid in relation to E&P. Taxes and E&P for the current and past five years would be pooled for the purpose of the ratio calculation. Then to calculate the tentative U.S. tax liability in the current tax year the excess of 15 percent above the average foreign tax rate is multiplied by the five year average of E&P. That is, the five year average effective tax rate and the income it applies to should be based on the same pool of income. Otherwise, there would be opportunities for manipulating the timing of income and deductions to reduce the U.S. tax.

In the expensing variations, current real investment can be deducted from the taxable E&P base. *But the expensing does not change the relevant average foreign effective tax rate for the purpose of calculating the stable residual U.S. tax rate.* The foreign effective tax rate, which determines the residual U.S. tax rate, is unaffected by the expensing.

Smoothing annual variations in foreign effective tax rates reduces the possibility that a given subsidiary will move above and below the 15 percent threshold over time. Another important reason for averaging is that it helps to achieve the exemption of the normal return in the expensing option because it increases the likelihood that the tax rate that applies to the deduction is the same as the tax rate that applies to the subsequent income.

The expensing under the minimum tax is intended to make the forward looking U.S. ETR on the *normal return* to investment zero while the forward looking ETR on the *excess return* bears a total tax, including both the foreign and U.S. components, of 15 percentage points. In the smoothing of effective tax rates and income that we propose, the deduction for investment is always for current year investment, not a five year average, in order to maintain the zero forward looking U.S. effective tax rate on the normal return. A delay in the deduction through averaging would fail to accomplish this objective.

Consider the case of a subsidiary in a country with a 5 percent effective tax rate. The U.S. tax is therefore (.15-.05) or 10 percent of the taxable base. The subsidiary's current pre-tax E&P is 200 per year. The tentative U.S. tax before expensing would therefore be (.15-.05)*200=20. It considers an investment of 100 in the current year.[10] This would be deductible from the U.S. taxable base and the current tax would therefore become (.15-.05)*(200-100)=10.

The company expects to earn 30 each year on the investment but the normal return, its cost of capital, is only 10 or 10 percent. Its annual excess return is therefore 20. The present discounted value of the excess return is 20/.1 =200. The present value of the U.S. tax on the return from the investment is (30*.1)/.1 minus the 10 of tax that was saved from the current expensing, i.e., 30-10=20. The total effective tax rate on the expected excess return is 15 percent, the 10 percent of U.S. tax plus the 5 percent of foreign tax.[11] If the expected return had been only 10 percent, the normal level, the expected U.S. tax rate on the investment would be zero. Of course the foreign 5 percent tax would remain.

One specific issue is what to do with withholding taxes on dividends. They cannot be linked to any particular location's income because of payments up the tiers of affiliates. Dividends also vary from year to year so attributing them to a particular location would be inconsistent with the goal of stable per country effective tax rates. One solution would be to credit withholding taxes against any combined U.S. tentative tax liability at the parent level.

Another issue that arises is whether assets beyond tangible capital can be expensed. This issue is of particular concern for financial businesses. Consideration might be given to net of debt active business assets if they can be precisely defined.

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[10] We assume for simplicity that the capital does not depreciate.
[11] In fact, the marginal foreign tax rate on the excess return may not be exactly equal to the effective tax rate. The relevant statutory rate which can be different from the effective tax rate may apply. But the company's own effective rate, the ratio of actual taxes paid to economic income, is the best feasible approximation. The relevant statutory rate may be virtually impossible to determine because of tax holidays, patent boxes, state and regional differences, negotiated rates, etc.

B. The Operation of the Overall Minimum Tax

The overall minimum tax would operate similarly to the per country minimum tax. The overall foreign tax rate for the purpose of the minimum tax would be calculated using a five year average of foreign taxes paid in relation to E&P. Since the overall effective rate is likely to be less noisy than effective tax rates calculated at the country level, the averaging could be over a shorter period.

C. The One-Time Tax when Dividends are Exempt

We assume there would be a one-time tax on the stock of pre-effective date untaxed deferrals in all the proposals in which dividends are exempt. Under both the country by country and overall minimum tax options with expensing, the one-time tax on pre-effective date untaxed deferrals takes a consistent form. Instead of applying to all untaxed deferred income, tangible capital can be deducted from total accumulated deferrals for the purposes of the tax. Only the 'trapped cash' that gets the greatest benefits from the new regime is taxed.[12]

D. Acquisitions under the Expensing Versions of the Minimum Tax

A tax system should not distinguish between the treatment of a Greenfield investment and an acquisition of a similar operating asset. Investing in a plant should not have a tax treatment different from acquiring a company that owns a similar plant. Therefore some allowance should be given for the assets obtained by acquisition. An annual deduction against the minimum tax base equal to the 'normal' return on the market value of tangible assets acquired would be appropriate. Indeed, it seems appropriate to include all active operating assets acquired including

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[12] An alternative with the same goal would be to simply tax the entity's portfolio investments to the extent that they are less than total deferrals. They are the assets that yield income in the passive basket.

intangible assets in the applicable base for the purposes of the deduction.[13] (In the case of the Greenfield investment, most of the intangible investments like start-up costs and market development are expensed.) The main objective of the minimum tax is to tax the excess return attributable to intangible assets developed by the parent, not the normal return on assets acquired.[14]

Taxing the excess return would not put U.S. companies at a competitive disadvantage in making foreign investments and acquisitions. They will still make the investments if they are more efficient than their rivals. If the intangible that is the source of the excess return is mobile, such as a patent used to produce a good sold on the worldwide market, the tax may just change where the investment is made. The choice of location will be less influenced by tax considerations than under the current system.

It might seem inappropriate to attribute all of the excess return to the U.S. parent. Some contribution might be made by researchers and marketers abroad. But any excess return is taxed at most at 50 percent the normal U.S. corporate rate (assuming a U.S. statutory rate of 30 percent and minimum tax of 15 percent), which is equivalent to assuming that half of the excess return is the result of the parent's activities. That is probably a substantial underestimate because, for example, a disproportionate amount of U.S. company R&D is still performed in the United States (Yorgason 2007). If a foreign company acquired by the parent has valuable intangibles, that would be reflected in the acquisition price for which an allowance against the minimum tax is given.

The annual allowance for the value of acquired assets would only be applied to the equity invested by the parent. If some of the acquisition debt is on the parent's books, it should be allocated to the new acquisition.

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[13] An annual allowance rather than an immediate deduction for the entire acquisition price is suggested to avoid large variations in taxable income over time. However, it does require measuring the normal return so a system of immediate expensing with carry-forwards might be considered.

[14] Whether the asset base should be depreciated over time might arise. But the normal return being imputed is a net of depreciation return so depreciating the assets is not appropriate.

We note that the treatment of acquisitions would be simpler under the overall minimum tax than under the per country tax as it would not be necessary to allocate the assets in a foreign acquisition to particular locations in the former.

Another issue related to acquisitions concerns the treatment of existing assets at the time of the effective date of the new system. An alternative is to not give a deduction for the capital against the one-time tax and instead give an allowance for the initial stock of capital. If firms were to receive an allowance for assets obtained in acquisitions as discussed above, they should receive an allowance for the initial stock of capital in the transition to the new system.

V. CRITERIA FOR JUDGING THE ALTERNATIVE SCHEMES

The question we are interested in evaluating is which of the proposals gets closest to fulfilling the goals of efficiency and simplicity. We take a broad view of efficiency to include the losses from income shifting attributable to tax planning costs and the distortions in investment incentives. We consider the issues listed below in our analysis of the desirability of the alternative schemes:

1. The lockout effect. All of the proposals eliminate the actual and implicit burden of the dividend repatriation tax. Because of the large implicit burden from large growing accumulations, this is a source of a substantial efficiency gain.

2. Changes in the incentives to shift income. These incentives disappear completely under full inclusion except for the companies that remain in excess credit. On the other hand, they expand under dividend exemption because of the elimination of the repatriation tax. The question will be whether the minimum tax is sufficient to reduce shifting incentives compared to the current system despite the elimination of the lockout burden. How close will the effective tax rate in a low tax location get to the undistorted (by income shifting) local rate?

3. Is the pattern of the changes in effective tax rates consistent with a more efficient worldwide allocation of capital? This means less distorted investment incentives due to income

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shifting opportunities but also not imposing burdensome U.S. tax when the company faces intense competition in foreign locations.

4. Revenue. Although we generally adopt the worldwide efficiency criterion, for the same worldwide revenue we would prefer it be paid to the U.S. Treasury rather than go into foreign coffers. Which country gets the revenue depends on the plan's incentives to lower foreign tax. Under full inclusion, the company has no incentive to lower foreign taxes unless it has excess foreign tax credits. In contrast, the company has the incentive to lower any foreign tax under dividend exemption. Under the per country minimum tax (and under the overall minimum tax if the company is above the threshold), it has the incentive to lower any foreign tax above a 15 percent rate. Under the Japanese style dividend exemption cliff, companies have an incentive to be above the 15 percent threshold as long as it is less than the home country full inclusion rate.

5. Matching benefits and costs. For example, are the companies that get a large benefit from the freeing of their cash from the lockout effect the ones who have to pay additional tax?

6. Complexity. This includes credit planning and repatriation tax avoidance, expense allocations to foreign income, active business tests, effective foreign tax rate calculations, etc.

7. Incentives for additional tax planning such as switching from taxable royalties to exempt equity under dividend exemption.

8. Changes in the incentives to expatriate through inversions or mergers with foreign companies. Any increase in the U.S. tax on foreign income would tend to increase the benefits of expatriation but this may be offset somewhat by elimination of the lockout effect and reduced complexity.

VI. THE EFFICIENCY COST OF ACCUMULATING DEFERRALS

The efficiency cost to companies of avoiding the repatriation tax on dividends is important in evaluating any shift from the current worldwide system to a system in which U.S. tax liabilities do not depend on foreign dividends. These implicit costs attributable to ballooning

parent debt and foregone domestic opportunities, etc., may be much larger than the explicit tax costs resulting from actual distributions. These costs may vary over the life cycle of a company's foreign operations so their impact on the effective tax rates on foreign investment will depend on whether the foreign operation is relatively new or relatively mature with a large stock of accumulated untaxed deferrals.

Estimates of the implicit burden of avoiding the residual U.S. tax on foreign dividends have tended to suggest a rather modest cost. Studies by Grubert and Mutti (2001) and Desai, Foley and Hines (2001) report efficiency costs of about one percent of foreign income. Both used a similar methodology, calculating the 'deadweight loss' attributable to the repatriation tax for a given investment based on CFC dividend repatriation equations. Grubert and Mutti concluded that in countries with effective tax rates below 10 percent the efficiency loss amounted to 1.7 percent of income. Adding the residual tax on actual dividends resulted in a combined cost of the repatriation tax of about 3 percent for a given investment. More recently, Grubert and Altshuler (2008) added a measure of potential accumulations of deferred income to a repatriation equation and concluded that the efficiency cost increases as the potential stock of deferrals increase. Indeed, the deterrent effect of the residual tax on repatriations appeared to lose its impact after 25 years of potential accumulations. But on the basis of the distribution of CFC ages they concluded that the average efficiency cost was still about one percent of 2002 income. They, however, did not project what the impact of continuing accumulations would be in the future.

Some studies of residence relocations and cross-border mergers and acquisitions have found a very large impact of the dividend repatriation tax (Huizinga and Voget 2009, Voget 2011, and Arulampalam, Devereux and Liberini 2012). These studies are based largely on non-U.S. companies headquartered in countries such as the United Kingdom that used to have worldwide systems. But these countries did not seem to have anything comparable to Section 956 which subjects subsidiary loans to and investments in to the United States to current taxation. Without this type of rule, the subsidiary could get cash to the parent free from tax, so it is surprising to

find that the potential repatriation tax has much impact. Therefore, it is only for U.S. MNCs that one might expect to see a significant impact.

Here we look at the issue again. One reason to do so is the unexpectedly large response to the 2005 repatriation tax holiday in which companies were able to bring back dividends in excess of a historical base subject to a 5.25 percent tax net of a scaled down credit. The companies who took advantage of the tax holiday paid an average of 3.6 percent on their repatriations (Redmiles 2008). They were willing to pay this amount to avoid actual or implicit future costs of at least this amount in terms of present value.

We go into the details of this analysis in Appendix A. We develop a model that incorporates the assumption that avoiding the repatriation tax is not costless, and further that the marginal cost of additional deferrals rises as the stock of accumulations grows relative to current earnings. The empirical analysis of repatriations under the 2005 tax holiday confirms these hypotheses. The repatriation tax holiday evidence is then used to calibrate the marginal cost of repatriation tax avoidance and how it evolves as deferrals accumulate.

The Tobit regressions presented and discussed in Appendix A use 2004 data from U.S. Treasury tax files on companies' tax holiday repatriations and accumulated deferrals before the holiday to identify the factors that increase the marginal costs of avoiding the repatriation tax. Alternative specifications are used. One examines the relationship between the share of accumulated deferrals that were repatriated and the size of accumulations relative to current income. Another specification scales variables by current sales and related repatriations to the size of the stock of deferrals. In that specification the square of the stock of deferrals was also added as an independent variable to test for the possibility that an increasing stock motivated a disproportionate increase in repatriations. Other independent variables include parent R&D intensity, the company's foreign profit margin on sales, the amount of accumulated income previously taxed under the CFC rules, and the ratio of tangible capital to sales.

The results provide strong support for the hypothesis that the marginal cost of deferring income rises as the accumulated stock of deferrals increase.[15] The share of accumulated deferrals repatriated in 2004 rose when the accumulated stock was higher in relation to current income. A higher stock of deferrals resulted in a disproportionate rise in tax holiday repatriations. In addition, parent R&D intensity and the profit margin abroad had a very significant impact in increasing tax holiday repatriations. The highly profitable, high tech subsidiaries seemed to have much fewer profitable opportunities for reinvesting their income.

A model (presented in Appendix A), which incorporates the rising marginal cost of deferral findings, is used to illustrate a company's repatriation decision under a permanent repatriation tax and under a temporary reduction in the repatriation tax. Under a permanent repatriation tax, the company begins to repatriate when the marginal cost of permanently retaining another dollar rises to equal the repatriation tax. In contrast, consider a temporary tax holiday tax rate after credits of 5 percent. The company will repatriate income beyond the point at which the marginal cost of further deferrals is equal to 5 percentage points. The reason is that an additional dollar of tax holiday repatriations saves not the constant cost of another dollar of permanent accumulations at that point but the rising marginal costs of greater accumulations as the deferral process begins again under the higher, normal repatriation tax. The tax holiday gives the subsidiary a 'fresh start' so that after the tax holiday it can begin deferring income with a low stock of deferrals and much lower marginal costs. It will repatriate a greater amount if the marginal cost of deferrals rises more steeply as the stock of deferrals grow.

We use the tax holiday evidence to calibrate the optimal conditions for repatriating under a tax holiday. The calibration indicates the extent to which the marginal cost of deferring income

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[15] If the marginal cost of any year's additional deferrals were constant, contrary to our hypothesis, the estimate of the implicit cost of deferrals could be higher. This would imply that *any* repatriation under the tax holiday would have had an implicit cost above the holiday tax rate. Under the rising cost hypothesis, this is not the case because of the 'fresh start' benefits that arise from delaying the onset of future high costs. Immediately after the tax holiday repatriations the marginal cost of deferrals is low, below the tax holiday tax rate, but may rise significantly as time goes on.

in a low tax profitable operation abroad rises as the stock of deferrals grows. As expected, the marginal cost of deferral is very low immediately after the tax holiday repatriations, but after 10 years, that is, in the year 2015, it rises to about 7 percentage points. This is consistent with BEA data which indicate that total retained earnings of nonbank affiliates abroad at the end of 2010 were almost double the amount at the end of 2004 even after the large tax holiday repatriations in 2005 and the severe recession. Thus in the effective tax rate simulations that follow, we are conservative in assuming a cost of 5 percentage points for a mature highly profitable, R&D intensive company.[16]

VII. EFFECTIVE TAX RATE SIMULATIONS

A. The Model

Simulations are useful in showing how the various alternatives work and their consequences. Because of the evidence of the importance of income shifting, we emphasize how the alternative systems affect shifting incentives and how this translates into changes in effective tax rates.[17] The simulations therefore show the effect of different policies on several important behavioral margins. These include the investment location decision, the income shifting decision, and the repatriation planning decision. In addition, they can indicate the change in companies' incentives to expatriate in terms of any increase in tax liabilities net of reduced company costs for income shifting and repatriation planning.

In analyzing income shifting, it is important to distinguish between two types of shifting, that is, income shifting before the introduction of check-the-box and income shifting after check-the-box. Before the introduction of check-the-box, stripping income to a tax haven through intercompany payments like interest and royalties was limited by the subpart F rules. It was

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[16] It might be claimed that companies expected another repatriation tax holiday sometime in a few years. If so, they repatriated less than our model would indicate, causing us to underestimate the marginal cost of additional deferrals.

[17] See, for example, Clausing (2009) for an estimate of U.S. corporate revenue lost to income shifting.

therefore necessary to invest in real operations in a low tax country in order to locate income there. Moreover, greater investment would facilitate greater income shifting because of a greater volume of intercompany transactions, for example. After the introduction of check-the-box this link between real investment and the location of income became much weaker (see Grubert 2012 and Kleinbard 2011). But the two types of income shifting can, in fact, reinforce each other. The use of a tax haven can make the tax rate on an operation in a low tax country even lower and can make a high tax country into a relatively low tax one.

The effective tax rates for various policy scenarios are presented in Table 1. We assume 3 countries: the United States, a high tax foreign country and a low tax country in which real operations can be located. There is also a pure tax haven that income can be shifted to if check-the-box can be used. In each country depreciation for tax purposes is equal to economic depreciation. There is no third party debt. Therefore, in the absence of income shifting, the country effective tax rate is equal to the statutory rate. For the purpose of the simulations, the statutory tax rate is equal to 30 percent in the United States, 5 percent in the low tax country and 25 percent in the high tax country (and zero in the tax haven). The current law effective tax rates take the interest allocation rules into account. These rules bind only for firms with excess foreign tax credits.

We assume that the subsidiary in the low tax country produces a high tech good on the basis of a U.S. developed intangible asset. It therefore earns an excess return before paying royalties to the parent for the contribution of its intellectual property. The subsidiary's own contribution to the company's worldwide profits is just the normal return to its capital. The difference in tax rates creates an incentive to underpay the royalty to the U.S. parent but the underpayment is not costless. Tax planning takes resources and there is also the risk of penalties after audit. We assume that, in this pre-check-the-box type of tax planning, the cost of the income shifting or underpayment of royalties is a quadratic function of the amount shifted relative to the

amount of real capital. The parameter in the function is calibrated to be consistent with observed profit margins in low tax countries under current law.

Income shifting alters the effective tax rate on new investment because added investment in a location increases the opportunity for additional income shifting. There are more transactions with other related parties and greater ability to use intangibles developed in the United States. In addition, if hybrid entities in tax havens can be used, investment incentives are the same as if the host countries for operating subsidiaries had lowered their tax rates.

Income shifting will have an effect on investment in both high and low tax countries. Additional investment in the high tax country benefits because some of its income can be shifted to the low tax country or to tax havens.

The subsidiary in the high tax foreign country produces a routine component and earns a normal return in the absence of profit shifting. It has an incentive to shift income to the low tax country but the ability to engage in that type of shifting is much more limited because it does not exploit valuable intangibles. The parameter in its quadratic cost of shifting function is therefore much greater.

In the simulations for current law, we assume, on the basis of the above analysis of the response to the repatriation tax holiday, that the burden of the repatriation tax on dividends from the low tax subsidiary is 5 percent of subsidiary pre-tax income if the parent is not in excess credit. This includes both the tax on actual dividends and the implicit cost of avoiding repatriations. We assume the burden on repatriations from the high tax country is 1 percent of subsidiary pre-tax income. The company has some expectation of being in excess credit but we weight this frequency at only .2, lower than past experience, because of the new 'anti-splitter' rules restricting the extent to which foreign tax credits can be magnified relative to the income being repatriated. If the company is in excess credit, its subsidiary will pay greater royalties because they will now be free from U.S. tax.

Because of the distinction between pre and post check-the-box tax planning, effective tax rates for each scenario are presented for two cases. The first is for the situation before check-the-box when stripping income to tax havens was restricted by the subpart F rules. The second case is for the tax planning environment after check-the-box. After the implementation of check-the-box, income in both the high tax and low tax country could be shifted to a tax haven without triggering a current inclusion in U.S. taxable income. Because organizing hybrid entities under check-the box seems relatively simple, we assume that half of both high tax and low tax income is shifted to the tax haven.

The simulations consider low tax and high tax investments separately. Each investment is considered in turn so it gets the benefit of any additional shifting opportunities it creates. The formulas and further details on the simulations are provided in Appendix B.

B. Simulation Results

Row one in Table 1 shows that there is a substantial negative effective tax rate on investing in the low tax country, that is, a large tax subsidy under our current law baseline (current law with a 30 percent statutory U.S. rate). This is true even in the absence of check-the-box in spite of the substantial cost of the dividend repatriation tax we have assumed. The large tax subsidy is attributable to the combination of the benefits of underpaying the royalty by the low tax subsidiary and the exemption of the royalties that are paid if firms expect to be in excess credit. There is also a visible effect on the effective tax rate in the high tax subsidiary because of the opportunity for shifting income to the low tax subsidiary.

As shown in column two for current law, check-the-box has a large impact on effective tax rates. Effective tax rates on investment in both locations decline substantially. This is particularly apparent in the high tax location because of the opportunity for shifting formerly highly taxed income to a tax haven. In addition, less income from the high tax location is shifted to the low tax subsidiary because of the new opportunity for shifting to a tax haven. The gap

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between the effective tax rates in the two locations gets much narrower. For non-tax reasons the company may therefore decide to locate the high tech operation in the high tax location.

Under full inclusion there is no repatriation burden as all income earned abroad bears a current U.S. tax. The second row shows the 30 percent effective tax rate that applies to new investment in both countries. There is no incentive to shift income but also no incentive to lower any foreign tax unless the company is in an excess credit position.

The third row shows that the elimination of the repatriation tax under dividend exemption pushes the effective tax rate in the low tax country even further into negative territory than under current law. Dropping the dividend repatriation tax outweighs the full taxation of royalties under dividend exemption. Because of the assumed quadratic cost of shifting function, and therefore a linear marginal cost of shifting function, the benefits of income shifting depend on the square of the tax differential. So the increase in the tax differential from 20 percentage points (30 percent – 10 percent) to 25 percentage points (30 percent – 5 percent) has a significant impact. With check-the-box, the effective tax rate is the equivalent of almost a 30 percent subsidy for investment in the low tax location. This comparison of current law and dividend exemption differs from earlier estimates (Altshuler and Grubert 2001) because the response to the 2005 repatriation tax holiday and the new 'anti-splitter' legislation requires an adjustment to the burden of the repatriation tax and the frequency of excess credit positions.

The next row has the Japanese type dividend exemption system with a minimum tax of 15 percent in each location. Recall that there is an exception for active businesses so the low tax and high tax operations with real investment qualify. The tax haven does not qualify because it has no real operations. Neither the low tax subsidiary nor the high tax subsidiary would use the tax haven because of the cliff created by the Japanese type system. Any tax haven income would be taxed at the U.S. rate of 30 percent rather than 5 percent in the low tax country or 25 percent in the high tax country. Therefore this proposal just gets us back to dividend exemption without check-the-box, which is confirmed by the estimates.

The anti-base erosion alternative in the Camp bill that is modeled on the Japanese system seems much tougher than just requiring an active business. It appears that it is necessary to serve mainly local customers to avoid the full inclusion. If this causes the low tax subsidiary to fail the test, it creates the rather bizarre incentive to pay a tax greater than 15 percent to escape the cliff.

The next two rows in Table 1 show effective tax rates for the 15 percent per country minimum tax. In contrast to the previous Japanese type dividend exemption with a minimum tax, there is no exception for an active business. There is also no cliff so any income that is taxed at a tax rate below 15 percent only pays the amount to the United States that would raise the total tax rate to 15 percent. Dividends after any minimum tax has been paid are exempt. The first version does not have expensing against the U.S minimum tax base in the location and the next row includes the expensing variation.

The implications of this proposal are much different from the Japanese type variation of dividend exemption. Investment in the low tax country gets no active business exception. Its income is always taxed at 15 percent whether it is shifted to the tax haven or not. On the other hand, the high tax country continues to benefit from having its income shifted to a tax haven. In the tax haven it pays only 15 percent compared to 25 percent in its home location. In contrast to the cliff case that also means the United States receives the 15 percent tax on the tax haven income.

This version of the minimum tax has a substantial effect on the effective tax rates. Note that in the no expensing case the effective tax rate in the low tax location rises to 5.6 percent, very close to the country's actual undistorted rate and much higher than the earlier version of the minimum tax with the active business exemption. It is not as high as 15 percent, the minimum tax rate, because the 15 percent differential from the U.S. rate and the 10 percent differential from the high tax rate still induce income shifting (from the U.S. to the low tax operation and from the high tax operation to the low tax operation). Furthermore, the effective tax rate on investment in

the high tax country is substantially below the country's nominal rate because there is still a tax benefit from using check-the-box to locate income in the tax haven.

In the low tax country, the expensing alternative that exempts the normal investment return results in a negative effective tax rate, but the effective tax subsidy is much smaller than under pure dividend exemption. Instead of bearing the 15 percent minimum tax, the normal return just pays the local 5 percent. In the high tax country, the opportunity to expense investment has no effect because any income there is not subject to the minimum tax.

There may be some concern that allowing expensing against the minimum tax on foreign income, but not on domestic income, will result in 'runaway plants'. The simulations show that the fear is unwarranted. Even with expensing the minimum tax results in a much higher effective tax in the low tax country than under current law.

The next rows show effective tax rates under the overall minimum tax. The rates will differ depending on whether the company's overall effective tax rate on foreign source income is above or below the 15 percent minimum tax threshold. We assume in our simulations that there are existing operations abroad that determine whether the company is above or below this threshold and that any new investment will not affect the company's status. Companies above the threshold owe no minimum tax and thus have the same incentives as under dividend exemption.

For companies below the threshold, any additional income earned on an investment is taxed at the minimum tax rate of 15 percent. There is no longer an incentive to shift income to the haven or from the high tax to the low tax country. Companies will still have an incentive to shift income out of the United States, however. Table 1 shows that the effective tax rate for investment in the low tax country is 6 percent which is slightly higher than the effective tax rate under the per country minimum tax since there is no shifting from the high tax to the low tax operation. The effective tax rate for the routine investment in the high tax country is 15 percent, the minimum tax rate, since in our model there is no mechanism in the form of intangibles or debt for the company to shift income from the United States to the high tax country. (But the overall

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minimum tax could induce the company to set up the high-tech investment in the high tax country. The effective tax rate on this investment would be 6 percent, the same as for the high-tech investment in the low tax country. Similarly, a routine investment in the low tax country would face an effective tax rate of 15 percent.)

The overall minimum tax could be combined with expensing so as to tax only the excess returns earned abroad. The effective tax rate for the investment in the low tax country for a company below the overall minimum tax threshold would be -4.0 percent. As with the alternative with no expensing, the effective tax rate is slightly above the per country effective tax rate since there is no incentive to shift income from the high tax to the low tax operation. Companies above the threshold would face the same incentives as dividend exemption under the expensing option yielding an effective tax rate of 10.7 percent. They owe no minimum tax and have an incentive to use the haven as long as they remain above the threshold.

The routine investment in the high tax country earns only a normal return which would be exempt from U.S. tax under expensing. The normal foreign tax would be due on the pre-expensing base which would increase the spillover of credits against the U.S. tax liability. These credits reduce the total tax liability of the investment. With full expensing, the effective tax rate would be zero in the high tax country for firms below the threshold. Companies above the threshold would have the same incentives as under dividend exemption.

Finally, we can compare the repeal of check-the-box under current law with the introduction of a minimum tax while keeping check-the-box. As shown in column one for current law, tax planning before check-the-box still provided many opportunities for income shifting, as is evident from the significant negative effective tax rate in the low tax country. The effective tax rates under the per country minimum tax is much closer to the nominal low tax country rate. The same is true for parents with effective tax rates on foreign income below 15 percent under the overall minimum tax. Furthermore, under both the per country and overall minimum taxes, the

high tax country can still use the tax haven to lower its tax rates, and the United States will therefore collect the 15 percent on the tax haven income.

C. Simulations of U.S. and Foreign Revenue

Table 2 presents the U.S. and foreign revenue resulting from the investments in the scenarios. The pattern is in general what the effective tax rates in Table 2 would lead one to expect. In each case, an investment of $100 is assumed with a normal return of $10.[18] In all cases except full inclusion the investment in the low tax country results in a revenue loss for the United States. The small amount received from actual repatriations under current law is far outweighed by the loss from the income shifted out. The loss to the United States widens after the introduction of check-the-box and even further under pure dividend exemption. But the loss is reduced significantly under the per country minimum tax both with and without expensing (and under the overall minimum tax when the company is below the threshold). Not surprisingly, foreign governments always gain less than the United States loses. The foreign gain is somewhat greater under both forms of the minimum tax than under the dividend exemption option because it is less advantageous to shift income from the high tax country to the low tax country.

As noted in the discussion of the effective tax rates, the Japanese version of dividend exemption just returns the system to dividend exemption before check-the-box. But the differing revenue impact of the Japanese version and the per country minimum tax from investment in the high tax country is notable. Because of the cliff in the Japanese type of scheme, the high tax subsidiary would not use check-the box to shift income to the tax haven because it would be taxed at 30 percent rather than 25 percent at home. Under the per country minimum tax, the subsidiary still gets a tax saving from using the tax haven, a tax rate of 15 percent rather than 25 percent. That means that the United States gets the 15 percent rather than having the income all

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[18] We are implicitly assuming that the capital for the investment would not have yielded any revenue if invested elsewhere. Estimates comparing these investments with an investment in the United States earning a normal return would have yielded similar results.

taxed in the high tax foreign country. The overall minimum tax generates no tax revenue for the United States for investment in high tax countries regardless of whether the company is above or below the threshold.

D. Expense allocations under the minimum tax

Any dividend exemption system raises the issue of parent overhead deductions like interest and whether there should be allocations to exempt income. If there is a denial of parent interest deductions in the case of the minimum tax, the allocations are presumably based on worldwide fungibility. Furthermore, since the income below the 15 percent threshold is subject to U.S. tax, any interest allocated abroad should receive a deduction at the rate at which the income would be taxed by the United States. For example, in a country with a 5 percent tax rate, the U.S. tax would be 10 percent of income and the allocated interest should be deductible at that rate. A company could of course avail itself of self-help by shifting debt abroad and getting a combined deduction of at least 15 percent.

The question is how much impact this allocation would have in low tax countries compared to the impact of the minimum tax and its effect on income shifting. Consider a hypothetical case. Assume that 25 percent of the investment in a low tax country is in the form of parent debt that gets allocated. The company engages in self–help and obtains a deduction at 15 percent. The tax differential between the deduction abroad and the deduction at home is therefore 15 percent. If the interest rate is equal to the normal pre-tax rate of return on the entire investment, the allocation raises the effective tax rate on the investment by 3.75 percentage points. Even though this is likely to be an overestimate because of the expansive assumptions, it is modest compared to the impact of the minimum tax on the effective tax rate in low tax countries revealed in the simulations in Table 1. For example, the country by country minimum tax raises the effective tax rate on a high tech investment in a country with a 5 percent tax rate by more than 25 percentage points. The reason for the discrepancy is that the allocated debt is based

only on the operation's capital while the minimum tax applies to the entire base of income including the large amount shifted from the parent. Unlike interest allocation, the minimum tax reduces the marginal incentive to shift income.

VIII. REVENUE

A. What does revenue depend on?

The simulations illustrate some factors that affect revenue. More generally the impact of the proposals on revenue will depend on the following elements:

1. The direct tax on each source of foreign income.

2. The extent of cross-crediting. This form of tax planning will still occur under full inclusion so that, for example, royalties will be shielded if the company is in an excess credit position. High tax income in a location can also offset low tax income elsewhere. The frequency of excess credits may, however, decline under full inclusion because of the inclusion of low tax income in the tax base. There is no cross-crediting under the dividend exemption or per country minimum tax proposals. There will be some cross-crediting of equity income under the overall minimum tax (but not to royalties).

3. Parent overhead expense allocations. We assume they continue under full inclusion but not the other proposals.

4. The extent to which foreign losses can be deducted from domestic taxable income. Under full inclusion we assume foreign losses can come home. Losses do not come home under the other proposals. However, as described above, subsidiary losses do enter into the computation of its effective tax rate for the purpose of the minimum tax.

5. The incentives to reduce foreign tax. As discussed above, under full inclusion the company has no incentive to reduce the taxes it pays abroad as long as it is not in an excess credit position. Under the per country minimum tax (and overall minimum tax when it is not binding), the company has an incentive to use a tax haven for the location of some income to reduce any

tax above 15 percent. The United States would tax the income in the tax haven at the minimum tax rate. The company has the same incentive to lower foreign taxes above 15 percent under the Japanese style version, but it cannot use a pure tax haven and has the somewhat odd incentive to pay more than 15 percent in low tax countries to escape the cliff.

6. Other behavioral responses. In some of the proposals, like the per country minimum tax (and overall minimum tax when it is binding) and full inclusion, companies will have smaller incentives to shift income, particularly from the United States than under the current system. In contrast, the incentive for income shifting increases under pure dividend exemption because the benefit of the elimination of the actual and implicit dividend repatriation taxes is magnified. Under both minimum tax proposals and dividend exemption, companies will have an incentive to switch from fully taxable royalties to equity income. That incentive, however, is smaller under the minimum tax because the equity income will bear a tax of at least 15 percent.

B. Revenue from Foreign Source Income under Current Law

Treasury tax returns indicate that in 2006, $32.0 billion of revenue was collected on all of corporate foreign source income. This amounted to less than 4 percent of all foreign income including deferred profits but before allocated parent expenses. But the amount raised from dividends represents only a very small portion of this revenue. Indeed, if dividends are removed from taxable foreign income total US tax revenue *increases* by about one billion. The dividends taxable on the margin after credits are more than offset by the credits originating with dividends that currently spill over to other income. The residual tax is obtained from royalties, passive income, export sales source income and branch income.

C. Some Static Revenue Comparisons of Reform Alternatives

We do not present full revenue estimates because they require precise knowledge of the various possible behavioral responses. But we can discuss the static no-behavioral change

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estimates in relative terms and speculate on the behavioral responses.[19] The tabulations discussed below are from the 2006 Treasury corporate tax return files and assume a 30 percent tax rate for the United States.

Because of the decline in average effective foreign tax rates that companies pay and the large amount of deferred income in low tax jurisdictions, the static revenue gain from repealing deferral is very large. The 15 percent per country minimum tax without expensing gains almost exactly half of the static full inclusion amount. About 55 percent of total E&P (net of dividends received from related parties) is in entities subject to the per country minimum tax, an indication that a large portion of MNC income bears a very low rate of tax. There is very little reduction in static revenue when expensing is added to the per country minimum tax proposal. It turns out that little real investment takes place in the locations affected by the minimum tax.

Finally, on a static basis pure dividend exemption is virtually revenue neutral. This is, however, without adjusting for the 'anti-splitters' legislation which would reduce excess foreign tax credits that shield royalties under current law. That would increase the cost of converting to dividend exemption under which royalties are fully taxed.

As indicated above, each of the options will induce large responses, but of different types and magnitude. Under full inclusion the company has no incentive to lower foreign taxes as long as it does not have excess credits. But it also gets no benefit from shifting income out of the United States so more income would be taxed in the United States. On the other hand, under dividend exemption companies have the incentive to reduce any foreign tax because they have no value as credits. But the elimination of the repatriation tax under dividend exemption will increase income shifting from the United States because low tax foreign income is now worth more. In addition, companies will tend to switch from taxable royalties to exempt equity income to the extent this is possible.

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[19] We are very grateful to Ralph Rector for these tabulations. For the minimum tax the tabulations required the imputation of tax to a CFC's disregarded entities under check-the-box.

The per country minimum tax falls somewhere between these two extremes in terms of behavioral responses. Companies have no incentive to lower foreign taxes in a location below a 15 percent rate but they will attempt to lower taxes above that threshold. Hybrid entities will still be used to shift high tax income to tax havens where the U.S. per country minimum tax rate of 15 percent applies. Because the minimum tax exempts dividends, there will be a tendency to switch from royalties to equity income, but the benefit is smaller than under dividend exemption because the tax differential is 15 percent rather than 30 percent. And the tendency to increase income shifting because of the elimination of the repatriation tax appears to be more than offset by the minimum tax. Indeed, the effective tax rate simulations suggest that shifting to low tax locations will be much smaller than under current law. In terms of investment location incentives, the effect of the per country minimum tax is smaller than under full inclusion. Behavioral responses to the per country minimum tax that reduce U.S. tax revenue therefore seem muted compared to either dividend exemption or full inclusion.

Behavioral responses for the overall minimum tax depend on whether the company is above or below the minimum tax threshold. Companies above the threshold face the same incentives as are present under dividend exemption. Companies below the threshold have similar incentives to those present under the per country minimum tax.

D. How Much Would Companies Be Willing to Pay for Dividend Exemption?

As we have seen, the evidence from the 2005 repatriation tax holiday suggests that the burden of the dividend repatriation tax is substantial, above 5 percent for the highly profitable, R&D intensive companies that account for much of foreign deferred income. This burden will increase as deferred income continues to accumulate. Bureau of Economic Analysis data on retained earnings indicate that they are now much higher than their pre-2005 peak.

In determining what minimum tax rate companies would be willing to accept, it is important to put the tax holiday rate of 5.25 percent and the 15 percent per country minimum tax

on a comparable footing. Unlike the repatriation holiday with a proportionately scaled down (by 15 percent of foreign tax actually paid) credit, a full credit for the foreign tax would be given against the U.S. tax liability in a country under the minimum tax. In a country with a 5 percent effective tax rate, for example, the burden of the 15 percent minimum tax would be 10 percent. The burden of the 5.25 percent repatriation holiday rate would be 4.5 percent after scaled down credits (5.25 minus .15*5). If the local tax rate is higher, say 10 percent, the 3.75 tax under the holiday (5.25 minus .15*10) is not far from the 5 percent U.S. tax under the minimum tax. Of course, the minimum tax would not apply for effective foreign tax rates 15 percent or above, unlike the tax under the holiday.

On the basis of the tax holiday evidence, we assumed in the simulations that the marginal cost of additional deferrals in a low tax country was 5.0 percentage points. If we assume that the average cost of the repatriation tax is 2.0 percentage points for all of foreign earnings, the benefit to the companies of exempting dividends is about equal to the static revenue gain from a 10 percent per country minimum tax or a 15 percent overall minimum tax. By the same token, the companies' gain from dividend exemption would offset 50 percent or more of their added U.S. tax liabilities from a 15 percentage point minimum tax.

E. Will Host Countries Soak Up the Minimum Tax?

Tax haven countries might be tempted to raise their tax on U.S. operations to soak up the minimum tax because they would not risk losing U.S. investment. This would reduce the revenue the U.S. Treasury obtains but not the impact of the minimum tax on income shifting or the location of investment. It is difficult to make any firm predictions, but the following considerations suggest that it is not likely to be an important phenomenon:

1. In many low tax countries, direct investment by U.S. based companies does not account for a major share of Foreign Direct Investment (FDI). For example, OECD statistics indicate that in 2007, U.S. direct investment in Ireland only accounted for 14 percent of total FDI

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in Ireland.[20] Also, the Allen and Morse (2011) analysis of IPOs on U.S. markets shows that many foreign companies, particularly from China, use tax havens such as Bermuda as a conduit. The tax havens would have to discriminate against U.S. companies to soak up the minimum tax.

2. The 'soak up' rules in Section 901 would be applied to credits under the minimum tax. They deny a credit under current law to cases when a foreign tax depends on the availability of a credit in the home country. Rules under current law also restrict credits in cases where the tax on U.S. companies is not a generally applicable tax.

3. Pure tax havens like Bermuda are very unlikely to increase their tax on U.S. companies. They do not now have an income tax on corporations and would have to introduce one, threatening their tax haven status.

4. If soaking up the minimum tax is a significant possibility, the credit for foreign taxes could be limited, similar to the 95 percent exemption of dividends in many territorial systems.

IX. THE OVERALL VERSUS THE PER COUNTRY MINIMUM TAX

A minimum tax at the level of all active foreign income rather than on a country by country basis may be simpler than the per country option. For example, as noted above, it would not be necessary to allocate the assets in a foreign acquisition to particular locations under the overall minimum tax. It might be successful in targeting the companies that can best exploit a low foreign tax rate. The incentives that a company faces may be usefully summed up by its overall foreign tax rate without having to look at the individual country rates it is composed of.

We compare a 15 percent minimum tax on all foreign income with a per country minimum tax at 10 percent to indicate whether the overall minimum is a serious option. The 2006 Treasury data indicate that the static revenue gains from the two alternatives are very similar. The comparison depends in part on how much foreign income is earned by companies with effective tax rates on foreign income above 15 percentage points. The companies above the threshold

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[20] We are grateful to Laura Power for providing us with these statistics.

would enjoy the equivalent of dividend exemption with no U.S. tax liability, even on low tax income, apart from the tax on royalties. One question therefore is how much current low tax income would be exempt. The companies could also increase tax haven income without confronting the problem of a U.S. repatriation tax. The easiest way for these companies to lower their average foreign tax rate would be to expand their use of check-the-box rather than investing in real activities in low tax countries.

In contrast, for companies *below* the threshold, any new investment would have an effective tax rate of exactly 15 percent. Any additional income is taxed at 15 percent. As indicated in the simulations above, this holds true even for investments in high tax locations because any foreign tax in excess of 15 percent can be used to reduce the U.S. tax.

For a systematic comparison of the 10 percent per country minimum and the 15 percent overall minimum, we use the 2006 Treasury files to construct the distributions of effective foreign tax rates at the *CFC level* under each proposal, and in particular the effective tax rates relevant for new investments. As illustrated in the simulations for the post check-the-box cases, the effective tax rate on real investment in a country depends both on the tax on the income where the investment is located and the tax in the haven to which income is diverted with the use of check-the-box. That is the reason for looking at effective tax rates at the consolidated *CFC level*. The question is whether the overall minimum tax leaves a large amount of low tax income unaffected.

In constructing the distribution for the effective foreign tax rate on new investment under the overall minimum tax we assume that the increase in investment under current law is proportional to the CFC's current E&P. New investment is likely to be where the old capital already is. Each minimum tax proposal may move that investment to another effective tax category. The distributions for the alternatives are therefore in the nature of 'static' estimates before behavioral responses to the new regimes.

As indicated above, all new investment by CFCs owned by MNCs below the 15 percent threshold are given a tax rate on new investment of 15 percent under the overall minimum tax. The CFCs of those MNCs above 15 percent are just given their actual effective tax rates because they are not affected by the U.S. tax.[21]

In the distribution for the per country minimum, the effective tax rate at the CFC level combines the foreign tax paid by entities within the CFC above 10 percent with the 10 percent paid by those subject to the minimum tax. In terms of investing and income shifting incentives, the per country tax may raise the effective tax rate on investments already bearing a high rate of tax while the overall tax might allow low tax investments to escape because they are shielded by the MNC's high tax CFCs.

Table 3 presents the distributions.[22] The first column presents the share of total E&P before tax in each effective tax rate category under current law. It indicates that more than 45 percent of 2006 E&P is in CFCs with effective foreign tax rates below 10 percent. The next column presents the effective foreign tax rate on new investment under the 15 percent overall minimum. We can see that there is a very substantial reduction, of about two thirds, in investment with effective tax rates below 10 percent. That leaves 16.5 percent of *total* income in CFCs with effective tax rates below 10 percent that are unaffected by the overall minimum, compared to 46 percent of total income under current law. The unaffected low tax CFCs are owned by parents above the overall threshold.

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[21] The distributions therefore differ from the assumptions in the effective tax rate simulations above in two ways. No attempt is made to add the burden of the U.S. dividend repatriation tax under current law. In addition the effective tax rates do not take the tax saving from income shifting into consideration.

[22] The table includes data for CFCs that reported both income and foreign tax on IRS Form 5471. The table only includes CFCs where the sum of income for all CFCs controlled by a common parent was positive. Also, the CFC itself must have positive income to be included in the table. (The 2006 Treasury files show that about 36 percent of CFCs did not have positive income.) Finally, CFCs were not included if their foreign tax was negative or if the sum of foreign tax across all of a parent's CFCs was negative. Adjustments were made to CFC income to account for ownership percentage and for income that was transferred between entities that were controlled by the same parent. In addition, total CFC income and tax was allocated between the CFC and connected foreign disregarded entities (if they were present). Foreign tax for disregarded entities was based on country-level imputations.

Looking further down column 2 for the overall minimum tax, we see that 37 percent of total investment would have an effective tax rate exactly at 15 percent. In addition, the CFCs paying high foreign taxes under current law are not much affected by the minimum tax. The amount of E&P in the high tax rate categories is close to the E&P in the categories under current law. Very few of them now have an effective tax rate on new investment at 15 percent because most are owned by parents above the threshold.

Column 3, for the 10 percent per country minimum tax, as expected shows that a large amount of investment will be taxed exactly at 10 percent and no investment will have a lower tax burden.[23] It is possible that the per country minimum raises effective tax rates even for CFCs with relatively high effective tax rates because some of the entities it owns are in a tax haven and therefore subject to the minimum tax. But the high tax categories in column 3 indicate that this effect is relatively modest when they are compared with column 1 (current law).[24] Columns 2 and 3 both suggest that a parent having both high tax and low tax CFCs is relatively uncommon.

The overall minimum tax appears to be successful in targeting the companies that have the greatest opportunities for shifting income, although of course not as effectively as the per country minimum. The reason is suggested by regressions, not shown, based on 2004 Treasury tax return data which indicate that MNCs that are R&D intensive and earn high worldwide profit margins have significantly lower overall effective foreign tax rates. For example, a company with both a worldwide profit margin and the ratio of R&D to sales one standard deviation above their respective means has a foreign effective tax rate about 4 percentage points below the mean.

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[23] The minimum tax calculations for column 3 were made for each country associated with a CFC and its disregarded entities. The calculations were based on a consolidation of income by country for the entities associated with the CFC but not across CFCs. Permitting consolidation of country income across CFCs would reduce the impact of the minimum tax because the aggregation could bring in entities with effective tax rates above 10 percent or with losses.

[24] If a CFC has a loss in an entity in one country and a gain another country, the minimum tax on the latter could make the CFCs effective tax rate substantially above 10 percent. But we exclude these possibilities in Table 3.

The distributions shown in Table 3 are based on corporate returns for 2006 without any adjustments for potential behavioral responses by the companies or governments. They would differ between the two alternative types of minimum taxes. For example, under an overall minimum tax havens would be much less likely to raise their tax on U.S. companies to soak up the minimum tax. They would not be in a position to know each company's overall worldwide position. Indeed, U.S. companies in the same jurisdiction may be on different sides of the overall tax threshold.

The companies would also react somewhat differently under the two alternatives. The per country minimum tax decreases the benefits of a low tax location so companies would shift more investment to relatively high tax countries including the United States. They would continue to use hybrid entities to shift income from countries with tax rates above the minimum tax. Under the overall minimum tax, the response depends on whether the company finds itself above or below the minimum tax threshold. Below the threshold all new investment has the same effective tax rate so there would be a significant shift to higher tax foreign countries both compared to current law and also compared to the per country minimum. Hybrid entities would provide no benefit and some may be unwound. If the MNC is above the overall threshold, it would *increase* its low tax investments because of exemption. They would become more attractive because of the disappearance of the repatriation tax on dividends. Furthermore, using a hybrid to strip income from any country with a positive tax offers a benefit.

Summing up, the overall minimum tax seems a serious alternative to the overall minimum tax. It is not as successful at targeting tax haven investments but it is much simpler. It would also provoke fewer attempts by foreign jurisdictions to soak up the U.S. tax.

Other Minimum Tax Variations

A minimum tax at the CFC level? This would be an intermediate step between the pure per country minimum and the overall foreign minimum tax. But it would soon be transformed

into the equivalent of an overall minimum because companies could use check-the-box to put subsidiaries under the same CFC umbrella if pooling would reduce their potential U.S. tax liability.

An incentive for greater royalties and less reliance on tax haven cost sharing agreements? If a company's foreign income is subject to a 15 percent minimum tax and the normal U.S. tax rate is 30 percent, it will just break even if it pays more royalties. It would save 15 percent by reducing the U.S. minimum tax base and pay the U.S. 30 percent on the royalties, for a net of 15. But this example shows that the Treasury also does not gain if the royalty is from a zero tax country. Any lower rate than 30 percent on the royalty would yield less than the minimum tax liability before the royalty. The United States only gains if the foreign tax rate is greater than the reduction in the U.S. tax on royalties. Any credit for royalties could depend on the foreign tax rate, which would be complicated. The lower rate on royalties could be restricted to entities above the minimum tax threshold, which is also complicated. In summary, there doesn't appear to be any strong reason for a lower tax rate on royalties in the minimum tax system. The minimum tax already substantially reduces the benefits of a tax haven holding company for intangible assets.

X. INCENTIVES TO EXPATRIATE

Because proposals like the minimum tax will increase MNCs' tax liabilities relative to current law, the possibility that this will cause some of them to expatriate is a concern.[25] The issue of expatriation has come back into focus by the recent decision by Aon, the major insurance broker, to move its tax residence to the United Kingdom. The company already has business operations in the United Kingdom so it believes the transaction will not be restricted by the anti-

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[25] See Daniel Shaviro (2011) for a discussion of the electivity of corporate residence under current law and its implications for tax policy. Eric Allen and Susan Morse (2011) look at firms that conducted initial public offerings in the United States between 1997 and 2010 to determine the extent to which firms incorporate in tax havens. Their careful analysis suggests that few U.S. start-ups incorporated in tax havens over the period examined.

inversion provisions in Section 7874. In the prospectus for the reorganization, the company stated that it expected its worldwide tax rate to go down from 30 percent to 26 percent, which seems much more than could be explained by any tax on its dividend repatriations. It could be that it has trouble qualifying for exceptions to subpart F treatment of insurance income. (It apparently expected a loosening of the UK CFC rules and had already been granted a two year exemption from the CFC rules.) We should note that the plan is for a stock transaction so it is apparently not governed by Section 367 on the transfers of intangible property from the United States. Any existing intangible assets will still reside with the U.S. entity. But shareholders in Aon will have to recognize a capital gain on the transaction.

It is useful to first consider why expatriation is harmful to the United States. Aon stated that it would move 20 key executives to London, so in this case the shift in headquarter services does not seem to be quantitatively very significant. It is similar to Halliburton's earlier (in 2007) shift of its headquarters to Dubai from Houston *without* changing its tax residence.

We might ask what makes an American company intrinsically an American company. It is presumably because that is where the source of excess returns originate, particularly the intangible assets or 'know how' developed in the United States. Under an income tax the contribution of the 'know how' should be taxed where it is developed like any other input. Getting the value of these intangibles outside the U.S. tax net may be a reason for expatriation although companies now do not seem to have any trouble migrating their intangibles.

Another source of observed excess returns is the initial risk taking when the company was established. There are examples in recent IPOs of companies in which the 'know how' was developed in the United States but the venture capital financing came from abroad. That offers some justification for a foreign tax residence.

Companies may choose to expatriate because it puts them in a better position to strip income out of the United States using intercompany debt. Presumably that is due to the weaknesses in Section 163j, the object of which is to restrict interest stripping from the United

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States.[26] Apart from avoiding the tax on dividend repatriations, a company may also wish to escape the strictures of the subpart F rules although these have been greatly weakened by check-the-box.

Turning now to the alternative proposals, the large increase in U.S. tax burdens under full inclusion will increase incentives for expatriation. Dividend exemption will reduce them compared to current law. The minimum tax with expensing will tend to eliminate any incentive attributable to differences in the tax on the normal return to capital. Industries like oil drilling are highly capital intensive. On the other hand, the excess returns that are largely attributable to intangible assets *would* be taxed more heavily under the minimum tax. However, companies may be reluctant to go through the valuation problems involved in expatriating the intangibles. In any case, it is difficult to predict the net effect of the minimum tax on expatriation. The proposal could also be linked with a change in 163j to limit the opportunities for earnings stripping provided by expatriation.

XI. COMPLEXITY UNDER THE ALTERNATIVE PROPOSALS

1. Credit planning. Under the current system and full inclusion, that is, any worldwide system, foreign tax credits have to be calculated. Magnifying credits is an important planning strategy although it will be somewhat restricted by the new 'anti-splitter' rules. Credit calculations for active income disappear for active income under the minimum tax and dividend exemption options. Foreign tax credits would still need to be calculated for passive income but that is a much smaller pool of income.

2. Expense allocations to foreign income. This is another important source of complexity in current law.[27] We have assumed that allocations are not made under dividend exemption or any of the minimum tax options. (The issue is discussed above in section VII.)

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[26] Altshuler and Grubert (2010) suggested that a company's worldwide debt be allocated to various locations based on assets. This would apply to both U.S. and foreign based MNCs, similar to one of the options in Section 882-5, which applies to the interest expense of foreign branches in the United States.

3. The determination of what is an active business under the active business exception in the Japanese type version of dividend exemption. Determining what is an active finance exception to the current inclusion of financial income in U.S. taxable income has required elaborate rules. Interpreting the Japanese rules or the version in the Camp proposal is very difficult. It is not clear whether anything that would pass as active in the current subpart F rule would fail. Furthermore, it is difficult to design a conceptually coherent rule based on the destination of subsidiary sales and it discriminates against small countries. Companies may choose a location as a base for worldwide sales for 'legitimate' non-tax reasons. Subjecting them to a U.S. tax may leave them at a competitive disadvantage.

The expensing in the minimum tax is in part a substitute for an active business test. If the company is making real investments in a location, its current U.S. tax liability is reduced and its normal return is exempt.

4. The determination of E&P by country and the computation of the average effective tax rate for the purposes of the per country minimum tax is a major complication in the proposal (and is not necessary under the overall minimum tax alternative). As indicated above, we suggest that five years, including the current one, of tax and five years of pretax income be combined to compute the effective tax rate.

5. The allowance for foreign acquisitions under the per country minimum tax with expensing. A large acquisition could create problems because the acquisition price might have to be divided among many locations. This should be based on the target's income in each of the locations. It is a problem that could be avoided under the overall minimum tax.

6. Potential subpart F simplification. Full inclusion would certainly make much of subpart F unnecessary. Subpart F rules would only be necessary to retain the active-passive income distinction for tax crediting purposes. Dividend exemption would render obsolete the

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[27] For an excellent discussion of interest allocation rules and the complexity imposing these rules creates see Graetz and Oosterhuis (2001).

Section 956 dividend provision requiring the current inclusion of CFC loans or investments in the parent. The current *de minimis* threshold for currently includable 'Foreign Base Company Income', which includes passive income, is the lesser of $1 million or 5 percent of the CFC's gross income. Because any foreign income would bear a tax of at least 15 percent under the minimum tax, that might justify raising the threshold.

7. The treatment of branch income. The dividend exemption plans would require new rules for branch income if it is also covered by the exemption. Instead of being inside the U.S. tax base under current law, branches would now be outside the U.S tax base. But this would simply require branches to be taxed like CFCs. They would, for example, be required to pay an explicit royalty for the use of any U.S. developed intangibles. The dividend exemption schemes would also necessitate rules restricting the use of hybrid instruments that convert payments deductible abroad into exempt equity at home.

XII. OTHER FIXES TO THE SYSTEM?

A. Is Formula Apportionment the Answer to Income Shifting?

Formula apportionment is frequently seen as the solution to income shifting because under this system intercompany transactions play no role in the division of income between jurisdictions. (See for example Avi-Yonah and Clausing 2007.) In 2011, the European Commission proposed a Common Consolidated Corporate Tax Base, a version of formula apportionment, for the members of the European Union. As indicated in Altshuler and Grubert (2010), Formula Apportionment (FA) suffers from many conceptual and practical problems and appears to have no advantage over the current, admittedly flawed, Separate Accounts (SA) system.

Most discussions of FA fail to specify the goals of a transfer pricing or income allocation regime within an integrated tax system. In terms of efficiency, it is to preserve neutrality in the

choice between related and unrelated party transactions. Both FA and SA distort these choices but in different ways.

The basic problem with FA is the asymmetry between the items in the formula and the sources of income. The principal sources of income shifting are intangible assets that create large excess returns and the location of worldwide company debt. But these never get into the formula. Companies can therefore exploit this asymmetry to locate more income in low tax locations.

Under SA, an MNC with valuable intellectual property has an incentive to locate the high tech stage part of the production process in a low tax location to justify large profits there. FA also distorts the company's decision making in order to locate more of the excess return in the tax haven but along different margins. If the formula is origin based, like capital and payrolls, the company can shift any stage of production to the low tax country, even a very routine stage, because it is equally successful in attracting the excess return. Furthermore, in the high tax country, the company has an incentive to outsource all routine production while in the low tax country it has the incentive to bring all suppliers under the company umbrella to get their labor and capital into the formula. Simulations in Altshuler and Grubert (2010) show that FA using a capital based formula has no advantages over the current system in terms of distorted decision making even though it is assumed that a substantial amount of resources are now wasted in tax planning under SA.

Labor and payrolls are particularly convenient for manipulating the formula to shift excess returns. Since wages are deductible from the pool of income to be apportioned, an additional worker hired in the tax haven whose wage just equals their marginal product contributes a bonus to the company. The wages get into the formula and attract more of the excess return. The company has an incentive to hire relatively unproductive workers in the low tax country.

Avi-Yonah and Clausing (2007) recommend exclusively sales based apportionment on the grounds that the destination of sales is least susceptible to manipulation. A single sales factor

is used in many formulas for corporate tax apportionment at the state level in the United States. But these formulas also provide many opportunities for restructuring activities to get more income into low tax locations. A company can sell routine, labor intensive products in a low tax location. The company may also sell its products to an unrelated distributor in the tax haven. The final sales may be very difficult to trace, particularly if the product is a component incorporated into a final good. Another response would be for the company to do its own marketing and selling in low tax countries while using unrelated sellers in high tax countries. The wholesale prices would get in the formula for high country sales and retail prices for low tax country sales.

Some observers see sales based FA as an intermediate step to a destination basis consumption tax like a VAT. We cannot judge the likelihood of this happening but as outlined in Altshuler and Grubert (2010) a sales based formula is very far from a destination basis consumption tax. It is not a consumption tax because investment goods are taxed like any other good and there is no deduction by the investing company. Furthermore, it applies only to corporate profits, not all of value added, which introduces trade distortions into an income tax.

One advantage of a VAT or other destination principle consumption taxes is that the rebate on exports per dollar is the same as the VAT imposed on imports. Also, in a uniform VAT, all sectors are subject to the same tax per dollar of sales. As a result, there are no trade distortions, or distortions in the choice to invest abroad rather than at home. But the sales based formula is applied to a corporate income tax in which companies have greatly varying levels of taxable profits relative to sales. Differences in capital intensity could be one reason. There would therefore be a large variety of rebates on exports and taxes on imports, with possibly large trade distortions.

Consider first the case of a unilateral FA system adopted by the United States. U.S. exporters may have very high profit margins on sales while foreign companies exporting to the United States may produce routine, labor intensive goods with very low profit margins. In that case, the formula would constitute a significant export subsidy because the tax applies only to the

profit portion of value added, unlike a true consumption tax. Taxing only one part of value added at the location of consumption can distort both production and consumption decisions. Furthermore there is the problem of a pure foreign exporter with no business in the United States and therefore out of the U.S. tax net.

If the sales based formula were adopted by all countries and there is no nexus problem, there would be no trade distortion only in the rare cases where the sum of rebates on exports and taxes on imports always just happen to net out. This would be true, for example, if all countries had the same tax rates or all goods and services everywhere had the same profit margin.

B. Willing Consumers as the Source of All Value?

Apart from sales based apportionment, there is the related view that corporate profits should be taxed at the locus of ultimate consumption. Willing consumers are what create value, it is claimed. The contribution of intangible assets like patents would therefore be taxed where the final good or service is consumed, not where the patent is developed or financed. In addition to the trade distorting effects of a sales-based formula and the absence of any conceptual reason for ignoring the creators of a good, this view confronts the problem of intermediate goods like components, machines and software. Unlike a sales based formula, where the first third party sale is presumably what is relevant, under the 'willing consumer' theory it is the final sale to a consumer that counts. The difficulty of identifying the location of the ultimate consumer is particularly acute in the case of business software and capital equipment. They can contribute to the production of a variety of goods and services over a long period of time. This problem does not arise under a real consumption tax like a destination basis VAT because of the invoice-credit mechanism. It is a true consumption tax.

Taxing corporate profits at the point of ultimate consumption presumably applies to sales in which the exporter has no economic presence in the consumer's location. A tax on a pure import is usually referred to as a tariff with its potential for distorting trade. To be sure, there are

some extreme cases in which a tariff or its equivalent is justified to offset the effect of a corporate tax on the location of economic activity. As suggested in Grubert (2005), if an activity is both very mobile and capital intensive, it can move to a tax haven and export its goods or services to high tax countries even if the tax haven is not the most efficient location. A tariff can offset this unproductive arrangement. In fact, this type of phenomenon is recognized in the tax code in the form of the excise tax of foreign insurance in section 4371. But this is very far from the 'willing consumer providing value' argument.

Neither 'taxing income where the goods are consumed' nor a sales based formula is consistent with what is actually taxed in a true consumption tax. In a consumption tax, the excess return earned on the basis of a valuable patent is taxed when the owners of the patent consume the proceeds in their country of residence. The final consumers of the goods produced with the patent are just taxed on the earnings they spend in their country of residence, the same tax they would pay if they spent their income on another good.

Furthermore, allocating expenses like R&D to the final consumption location as a way for recapturing the parent contribution to excess returns is inadequate even apart from being complicated. First, what you observe are the winners in the R&D race who make large returns. It is impossible to include the R&D of all the losers in the allocation. Second, there are important increases in value that are not explained by an application of inputs. That is what an increase in U.S. total factor productivity means.

One common justification for taxing income where the good is consumed, not where it is produced, is that the country of final consumption protects the intellectual property embodied in the good. The implication appears to be that the United States should tax imports under an income tax because the U.S. police prevent them from being stolen. The corporate tax is not generally characterized as a benefit tax. (If it were, the foreign tax would not be creditable in the current system.) If the host country protects companies' intellectual property, a user charge for

the registration and protection of the patents and trademarks is better directed at the companies that actually benefit from the service.

In summary, the taxation of business income based on the location of ultimate consumption is not a path to a destination basis consumption tax or a solution to base erosion, it is a blind alley. It presents both conceptual and practical difficulties.

XIII. CONCLUSIONS

We evaluate a series of proposals for the reform of the U.S. system of taxing cross-border corporate income:

1. Dividend exemption

2. Full current inclusion (the repeal of deferral)

3. A Japanese type of dividend exemption with a per country effective tax rate test subject to an exception for an active business

4. The repeal of check-the-box

5. Four versions of a minimum tax on foreign income: a per country minimum tax with dividend exemption; a per country minimum tax with dividend exemption, no active business exception, but a current deduction against the minimum tax base for real investment in the location; a minimum tax at the overall foreign level at a higher rate; and an overall minimum tax with expensing of current investment against the taxable U.S. base.

To compare these schemes with current law, we first reevaluate the burden of the dividend repatriation tax using evidence from the response to the 2005 repatriation tax holiday. We find that the implicit cost of avoiding repatriations is higher than found in previous estimates, particularly for high tech profitable foreign businesses, and rises as untaxed deferrals accumulate.

We simulate the effect of the various alternatives on effective tax rates for investment in high and low tax countries, with emphasis on the importance of parent developed intangibles and their role in shifting income from the United States.

Our analysis demonstrates that it is possible to make improvements to the system of taxing cross-border income across many dimensions including the lockout effect, income shifting, the choice of location and complexity. The goals are not necessarily in conflict. Compared to the other schemes, we find that the per country minimum tax with expensing for real investment has many advantages with respect to these margins. The per country minimum tax offsets the increased incentives for income shifting under pure dividend exception and is better than full inclusion in tailoring companies' effective tax rates to their competitive position abroad. No U.S. tax burden will fall on companies that earn just a normal return abroad. The per country minimum tax is basically a tax on large excess returns in low tax locations, cases in which the company probably has less intense foreign competition.

Unlike the Japanese type of dividend exemption alternative, the minimum tax does not contain a cliff in which the income is subject to the full home country rate if it fails the minimum tax and active business tests. Under the minimum tax with no cliff the company has more of an incentive to lower foreign taxes, by using check-the-box to ship income to a tax haven for example, and will often prefer paying the U.S. minimum tax to paying a higher foreign tax. Finally, the per country minimum tax with expensing seems more advantageous than the repeal of check-the-box. It is more effective in discouraging income shifting. In summary, the minimum tax with expensing combines the advantages of the extreme alternatives, dividend exemption and full inclusion, and reduces their shortcomings.

In addition, the overall minimum tax seems a serious alternative deserving consideration. While it is not as thorough as the per country minimum tax in targeting tax haven income, it is a substantial move in that direction and is much simpler. Earnings and tax do not have to be split up by country, which requires looking through hybrid entities to determine where income is actually subject to tax. If an allowance is given under the minimum tax for acquisitions, as we recommend to equalize the treatment of Greenfield and Brownfield investments, this is particularly complex

under the per country version because the target's price would frequently have to be divided among different jurisdictions.

Our evaluation of alternatives to reform also considers other issues in international tax including incentives for expatriation, the benefits if any of formula apportionment as a solution to the income shifting problem, and the desirability of a system in which income is taxed by the jurisdiction in which willing consumers reside.

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Table 1
Effective Tax Rate Simulations

	Before Check-the-box	After Check-the-box
Low tax investment (statutory rate =.05)		
Current law	-.182	-.236
Full inclusion	.300	.300
Dividend exemption	-.236	-.295
Japan minimum tax		-.236
Per country minimum tax		.056
Per country minimum tax with expensing		-.044
Overall minimum tax for parent with foreign ETR > 15%		-.295
Overall minimum tax for parent with foreign ETR < 15%		.060
Overall minimum tax for parent with foreign ETR > 15% with expensing		-.295
Overall minimum tax for parent with foreign ETR < 15% with expensing		-.040
High tax investment (statutory rate = .25)		
Current law	.242	.130
Full inclusion	.300	.300
Dividend exemption	.214	.107
Japan minimum tax		.214
Per country minimum tax		.121
Per country minimum tax with expensing		.121
Overall minimum tax for parent with foreign ETR > 15%		.107
Overall minimum tax for parent with foreign ETR < 15%		.150
Overall minimum tax for parent with foreign ETR > 15% with expensing		.107
Overall minimum tax for parent with foreign ETR < 15% with expensing		.000

Notes: See text for details and Appendix B.

Table 2
Tax Revenue on $100 Investment in Low and High Tax Countries

	Before Check-the-Box		After Check-the-Box	
	U.S. tax revenue	Foreign tax revenue	U.S. tax revenue	Foreign tax revenue
Low tax investment (statutory rate =.05)				
Current law	-5.20	0.69	-4.87	0.54
Full inclusion	2.50	0.50	2.50	0.50
Dividend exemption	-6.00	0.79	-6.60	0.62
Japan minimum tax			-6.00	0.79
Per country minimum tax			-1.33	1.01
Per country minimum tax with expensing			-2.33	1.01
Overall minimum tax for parent with foreign ETR > 15%			-6.60	0.62
Overall minimum tax for parent with foreign ETR < 15%			-1.40	1.10
Overall minimum tax for parent with foreign ETR > 15% with expensing			-6.60	0.62
Overall minimum tax for parent with foreign ETR < 15% with expensing			-2.40	1.10
High tax investment (statutory rate = .25)				
Current law	0.16	1.90	0.15	1.10
Full inclusion	0.50	2.50	0.50	2.50
Dividend exemption	0.00	1.79	0.00	1.07
Japan minimum tax			0.00	1.79
Per country minimum tax			0.82	1.16
Per country minimum tax with expensing			0.11	1.16
Overall minimum tax for parent with foreign ETR > 15%			0.00	1.07
Overall minimum tax for parent with foreign ETR < 15%			0.00	2.50
Overall minimum tax for parent with foreign ETR > 15% with expensing			0.00	1.07
Overall minimum tax for parent with foreign ETR < 15% with expensing			0.00	2.50

Notes: See text for details.

Table 3
Distributions of Effective Tax Rates on New Investment
(CFC Level)

	Percentage of total income:		
Effective tax rate category:	Current law	Overall minimum tax at 15 percent	Per country minimum tax at 10 percent
0 to less than 5 percent	36.8	12.6	
5 to less than 10 percent	9.1	3.9	
10 percent	0.4	0.3	42.3
Greater than 10 to less than 15 percent	7.4	5.3	11.0
15 percent	0.3	37.1	0.3
Greater than 15 to less than 20 percent	8.6	7.5	8.1
20 to less than 25 percent	6.9	6.1	7.4
25 to less than 30 percent	6.5	5.7	6.8
30 percent and above	24.0	21.5	24.2

Notes: Based on Form 5471 earnings and profits (E&P) data for 2006. Assumes additional investment income proportional to CFC's 2006 E&P. Parents with positive total E&P only. See text for details.

Appendix A

The Cost of Avoiding the Repatriation Tax

Interpreting the tax holiday evidence depends on what model of the MNC's decisions is most consistent with the data. In the pure Hartman-Sinn 'New View' model, the foreign subsidiary has only two options for the use of any income, reinvesting in real assets or repatriating dividends to the parent. The MNC initially 'underinvests' to take advantage of deferral, first reinvesting all its income, and then repatriating all its income when it reaches the 'mature' stage. Even in this model, however, the subsidiary would take advantage of a tax holiday. For example, if the temporary tax holiday rate is zero the subsidiary would liquidate some of its real capital and return to the initial equity injection point. It would begin the Sinn process all over again to take advantage of deferral. The gain to the company is the cash repatriated less the present value of the former level of its repatriations until it resumes them when it becomes 'mature' again. If the tax holiday rate is positive, the company would repatriate less until the tax cost of repatriating another dollar is just equal to the net gain.

Weichenrieder (1996) and Altshuler and Grubert (2002) showed that the Hartman-Sinn model is based on very restrictive assumptions. For example, it ignores financial assets and debt. Weichenrieder (1996) introduced the possibility that the subsidiary could invest in passive assets rather than repatriating. Altshuler and Grubert (2002) use a more general model and describe various strategies that the subsidiary can use to permanently avoid the repatriation tax while still getting cash back to the parent. One simple strategy is for the subsidiary to invest in passive assets like bonds that are used as informal collateral by the parent for borrowing at home. If the borrowing and lending interest rates are the same, the current taxation of the passive interest under the CFC (subpart F) rules is just offset by the parent's deduction for the interest. There is no 'underinvestment' period, which Altshuler and Grubert (2002) find is consistent with the evidence.

Under the pure Altshuler and Grubert models, the company would never take advantage of any repatriation tax holiday if the tax holiday rate is positive. It can avoid repatriating forever while still getting the cash in the hands of the parent. But their assumption that repatriation avoidance strategies are

costless is unrealistic. For example, there may be a spread between borrowing and lending interest rates. More important, the debt on the company's balance sheet will balloon as time goes on, raising its borrowing costs. In another Altshuler-Grubert strategy, in which the low tax subsidiary invests in a high tax subsidiary that it uses as a vehicle for indirect tax free repatriations, the low tax subsidiary may eventually run out of eligible candidates to invest in.

The evidence in Grubert and Mutti (2001) and Desai, Foley and Hines (2001) that dividends do increase if the residual repatriation tax is lower suggests that repatriation tax avoidance strategies are not costless. (It is also inconsistent with the 'New View'.) Each of these papers uses annual cross-sectional data on subsidiary repatriations. The relationship they identify does not reflect temporary changes in a subsidiary's tax rate because the average country rate is used to construct the repatriation tax rate variable. Country average effective tax rates change only gradually over time and the country ranking of effective rates is very stable. The relationship between repatriation taxes and dividends is also not attributable to greater investment opportunities in the low tax subsidiaries because of the dominance of financial assets in low tax subsidiary balance sheets.

The average actual tax cost of repatriations for companies that repatriated during the holiday was about 3.6 percentage points (see Redmiles 2008). The fact that companies were willing to make very large tax holiday repatriations at this tax rate indicates that the repatriation tax was imposing substantial current or future costs. These could be in the form of the implicit costs of repatriation tax avoidance and the explicit costs of actual future repatriations. Presumably they were willing to pay 3.6 percentage points during the holiday to save at least that much in the present value of future costs they would have incurred. The question is the time pattern of these future costs.

The repatriation equations in Grubert and Altshuler (2008) suggest that the marginal costs of deferrals increase as the pool grows relative to current income. We use the tax holiday evidence to further test this hypothesis. We also develop a simple model that embodies the hypothesis and use it to interpret the evidence from the tax holiday. An explicit model is particularly important because the repatriation holiday was a temporary tax reduction. The response therefore depends on expectations about the future.

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Unlike earlier analyses of repatriation behavior, the model we develop below looks at the company's long run plans rather than focusing only the repatriation choices in a single year.

We start with a model of behavior under a permanent repatriation tax. We assume a fixed, indivisible investment that yields an annual return after foreign tax of Y per period.[28] The repatriation tax if Y is repatriated is TY. The cost of avoiding repatriation in any year is a function of total accumulated retentions A up to that point, or $F(A)$, with $F'(A)$ a rising function of A. The point at which the company stops retaining earnings and starts repatriating its income is time period D. The firm chooses D to minimize the present value of the cost of its repatriation strategy.

The present discounted value of these costs is:

$TC = \int_0^D F(tY)e^{-rt}dt + \int_D^\infty F(DY)e^{-rt}dt + \int_D^\infty YTe^{-rt}dt$, where r is the company's required rate of return.

The first term is the cost of retentions until period D, the second term is the discounted cost of retaining the fixed accumulation DY after D and the third term is the present value of future repatriations taxes after they begin at D. Minimizing TC with respect to D, we get: $\int_D^\infty F'(DY)Ye^{-rt}dt = TYe^{-rD}$ which is

equivalent to $\int_0^\infty F'(DY)e^{-rt}dt. = T$. The left hand side is the marginal cost of further retentions of earnings at D. Beginning repatriations at period D with retentions DY is optimal when this marginal cost is equal to the repatriation tax T. D is the point at which the marginal cost of additional deferrals rises to equal the cost of actual repatriations. (It has not to be confused with the time at which repatriations begin in the Hartman-Sinn model.) This general pattern is consistent with the evidence in Grubert and Mutti (2001) who found that dividends were virtually zero in the first 10 years of a low tax subsidiaries existence.

We can compare this optimal condition for deferrals under a permanent tax with the one that arises under a temporary tax holiday. We assume that under the tax holiday the rate applied to repatriations is temporarily reduced (but not to zero). The optimal date for beginning actual repatriations

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[28] A fixed indivisible investment is convenient because it avoids the 'underinvestment' issue whenever there is an implicit or explicit repatriation tax, even if relatively small.

at the normal tax rate T is D Assume that the subsidiary has accumulated an amount A and is deciding how much to retain, R, after taking advantage of the tax holiday. The temporary holiday tax rate is H where $0<H<T$. If the company keeps R after tax holiday repatriations, it will retain income for $D-R/Y$ periods and then start repatriating again at the normal repatriation tax T. Total repatriation costs therefore

are: $H(A-R) + \int_{0}^{D-R/Y} F(R+Yt)e^{-rt}dt + \int_{D-R/y}^{\infty} F(DY)e^{-rt}dt + \int_{D-R/Y}^{\infty} TYe^{-rt}dt$. The first term is the tax cost

of tax holiday repatriations and the second term is the cost of accumulating earnings until D, when

repatriations begin under the normal tax T. The third term is the cost of permanent retentions DY and the

fourth term is the cost of future repatriations at the normal repatriation tax T.

Minimizing these costs with respect to R yields:

$H= \int_{0}^{D-R/Y} F'(R+tY)e^{-rt}dt + Te^{-r(D-R/Y)}$. We can see that this condition for retentions is much

different from the repatriation decision under a permanent tax, where repatriations begin when the

marginal cost of permanent accumulations reach the repatriation tax. In the case of the temporary tax

reduction, a marginal increase in tax holiday repatriations saves not the constant cost of any further

retentions at that point but the rising costs of further accumulations as the process begins again under the

permanent normal tax. Holiday repatriations delay the onset of higher marginal costs of future deferrals

and also the time at which the subsidiary would start repatriating at the 'normal' high tax price. The tax

holiday allows the subsidiary to start over deferring income at initial volumes with lower marginal costs.

Indeed, a company may repatriate under the holiday even if it has relatively low current accumulated

deferrals because of the 'fresh start' that saves future costs on large high cost accumulations in the future.

This will be particularly true if it expects sharply rising implicit and actual costs in the future.

We use the condition for optimal repatriations under the tax holiday to project the implicit costs

of the repatriation tax as accumulations resume. But first we summarize evidence on our basic hypothesis

that the marginal costs of avoiding the repatriation tax rise as the accumulated stock of deferrals increase

The regressions presented in Appendix Table 1 indicate the factors determining the extent to which a company took advantage of the repatriation tax holiday. They are based on linking the information from a company's CFCs from its Form 5471 at the end of 2004 with the data on its tax holiday repatriations.[29] The Form 5471s filed for each CFC reports on its current earnings, sales, and assets, the taxes it paid, and accumulated earnings not previously taxed by the United States as well as accumulations that have been taxed previously under the CFC (subpart F) rules. Parent level data are created by summing these variables across all of its CFCs. The special Form 8895 has data on qualified repatriations under the holiday. The analysis thus differs from the earlier studies cited above in using parent level responses instead of cross-sections of CFCs in different locations.

The dependent variable in the regressions shown in Appendix Table 1 is the ratio of a company's qualified repatriations to its accumulated untaxed earnings in 2004. In other words, how much of its accumulated deferrals did it repatriate under the tax holiday. Both linear and semi log versions of the specification are included. We run Tobit regressions rather than OLS since tax holiday repatriations are truncated at zero and only about half of the large MNCs in the sample took advantage of the tax holiday. The independent variables in the regressions are as follows:

1. The ratio of accumulated untaxed deferrals to 2004 income. This tests our hypothesis that the implicit cost of deferral rises as accumulations increase relative to current income or activity. If the marginal cost of avoiding deferral doesn't increase with total accumulations, there would be no necessary relationship between the share of accumulations repatriated and the stock of deferrals.

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[29] The analysis in Appendix Table 1 is based on a sample of large U.S. nonfinancial corporations. The sample accounted for $247 billion of the repatriations under the 2005 tax holiday. Approximately 45 percent of the sample took advantage of the holiday and made qualified repatriations. Tax holiday repatriations were reported on Form 8895 and these were linked with the company's tax return for 2004 including its Form 5471s filed for each of its CFCs. The 5471s provided information on the CFC's sales, Earnings and Profits (E&P), foreign income taxes paid, and also its accumulated untaxed retained E&P.

Some multinational companies were excluded from the Appendix Table 1 analysis. Under the holiday companies which had booked the potential U.S. tax for financial reporting purposes and therefore did not have 'permanently reinvested earnings' could not bring back more than $500 million under the holiday. The small number of companies in this category was excluded because of this constraint. Companies with negative accumulated retained earnings in 2004 were also excluded.

2. The parent's average effective foreign tax rate. This rate indicates the holiday tax saving compared to normal dividends.

3. The ratio of previously taxed accumulations to total foreign sales. These accumulations can be repatriated free from any U.S. tax.

4. The ratio of total tangible capital to sales. This variable may reflect the amount of deferred income invested in the foreign business and indicates opportunities for productive investment in the future.

5. The parent's R&D intensity in terms of the ratio of qualified R&D to sales. This variable indicates the parent's industrial intangibles available to the foreign operation.

6. The company's profit margin on foreign sales. This variable indicates income that is too great to be reinvested profitably in the foreign business.

In addition, in some regressions the ratio of accumulated deferrals to current earnings is interacted with the effective foreign tax rate. If a company has a high effective foreign tax rate it may not choose to repatriate under the holiday because its tax saving relative to normal distributions is lower. Also, it is more likely to have previously distributed excess income not invested in its operations in the past.

The Tobit regressions 1 and 3 in Appendix Table 1, in which the retentions-effective tax rate interacted term is included, confirm that the implicit cost of deferring income rises as accumulations increase relative to current earnings. Companies are more willing to pay the holiday tax price. The estimated coefficient on deferrals relative to income is nearly significant at the one percent level in the linear version and significant at the .1 percent level in the semi log specification. But the interaction terms indicate that as the effective foreign tax rate rises for a given level of accumulated deferrals, companies are less willing to pay the tax holiday price. Fewer accumulations have an *implicit* cost above the potential holiday tax rate.

The other independent variables tend to have the expected sign. In both specifications, the company's foreign profit margin on sales and its domestic R&D intensity have positive coefficients which are highly significant, greater than at the 1 percent level. Highly profitable operations exploiting

parent intangibles have few profitable opportunities for investing all of their profits abroad. By the same token the coefficient for the foreign ratio of tangible capital to sales is negative and significant at the 10 percent level in the linear specification and at the 5 percent level in the semi log version. More of earnings are invested in real assets. And, as expected, greater accumulations of previously taxed income lowered tax holiday repatriations because they could be brought back free from any U.S. tax. These findings will be important in designing the minimum tax and the one-time tax on past accumulations when dividends become exempt.

The regressions presented in columns 2 and 4 in Appendix Table 1 do not include the interaction term. The ratio of deferrals to current income is highly significant in the semi log version but not in the linear one. Controlling for the potential tax benefit of the holiday seems important. In both of these regressions, the effective foreign tax rate has a negative coefficient significant at the 5 percent level. As expected companies with higher foreign tax burdens took less advantage of the tax holiday. When the retentions ratio-tax interaction term is introduced, the effective foreign tax rate by itself becomes statistically insignificant. Its impact depends on the level of accumulated retained income.

Appendix Table 2 presents an alternative specification using total current sales as a more consistent scaling variable. The dependent variable is the ratio of tax holiday repatriations to sales. The two columns differ in the construction of the accumulated deferral variables. In the first column the two variables are the ratio of accumulated deferrals to sales and the square of that ratio. In the second column tangible assets are first netted from accumulated retentions. This is intended to leave assets that are more likely to be repatriated under the tax holiday. The squared variables are added to reflect the possibility of disproportionate repatriations as the stock of deferrals grows.

In the first column of Appendix Table 2, the ratio of accumulated deferrals to sales is highly significant and the squared variable is significant at the 10 percent level. However, when real capital is netted from accumulations in the second column, the squared variable has a high level of significance, even greater than the basic ratio. Netting out invested real capital seems to focus on retentions with the sharply rising marginal cost. As in Appendix Table 1, parent R&D intensity has a highly significant

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positive coefficient. The foreign profit margin is significant at the 10 percent level in the first column and is easily significant at the one percent level in the second. Profitable high tech foreign subsidiaries were more likely to make larger tax holiday repatriations at any given level of retentions.

We now turn to projecting the cost of deferrals as they accumulate using the analytic model. The $F(\cdot)$ function which gives the cost of accumulating deferrals, relative to annual income, is assumed to be quadratic, which makes the marginal cost of additional deferrals linear. (We assume marginal costs are zero at the origin.) For simplicity, we assume that the company has a 20 year time horizon and that it would not commence repatriations during that period. We further assume a high annual discount rate equal to 10 percent. This is based on the company's uncertainty about future corporate tax rates, the prospects of another tax holiday, the possibility of the enactment of dividend exemption, and the possibility of future losses that would lower future repatriation taxes. The company is assumed to have a foreign tax rate of 5 percent, making the tax cost of repatriations under the holiday equal to 4.5 percentage points.

The one data point required to apply the optimal tax holiday strategy condition is the number of years of income retained after the holiday. That together with our assumptions permits us to identify the single parameter in the linear marginal cost of deferrals function. In the sample of companies making tax holiday repatriations with profit margins on sales in excess of 20 percent, which is the weighted mean in the sample, the average amount retained was approximately two years of income.

As expected under our assumptions, the marginal cost of deferral is very low immediately after the tax holiday repatriations, but after 10 years, that is, in the year 2015, it rises to about 7 percentage points. This is consistent with BEA which data indicate that total retained earnings of nonbank affiliates abroad at the end of 2010 were almost double the amount at the end of 2004 even after the large tax holiday repatriations in 2005 and the severe recession. Thus in the effective tax rate simulations in the text, we are conservative in assuming a cost of 5 percentage points for a mature highly profitable, R&D intensive company.

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Appendix B

Description of the Effective Tax Rate Simulations

This appendix provides details on and formulas for the calculation of the effective tax rates (ETRs) shown in Table 1. The ETR calculations are for real investment undertaken by a U.S. parent corporation in a subsidiary located either in a low tax (LT) or high tax (HT) foreign country. We calculate these rates under various policy alternatives and distinguish between income shifting opportunities available before and after the introduction of check-the-box (CTB). In the post-CTB cases, we allow the parent to shift income from the foreign investments in LT and HT to a hybrid entity in a pure tax haven.

The ETRs are calculated assuming that there are already ongoing operations in each country and that new discrete investments in HT and LT are being considered. The HT subsidiary produces a routine good and earns the normal return on its capital. The new discrete investment in LT produces a high tech good that exploits a U.S. developed intangible asset like a patent and earns a high excess return. The investment in LT therefore permits the parent to shift excess returns now taxed in the United States to the subsidiary in LT.[30] This income shifting is accomplished through the underpayment of royalties and is a function of the difference in tax rates between the LT country and the United States. If the transfer pricing rules worked perfectly this type of income shifting would not be possible and the excess return would all be paid back to the United States as a royalty.

We also assume that any new LT investment creates opportunities to lower the foreign tax rate paid in HT by shifting income to LT. In other words, new investment in the LT country increases the amount of income that can be shifted there from existing operations in the HT country. This is possible because the added investment in LT generates more intercompany transactions, for example, that allow for greater profit shifting through transfer price manipulation. Similarly, we assume that any new discrete investment in HT increases the amount of income that can be shifted to the existing operation in LT. The incentive to shift income between LT and HT increases with the tax rate differential between the

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[30] We could have also considered the parent decisions as to whether to manufacture the product based on the new intangible in LT or manufacture it in the US. The set-up would be similar except that the amount shifted would be a proportion of the normal return instead of the excess return.

countries. We assume that this shifting is symmetric in terms of the amount of income shifted. This simple set-up allows us to consider each investment separately in the ETR calculations.

Check-the-box creates further opportunities for tax planning through the use of hybrid entities in tax havens. As explained in the text, introducing the possibility of using hybrids entities in tax havens as a destination for income from HT and LT is the same as assuming that the host countries had lowered their tax rates. Thus, introducing CTB will have an impact on our ETRs.

We calculate the effective tax rate on a new discrete investment of one unit of capital by accounting for all tax payments and deductions made by the U.S. parent to both the host and home country and then dividing the tax payments by the pre-tax income generated by the investment.[31] For simplicity, we ignore debt, assume that depreciation for tax purposes is equal to economic depreciation, and ignore any investment credits so that the host country effective tax rate for an investment undertaken by a domestic firm in the host country is equal to the host country statutory rate.

It is important to be clear as to how the tax benefits of profit shifting created by the new foreign investment we consider are assigned. We consider each investment separately so when we account for the taxes associated with the investment in LT, for example, we include the tax benefits that accrue from (i) any underpayment of royalties to the parent, (ii) any shifting of income from HT to LT, and (iii) any post-CTB shifting of income to a hybrid entity in the tax haven. When considering the investment in HT, we include the tax benefits of (i) any income shifted to LT and (ii) any income shifted to the entity in the haven (post-CTB).

We now turn to the formulas we use to calculate the ETRs under the various scenarios. Let t_L equal the statutory tax rate in low tax country, t_H equal the statutory tax rate in high tax country, and t_U be statutory tax in the United States. In our simulations we assume the LT statutory rate is 5 percent, the HT rate is 25 percent, and the U.S. rate is 30 percent. We assume the tax haven has no tax on corporate

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[31] Grubert (2004) uses a similar approach to calculate effective tax rates for investment in low and high tax countries under a variety of scenarios that take income shifting and the use of hybrid entities into account.

income. We denote income shifted from the United States to the LT operation as S_U and income shifted from the HT to the LT operation as S_H.

Income shifting is not costless to the parent corporation. Tax planning through income shifting uses valuable resources and there is always the risk of penalties after audit. We assume a cost of income shifting that is a quadratic function of the amount shifted relative to the amount of real capital placed in a location and that differs depending on whether intangibles are being exploited.[32] The costs of shifting functions for the two types of pre-CTB shifting are as follows:

$$C_U(S_U) = a(S_U/K_L)^2 K_L$$

$$C_H(S_H) = b(S_H/K_L)^2 K_L = b(S_H/K_H)^2 K_H$$

where K_L is capital placed in LT, K_H is capital placed in HT, $C_U(S_U)$ is the cost of shifting income from the U.S. to LT, and $C_H(S_H)$ is the cost of shifting from HT to LT. We discuss calibration of the shifting functions in the next section.

Current law before Check-the-Box

We start by deriving the ETR formulas under current law. The formulas will differ depending on the foreign tax credit position of the parent corporation. Under current law, firms with excess credits pay no U.S. taxes on dividend repatriations to their U.S. parents while firms in excess limitation owe residual taxes to the U.S. Treasury when dividends are remitted from operations in low tax countries. We assume that repatriation taxes impose an additional tax burden for foreign investment and therefore must be incorporated in the ETR calculations. The repatriation tax burden for investment in LT and HT, which we denote $t_{L,D}$ and $t_{H,D}$ respectively, include both the tax paid on actual distributions and the implicit deadweight loss attributable to repatriation planning. In our simulations, we set $t_{L,D}$ equal to 5 percent and $t_{H,D}$ equal to 1 percent.

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[32] Grubert and Slemrod (1998) use a similar cost of shifting function to examine how income shifting opportunities can impact the after-tax profits of operating in Puerto Rico. Grubert (2003) derives the cost of capital for investments in low and high tax countries using a model in which intercompany transactions provide the opportunity for income shifting. He also uses a quadratic cost of shifting function. The model shows clearly how the conventional cost of capital is altered when the benefits of income shifting are introduced.

Like the taxation of dividend income, the taxation of royalties under the current system depends on the parent's foreign tax credit position. Firms in excess limitation pay full U.S. taxes on royalty remittances received from abroad. Firms in excess credit positions can shield U.S. taxes owed on royalty remittances with excess credits and therefore pay no U.S. tax on royalties.

Excess limitation case

To calculate the ETR we first need to know the optimal amount of income to be shifted. We start by solving for the optimal amount of income shifted through the underpayment of royalties on the U.S. developed intangible. Note that in the absence of any cost of income shifting, the optimal royalty payment would be zero. Let R_T be the true royalty and R be the royalty actually paid. The amount of income shifted to the affiliate, S_U, is the difference between the true royalty and the actual royalty $S_U = R_T\text{-}R$. The net tax benefit to income shifting associated with the investment in LT in the excess limitation case is therefore $(R_T\text{-}R)(t_U\text{-}t_L\text{-}t_{L,D}) - C_U(R_T\text{-}R)$.[33] Since R_T is given (it is known), solving for the optimal royalty payment is the same as solving for optimal S_U and gives us $S_U^* = (t_U\text{-}t_L\text{-}t_{L,D})$ /2a where * denotes the optimal value. The optimal royalty, R^* is $R_T\text{-}(t_U\text{-}t_L\text{-}t_{L,D})$ /2a.

To calculate ETRs we need to calibrate the shifting function. On the basis of several sources of evidence we assume a normal return to investment of 10 percent and an excess return of 30 percent for a high tech investment in a location with a 25 percent tax differential. Furthermore, one third of the excess return is paid back as royalties. Grubert and Altshuler (2008) indicate that in 2002 the profit margin on sales earned by Irish subsidiaries, after the payment of royalties, was three times the average margin of all subsidiaries. Grubert (2012) reports that in 2004 the average profit margin on all foreign sales was almost twice the worldwide average. The one-third, two-third split between parent and subsidiary is based on parallel regressions of royalties paid and earnings and profits and how they depend on parent R&D (see Mutti and Grubert 2006). Accordingly, an excess return of 30 percent, with 10 percent paid in royalties,

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[33] We assume here that the tax treatment of the cost of shifting is incorporated in the parameter of the cost of shifting function. In this way, we do not make any assumptions regarding where the cost of shifting is deducted for tax purposes.

for a 25 percent tax differential, seems conservative because the Irish and foreign profit margin averages include some non-high tech investments.

If the tax differential between the low tax country and the U.S. is 25 percentage points, for example, and the excess return was 30 percent, using our cost of shifting function and assuming that firms were optimally shifting under current law results in a parameter a equal to .625 (=.25/2(.3-.1)).

The net benefit of income shifted through transfer pricing (or, alternatively but not modeled, debt shifting) from HT to LT is $S_H(t_{H+}t_{H,D} - t_L - t_{L,D}) - C_H(S_H)$. Solving for optimal S_H gives $S_H^* = (t_{H+}t_{H,D} - t_L - t_{L,D})/2b$. We also need to calibrate the cost of shifting function for profit shifting between LT and HT. We assume that the ability to engage in income shifting in the presence of an intangible is much greater than it is when there is no intangible available. In the simulations we let b be 4.5 times the value or a (b=2.81).

To calculate the ETR we add up the taxes, T_L, associated with the discrete investment of one unit of K_L in LT:

$$T_L = (t_{L+}t_{L,D})\, r_N - (t_U - t_L - t_{L,D})S_U^* + a(S_U^*)^2 - (t_{H+}t_{H,D} - t_L - t_{L,D})S_H^* + b(S_H^*)^2$$

$$= (t_{L+}t_{L,D})\, r_N - (t_U - t_L - t_{L,D})^2/2a + (t_U - t_L - t_{L,D})^2/4a - (t_{H+}t_{H,D} - t_L - t_{L,D})^2/2b + (t_H + t_{H,D} - t_L - t_{L,D})^2/4b$$

$$= (t_{L+}t_{L,D})\, r_N - (t_U - t_L - t_{L,D})^2/4a - (t_{H+}t_{H,D} - t_L - t_{L,D})^2/4b$$

where r_N is the normal return to capital. Note that the quadratic cost of shifting function results in a net benefit of each type of income shifting equal to one-half the gross benefit.

The ETR is found by dividing the tax associated with the additional capital placed in LT with the pre-tax return, r_N, on the capital. Thus, the ETR for the excess limit (EL) case, which we denote ETR(EL, LT), is as follows:

$$\text{ETR(EL, LT)} = (t_{L+}t_{L,D}) - (t_U - t_L - t_{L,D})^2/4ar_N - (t_{H+}t_{H,D} - t_L - t_{L,D})^2/4br_N.$$

Excess credit case

When the parent has excess foreign tax credits, the royalty paid from the affiliate is shielded from U.S. tax by the excess credits and we credit this benefit to the LT investment. In this case there should be no underpayment of royalties. We assume, however, that parents take into consideration that they may not always be in an excess credit position when royalties are paid and therefore the optimal royalty will be

less than the 'true' royalty. The net tax benefits to shifting in this case are $t_U R + (t_U - t_L)S_U - C(S_U)$. The first term is the reduction in U.S. tax due to the royalty payment, the second is the benefit of retaining any underpayment of royalty in the low tax location, and the third is the cost of shifting.

We assume that the costs of shifting in the excess limit and excess credit cases differ and parameterize the cost function to give a higher royalty and therefore lower value for the amount retained in the excess credit case. The cost of shifting function becomes $C(S_U) = c(S_U/K_L)^2 K_L$. Solving for the optimal amount of shifting gives $S_U^* = (t_U - t_L)/2c$ and $R^* = R_T - S_U^*$. In the simulation, we use a parameter value for c that results in a royalty of .15 and income shifting amount of .15.

We also must take into account that the interest allocation rules under current law are binding for firms in excess credit positions. The allocation of domestic interest expense against foreign source income reduces the foreign tax credit limitation and therefore decreases foreign tax credits. As a result, any allocation of domestic interest expense to foreign source income is lost as a deduction. We assume that domestic interest expense that must be allocated abroad is 15 percent of the normal return and therefore increases the effective tax rate by $.15r_N t_U$ for firms in excess credits.

The taxes associated with the investment in LT for the excess credit case can be written:

$$T_L = t_L r_N + .15 r_N t_U - t_U R^* - (t_U - t_L)S_U^* + c(S_U^*)^2 - (t_H - t_L)S_H^* + b(S_H^*)^2.$$

Dividing by r_N gives us the ETR:

$$ETR(EC, LT) = t_L + .15 r_N t_U - t_U(R_T - (t_U - t_L)^2/4c)/r_N - (t_U - t_L)^2/4cr_N - (t_H - t_L)^2/4br_N.$$

The current law (CL) effective tax rate for the LT case, ETR(CL,LT), is a weighted average of the excess limitation and excess credit cases where p is the weight given to the excess limit case:

$$ETR(CL, LT) = p*ETR(EL,LT) + (1-p)*ETR(EC,LT).$$

We assume that 20 percent of parent firms are in excess credit positions in our simulations.

We turn now to the relatively simple formulas for the ETRs under current law for investment in HT. Since the routine investment in the HT affiliate earns only the normal return the ETR can only be lowered below the statutory rate in HT through income shifting to the LT operation. The ETR for the HT investment in the excess limit case, which we denote ETR(EL, HT) is as follows:

$$\text{ETR(EL, HT)} = (t_H + t_{H,D}) - (t_H + t_{H,D} - t_L - t_{L,D})^2 / 4br_N.$$

The excess credit case is simply the EL case without any repatriation tax (and any shifting related to intangibles):

$$\text{ETR(EC, HT)} = t_H + .15t_U - (t_H - t_L)^2 / 4br_N.$$

Again, the current law ETR is a weighted average of the two foreign tax credit cases:

$$\text{ETR(CL, HT)} = p\text{ETR(EL,HT)} + (1-p)\text{ETR(EC,HT)}.$$

Dividend exemption before Check-the-Box

The ETR formulas for dividend exemption (DE) are straightforward. There is no repatriation tax burden and royalties are fully taxed. The formulas for LT and HT investment are:

$$\text{ETR(DE, LT)} = t_L - (t_U - t_L)^2 / 4ar_N - (t_H - t_L)^2 / 4br_N, \text{ and}$$

$$\text{ETR(DE, HT)} = t_H - (t_H - t_L)^2 / 4br_N.$$

Current law after Check-the-Box

Check-the-box opens up generous tax planning opportunities through the use of hybrid entities in tax havens. As explained in the text, setting up and shifting income to hybrid entities is relatively easy. In our calculations, we assume that half of both the high tax and low tax income is shifted to the haven at no cost. This makes calculating effective tax rates straightforward since the availability of the tax haven to shift one half of income has the effect of lowering the rates in both LT and HT by one-half.

The taxes associated with the LT investment are therefore:

$$T_L = ((1/2)t_L + t_{L,D}) \, r_N - (t_U - (1/2)t_L - t_{L,D})^2 / 4a - (t_H + t_{H,D} - t_L - t_{L,D})^2 / 8b.$$

The ETR for the excess limitation case becomes with check-the-box:

$$\text{ETR(CTB,EL,LT)} = ((1/2)t_L + t_{L,D}) - (t_U - (1/2)t_L - t_{L,D})^2 / 4ar_N - (t_H + t_{H,D} - t_L - t_{L,D})^2 / 8br_N.$$

We adjust the excess credit case for the tax planning opened up by check-the-box similarly:

$$\text{ETR(CTB,EC,LT)} = (1/2)t_L + .15t_U - t_U(R_T - (t_U - (1/2)t_L)^2 / 4c)/r_N - (t_U - (1/2)t_L)^2 / 4cr_N - (t_H - t_L)^2 / 8br_N$$

As before, the formulas for HT investment are the same as for LT except there is no shifting from the U.S. parent:

$$\text{ETR(CTB,EL,HT)} = ((1/2)t_L + t_{L,D}) - (t_H + t_{H,D} - t_L - t_{L,D})^2 / 8br_N$$

$$ETR(CTB,EC,HT) = (1/2)t_H + .15t_U - (t_H - t_L)^2 /8br_N$$

Dividend exemption after Check-the-Box

The ETRs for the dividend exemption cases after CTB are as follows:

$$ETR(CTB,DE, LT) = (1/2)t_L - (t_U - (1/2)t_L)^2 /4ar_N - (t_H - t_L)^2 /8br_N$$

$$ETR(CTB,DE, HT) = (1/2)t_L - (t_H - t_L)^2 /8br_N$$

Japanese type dividend exemption

The Japanese type dividend exemption system imposes a minimum tax, t_M, in each location with an exception for active business income. As a result, the LT and HT real investments qualify for the exception. The tax haven does not since it does not have real operations. Any income in the tax haven pays the U.S. rate and, as a result, it has no benefit for income shifting purposes. The benefits of the "routine" type income shifting --- underpaying royalties and shifting income from HT to LT --- are still available, however. The ETRs are the same as those available under dividend exemption before check-the-box:

$$ETR(JAPAN, LT) = t_L - (t_U - t_L)^2 /4ar_N - (t_H - t_L)^2 /4br_N, \text{ and}$$

$$ETR(JAPAN, HT) = t_H - (t_H - t_L)^2 /4br_N.$$

Per country minimum tax with and without expensing

Adjusting the ETRs to take into account the per country minimum tax is straightforward: whether the income is shifted to the haven or not, it is subject to the minimum tax rate. There is still an advantage, however, to shifting the income coming from the high tax investment to the haven entity. Since we assume half of the income is shifted to the haven, the benefit of shifting between HT and LT is now the average of the HT rate and the minimum tax rate compared with the minimum tax rate. This gives an ETR for the no expensing (NE) case:

$$ETR(MIN, NE, LT) = t_M - (t_U - t_M)^2 /4ar_N - (t_H - t_M)^2 /8br_N.$$

For the case with expensing (E), the ETR becomes:

$$ETR(MIN, E, LT) = t_L - (t_U - t_M)^2 /4ar_N - (t_H - t_M)^2 /8br_N.$$

The high tax cases are adjusted, as follows, by eliminating the income shifting from the LT case since there is only a routine investment involved and substituting the appropriate rates. Since the returns on the routine investment HT is not subject to the minimum tax, there is no impact of expensing.

$$\text{ETR(MIN, NE, HT)} = \text{ETR(MIN, E, HT)} = (1/2)t_H - (t_H - t_M)^2 / 8br_N.$$

Overall minimum tax with and without expensing

The ETRs will differ depending on whether the company's overall effective tax rate on foreign source income is above or below the 15 percent minimum threshold. We assume in these simulations that there are existing operations abroad that determine whether the company is above and below this threshold and that the new investment will not affect the company's status. For companies above the threshold, no minimum tax will be paid and the ETRs are the same as under dividend exemption:

$$\text{ETR(OVERALL, NE, LT)} = (1/2)t_L - (t_U - (1/2)t_L)^2 / 4ar_N - (t_H - t_L)^2 / 8br_N = \text{ETR(OVERALL, E, LT)}$$

$$\text{ETR(OVERALL, NE, HT)} = (1/2)t_L - (t_H - t_L)^2 / 8br_N = \text{ETR(OVERALL, E, LT)}$$

Companies below the threshold face the minimum tax. Unlike under the per country minimum tax, there is no longer an incentive to shift income to the haven or from the high tax to the low tax operation. The ETRs for LT investment are as follows

$$\text{ETR(OVERALL, NE, LT)} = t_M - (t_U - t_M)^2 / 4ar_N.$$

For the case with expensing (E), the ETR becomes:

$$\text{ETR(OVERALL, E, LT)} = t_L - (t_U - t_M)^2 / 4ar_N.$$

For the routine HT investment, the ETR is the minimum tax rate, t_M, since there is no mechanism in the form of intangibles or debt to shift income from the U.S. to HT in our model:

$$\text{ETR(OVERALL, NE, HT)} = t_M - (t_U - t_M)^2 / 4ar_N.$$

Since the routine HT investment earns only a normal return the ETR would be zero with expensing:

$$\text{ETR(OVERALL, E, HT)} = 0.$$

Tax Holiday Repatriations and Retained Earnings
(Tobit Regressions)

Independent Variables:	Repatriations/ Accumulated Deferrals		Log of Repatriations/ Accumulated Deferrals	
	Dependent variable:			
Accumulated Deferrals/2004 Income	0.0436	0.0059		
	(0.0171)	(0.0068)		
Ratio of Deferrals to Income*Effective Foreign Tax Rate	-0.1871			
	(0.0788)			
Log of Ratio of Deferrals to Income			0.2637	0.1055
			(0.0759)	(0.0319)
Log of Ratio of Deferrals to Income*Effective Foreign Tax Rate			-0.8335	
			(0.3404)	
R&D/Sales of Parent	3.312	2.990	2.2637	2.2845
	(0.9668)	(0.8472)	(0.7380)	(0.7407)
Foreign Profit Margin on Sales	0.9010	0.7414	0.8210	0.8018
	(0.2824)	(0.2480)	(0.2173)	(0.2189)
Effective Foreign Tax Rate	0.1573	-0.5333	0.7146	-0.4849
	(0.4357)	(0.2677)	(0.5325)	(0.2327)
Ratio of Previously Taxed Income to Sales	-0.6573	-0.5423	-0.6087	-0.5911
	(0.3703)	(0.3176)	(0.2934)	(0.2909)
Ratio of Tangible Capital to Sales	-0.1074	-0.0814	-0.0891	-0.0864
	(0.0801)	(0.0698)	(0.0611)	(0.0610)

Notes: N=413. Standard errors in parenthesis. Companies with nonpositive retained earnings excluded. One added to dependent variable in logarithmic specification.

Tax Holiday Repatriations Relative to Sales
(Tobit Regression)

Independent Variables:	Dependent Variable:	
	Repatriation/Sales	
Accumulated Deferrals/Sales	0.4566 (0.0582)	
(Accumulated Deferrals/Sales)^2	0.0116 (0.0065)	
(Accumulated Deferrals – Real Capital)/ Sales		0.1768 (0.0339)
[(Accumulated Deferrals – Real Capital)/ Sales]^2		0.0362 (0.0051)
(R&D/Sales) of Parent	1.81 (0.413)	1.86 (0.451)
Foreign Profit Margin	-0.302 (0.158)	0.551 (0.121)
Effective Foreign Tax Rate	-0.163 (0.133)	-0.167 (0.144)
Ratio of Previously Taxed Income to Sales	-0.021 (0.162)	-0.270 (0.146)
Tangible Capital/Sales	-0.0527 (0.0346)	

Notes: N=413. Standard errors in parenthesis. Companies with nonpositive retained earnings excluded. Accumulated deferrals are net of foreign tangible assets.