Abstract - In 2001, the IRS issued a ruling allowing firms to engage in nontaxable real estate investment trust (REIT) spin-offs. In a REIT spin-off, a corporation places real estate assets into a subsidiary, which it then distributes to shareholders as a REIT. A nontaxable spin-off triggers no immediate taxation of unrealized gains and the future earnings of the REIT generally are not subject to corporate level taxation; the earnings are instead taxed at the investor level. REIT spin-offs thus provide a means to avoid the double-taxation of at least some part of corporate earnings.

The ruling was promptly followed by a large REIT spin-off of timber properties by Georgia-Pacific and there has been much speculation about how many and what kinds of firms will follow. Given that the total real estate held in the corporate sector is in the trillions of dollars, the potential revenue loss is of serious concern.

This paper simulates the effects of the REIT spin-off ruling by analyzing the actual real estate holdings of over 4,000 publicly traded companies. Specifically, we estimate the potential tax benefits for each firm and for each industry, both in absolute terms and compared to market value, to determine the types of firms and industries most likely to restructure as a result of the ruling. The calculations take into account the related impact of likely reductions in debt levels on corporate taxes, as well as the likely increase in investor level taxes from the requirement that REITs pay out nearly all of their income each year as dividends. The results suggest that the benefits to REIT spin-offs are heavily concentrated in a few industries and that while there may be a subset of firms for which REIT spin-offs would provide substantial tax benefits, in the aggregate, revenue losses are likely to be modest.

INTRODUCTION

Publicly traded corporations hold a significant amount of real estate. Compustat data indicate that publicly traded corporations hold approximately $5 trillion of property, plant and equipment, of which we conservatively estimate that over $1 trillion is real estate. Publicly traded corporations also account for a significant portion of the aggregate private ownership of nonresidential real estate. Bureau of Economic Analysis data indicate that private ownership (both
Holding real estate at the corporate level is not necessarily efficient from a tax perspective. Corporations are subject to double taxation, i.e., their earnings are taxed at the corporate level when earned and at the investor level when paid out as dividends. In contrast, a host of “flow through” entities generally are nontaxable at the entity level and are taxed only at the investor level, including REITs, S corporations, partnerships, limited liability partnerships (LLPs) and limited liability companies (LLCs).

As discussed in Scholes et. al. (2002) or Goolsbee (2002), there are important non–tax factors that lead most businesses to choose corporate form. For example, corporations are able to trade on organized exchanges, whereas S corporations, partnerships, LLPs and LLCs generally are precluded from being widely held, publicly traded entities. REITs are a notable exception, however. REITs are flow–through entities yet can trade on major exchanges like corporations. REITs must hold primarily real estate assets and are restricted in the activities in which they can engage.

The question is why do corporations hold real estate given the existence of REITs? After all, REITs appear to have the best of both worlds—the tax advantages of flow–through entities coupled with the liquidity and capital raising ability of publicly traded corporations. One likely reason for holding real estate within the corporation is that putting it into a REIT may give rise to coordination problems or conflicts of interest between the REIT and the corporation using the asset (see Hart, 1995, for a survey of the extensive literature on control rights). Wolfson (1985) for example, examines moral hazard problems between limited partners and the general partner in oil and gas tax shelters.

In some cases, such issues are overcome and the real estate may already be leased from some other entity that is a more tax efficient owner of the asset. In other cases, corporations may have purchased or created assets in the past but now the ongoing tax benefits of restructuring ownership outweigh the costs of separating ownership and control. Since real estate assets tend to appreciate over time and a sale of such assets would trigger a large one–time capital gains tax, the resulting lock–in effect could be significant enough to prevent the corporation from putting the asset into the hands of a more efficient tax owner.

Nontaxable spin–offs are one means of transferring ownership to a new entity (albeit one initially owned by the same shareholders) that avoids triggering capital gains taxation at both the corporate and investor levels. Until recently, however, REIT spin–offs were precluded from being nontaxable for technical reasons and consequently they did not occur. In 2001, however, the IRS lifted this ban and nontaxable REIT spin–offs became possible. The rule change was promptly followed by a large REIT spin–off of timber properties by Georgia–Pacific. The spun–off REIT merged with an existing REIT and joined the ranks of the S&P 500 as Plum Creek Timber Company. The fact that Georgia–Pacific only engaged in a REIT spin–off once it could be nontaxable suggests that the lock–in effect was a sig-

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1 From Bureau of Economic Analysis Fixed Asset Tables 3.1S and 3.3S as of 2000. These are historical cost estimates to facilitate comparison with the Compustat numbers (although the comparison is still imperfect). Current cost estimates are approximately $5.3 trillion for nonresidential structures.
2 Master Limited Partnerships are an exception, but they account for a small fraction of total real estate and are concentrated in the extractive industries.
3 Taxation of the unrealized gains in the stock and in the underlying assets is deferred, not forgiven.
significant barrier to putting its real estate into the hands of a more tax efficient owner.\textsuperscript{4}

Once it became possible for corporations to spin–off their real estate in the form of a REIT without triggering taxation of unrealized gains, practitioners immediately began debating how much restructuring would ensue. The Wall Street Journal reported that McDonald’s was considering a “McREIT” that would hold its substantial real estate that is largely leased to franchisees (Wall Street Journal, 2001). The broader issues include understanding the kinds of firms and industries that are most likely to engage in REIT spin–offs, the likely magnitude of the change, and the implications for corporate and other tax revenue. To some extent, we will have to wait before we have a real sense of the answer to these issues since only one such spin–off has taken place. We can, however, provide some initial analysis and estimates based on publicly available firm data. If REIT spin–offs take place, they are most likely to occur with large, publicly traded corporations as opposed to privately held corporations. Because we can obtain firm–specific financial data for publicly traded corporations, we are able to estimate the effects of REIT spin–offs under different scenarios.

We find that the potential tax benefits of REIT spin–offs are highly concentrated in a few industries, such as railroads and various parts of the retail trade. The industries with the greatest ratio of potential net tax benefits to a REIT spin–off compared to their market value are nursing homes and railroads. Of the major industry groups, firms in the transportation industry and firms in agriculture, forestry, and fishing appear to face the largest lock–in effect as measured by the ratio of current market value to historical cost of their real estate.

Simulating the effect on tax revenues requires also estimating several collateral effects from REIT spin–offs. First, firms with large amounts of fixed assets tend to finance at least a portion of those assets with debt, so firms spinning off real estate to a REIT are also likely to spin–off a portion of their debt. Not considering the reduction of corporate debt associated with a REIT spin–off could greatly overstate the tax savings since interest payments on debt are deductible by the corporation. Second, REITs are required to pay out substantially all of their income each year to their shareholders, potentially increasing taxes at the investor level (or at least accelerating those taxes). Not taking this into account would also overstate the tax revenue loss from REIT spin–offs. Third, firms with large amounts of fixed assets also tend to have high dividend yields compared to other firms. If less real estate being left within the firm reduces these dividends, that will tend to reduce the taxes collected at the individual level. Ignoring this effect would understated the tax revenue effects of REIT spin–offs.

For our analyses that take into account all of the above effects, we estimate the effects on tax revenues assuming different thresholds at which firms will be induced to undertake REIT spin–offs. For example, assuming that firms only engage in REIT spin–offs if the net tax savings exceeds 10 percent of their current market value, then 221 firms would undertake REIT spin–offs with an estimated loss to the government of approximately $1,617 million in corporate taxes. The loss in corporate tax revenue is partially offset by a $794 million estimated increase in individual taxes for a net tax revenue decrease of $823 million per year. These estimates are, of course, dependent on a number of assumptions. But the general conclusion

\textsuperscript{4} For evidence of the effect of locked–in capital gains on corporate divestitures, see Edwards, Lang, Maydew, and Shackelford (2002) and Maydew, Schipper, and Vincent (1999).
is that although a subset of firms may find REIT spin-offs attractive in terms of enhancing shareholder value, the aggregate tax revenue loss to the Treasury is likely to be modest.

BACKGROUND ON REITS AND REIT SPIN-OFFS

Background on REIs

REITs can be thought of as mutual funds for real estate. Like mutual funds, they provide investors with liquidity, diversification, and professional management. REITs thus play an important role by allowing investors to diversify their portfolios into income-producing real estate without having to actually own and manage the property directly or sacrifice liquidity by owning real estate through a limited partnership. Also like mutual funds, REITs are not taxable at the entity level provided they satisfy certain criteria. To prevent REITs from becoming unconstrained tax deferral devices, REITs (like mutual funds) are required to distribute nearly all (currently 90 percent) of their income each year to their investors. So while REITs avoid corporate level taxation, their income is subject to immediate taxation at the investor level, at least to the extent that they are owned by taxable investors (see PricewaterhouseCoopers, 1998).5

The REIT structure was created by Congress in 1960 but basically the structure lay dormant for many years. Before 1986, accelerated depreciation caused real estate often to generate tax losses even while it was generating economic gains. This tax shelter aspect of real estate is incompatible with the REIT structure because REITs are not allowed to pass through tax losses to their shareholders. Also, before 1986 REITs were not allowed to manage their own property, so REITs had to hire third party managers. The Tax Reform Act of 1986 (TRA 86) curtailed the tax shelter aspects of real estate and also liberalized the extent to which REITs could manage their property. REITs began to attract attention but it was not until the resolution of the savings and loan crisis that REITs began to grow rapidly. Figure 1 shows that REITs grew from an aggregate market capitalization of less than $10 billion in 1990 to approximately $147 billion in 2000.6 Except for a decline during the boom in Internet valuations from 1997–1999, the aggregate market capitalization of REITs has grown steadily since 1986. The three largest REITs are included in the S&P 500.7

REITs are highly concentrated in three real estate sectors: industrial and office property, retail property, and residential property (i.e., apartments). REITs in these three sectors account for over 70 percent of the aggregate market capitalization of REITs.8 However, REITs have also expanded into a number of other areas, including REITs that specialize in owning hotels, hospitals and clinics, timber, self storage facilities, auto dealerships, railroad track, restaurants, theaters, and even prisons. Over time the tax rules governing REITs for the most part have become increasingly liberal about what types of property can be placed in REITs (e.g., air rights count as real estate) and what types of activities REITs can engage in (e.g., REITs are now allowed to have taxable subsidiaries to provide services beyond

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5 Other tax requirements to be a REIT include: 1) at least 75 percent of their assets must be real estate, 2) at least 75 percent of their income must come from real estate, and 3) they must have at least 100 shareholders.
6 Source: National Association of Real Estate Investment Trusts (NAREIT). This figure is for equity REITs and thus does not include mortgage or hybrid REITs, which are much smaller parts of the industry.
7 These are Equity Office Properties, Equity Residential, and Plum Creek Timber Company, the last of which was created through a REIT spin-off.
8 As of May 2002. Source: NAREIT.
those that REITs can provide so long as the taxable subsidiaries do not increase above a certain size).

**REIT Spin-offs**

In a REIT spin-off the objective is to transfer income producing real estate from the corporation to a subsidiary that is then spun-off to existing shareholders as a REIT. The tricky issue is to make sure the spin-off does not trigger taxation of the difference between fair market value and tax basis. If the REIT spin-off was determined to be taxable, both the corporation and the shareholders receiving the REIT distribution could wind up owing taxes. As mentioned earlier in the paper, until 2001 the tax regulations precluded REIT spin-offs from qualifying as nontaxable transactions.9

Figure 2 illustrates a REIT spin-off in its simplest form.10 In the first step the parent drops the real estate assets into a subsidiary. This step is a nontaxable event under Section 351. The second step is to distribute the stock of the subsidiary to the parent’s shareholders. This transaction will be nontaxable provided that the spin-off satisfies the normal criteria for a nontaxable spin-off detailed in Section 368 or Section 355. In the final step the newly

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9 Revenue Ruling 2001–29. The cutoff is not quite this clean for technical reasons and some commentators believe that a reasonable basis existed before 2001 to argue that firms should be able to undertake nontaxable REIT spin-offs. But before the rule change in 2001 no firm was willing to take the risk of undertaking a REIT spin-off given the uncertainty in the tax treatment. Even after the rules were liberalized in 2001, Georgia Pacific and Plum Creek felt the need to take out a $500 million insurance policy to insure against the possibility that the IRS would determine that the spin-off was taxable rather than nontaxable. The Georgia Pacific/Plum Creek deal did contain several complicating tax issues that would not exist in more straightforward spin-offs.

10 For an in-depth discussion of the tax aspects of REIT spin-offs, see Willens and Wright (2002).
A spun-off subsidiary will convert to a REIT as part of the spin-off. If all goes as planned, no party will owe tax at the time of the transaction and the tax bases of the assets will carryover.

The shareholders who formerly owned the parent, which in turn owned the real estate, now own the parent and the real estate (REIT) as separate entities. The parent and the REIT trade separately and over time the ownership of the two entities can diverge. In general, one would expect tax clienteles to form over time such that the stock of the corporation would tend to be held by taxable investors while stock in the REIT would be held by nontaxable investors, at least to the extent the return on the REIT stock was largely made up of ordinary dividends.

In the case of the Georgia Pacific / Plum Creek spin-off, we could see the opposite clienteles form. The reason is that Congress has long bestowed tax benefits on the timber industry by virtue of granting capital gains treatment to income from the cutting of timber. As a REIT, Plum Creek is able to pass on the long-term capital gains from its timber operations to its shareholders who, if they are individuals, face a maximum tax rate of 20 percent on that income. Over the period 1999–2001 almost half of Plum Creek's "dividends" were taxed to investors as long-term capital gains. Thus, individuals seeking an investment that produces current income will find the tax treatment of Plum Creek's dividends more favorable than, say, the interest on a bond that has a similar pretax yield.

**DATA AND SIMULATION METHOD**

**Data**

To simulate the impact of REIT spin-offs we construct a sample consisting of publicly traded firms from Compustat for

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11 In so-called “paired share” or “stapled” REITs, a corporation and REIT trade as a unit even though they are technically separate entities for tax and legal purposes. Paired-share REITs were curtailed by Congress twice—first in 1984 when Congress disallowed the structure except for five then-existing paired share REITs, and again in 1998 when Congress froze the size of the existing paired-shares by making the benefits inapplicable to newly acquired real estate.
the year 2000. We exclude firms in certain industries from the sample. We exclude oil, gas, and mining firms because the definition of real property for purposes of the REIT provisions excludes oil, gas, or mineral royalty interests. We have no way of knowing how large such excluded interests are in proportion to these firms’ total real estate.

We exclude utilities and telephone companies because for those firms we are unsure that the distinction between real estate and equipment for financial statement purposes matches well with the distinction for tax purposes. We are not aware of any utility owning REITs and there do not appear to be any rulings exactly on point, although the definition of real estate is fairly broad (e.g., it includes air rights). We do not preclude the possibility that tax attorneys could argue successfully that at least some utility assets (e.g., power lines) fit the definition of real estate but at this time we are unable to estimate what fraction of utility assets might qualify.

We also exclude banks, savings and loans, and similar financial institutions because those firms rarely break out their real estate separately in their financial statements. Consequently, we cannot reasonably simulate the potential effects of REIT spin-offs for these types of firms.

With each of these exclusions we no doubt understimate the potential impact of REIT spin-offs. For example, a large integrated oil company might find it desirable to spin-off its service station assets in REIT form. One example of this, done the hard way before the recent rule change, is that of Getty Petroleum and Getty Realty (a REIT). Getty Realty’s business consists of leasing 1,000+ service stations to Getty Petroleum, with lease terms of 50 years. Getty Petroleum is a wholly-owned subsidiary of the Russian oil giant Lukoil. Getty Realty separated from Getty Petroleum in 1998 as a regular C corporation and waited until 2001 to convert to REIT status. Because oil and gas firms, along with utilities and telephone companies, hold very large amounts of assets, the effect of excluding them from the analysis could be large, but there is not much we can do about the problem in the data.

Finally, we exclude firms already operating as REITs or trusts, as well as the relatively small number of firms operating as publicly traded limited partnerships. We are left with a sample of 4,925 firms that collectively hold approximately $6 trillion of total assets and $775 billion of real estate. Table 1 presents descriptive statistics for the sample. In particular, the median real estate holdings of $1.7 million is modest. However, the mean of $157.2 million suggests that a subset of firms have large real estate holdings, skewing the distribution to the right. The ratio of real estate to total assets has a mean of 9.5 percent and a median of 2.2 percent, suggesting that a subset of firms that have high concentrations of real estate. The corpo-

12 The SIC codes of excluded firms are as follows: Oil, gas, mining and minerals (1000-1400, 2911, 3334, 3270), communications (4812-4899), utilities (4911-4991), banks and financial institutions (6021-6411), and REITs and other trusts (6798, 6792).
13 I.R.C. § 856(c)(5)(C).
14 In one ruling the IRS considered a microwave transmission system and decided that the building, heating and air conditioning systems, the transmitting and receiving towers, and the fencing were all real property. However, the antenna, waveguides, transmitting, receiving and multiplex tracks, and pre-wired modular tracks were determined to be assets accessory to the operation of a business and not real property (Rev. Rul. 75-424, 1975-2 C.B. 269).
15 From Compustat for 2000. We define real estate as the value of land, land improvements, natural resources, and buildings. We exclude equipment, capital leases, and construction in process from the definition of real estate. Compustat data are based on firm’s financial statements, which report real estate at historical cost. Because real estate tends to appreciate, we use historical cost before depreciation in our estimates.
Rate marginal tax rates are from John Graham and are firm-specific estimates based on simulations of the distribution of future earnings (see Graham, 1996).16

Table 2 presents the ten industries in our sample that have the largest real estate holdings. Real estate ownership appears to be highly concentrated as these ten industries account for $338 billion of the $775 billion of real estate in our sample. Railroads top the list with $77.5 billion of real estate followed by variety stores with $49.3 billion. Real estate ownership also tends to be highly concentrated within industries as well. Three railroads account for $61.1 billion of the total $77.5 billion of real estate owned by the railroad industry, while Wal-Mart alone accounts for $33.9 billion of the $49.3 billion of real estate owned by variety stores. Despite owning large amounts of real estate, some of these industries may not be suitable candidates for large-scale REIT spin-offs. Pharmaceuticals, for example, may have large investments in production facilities and laboratory space that are highly firm specific and unsuitable for a REIT. Other industries may not find REIT spin-offs attractive because the net tax savings are small. In particular, the tax savings are

<table>
<thead>
<tr>
<th>Industry</th>
<th>Real Estate ($ millions)</th>
<th>Percent of Total Assets in Real Estate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railroads</td>
<td>77,572</td>
<td>0.78</td>
</tr>
<tr>
<td>Variety stores</td>
<td>49,332</td>
<td>0.40</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>33,310</td>
<td>0.13</td>
</tr>
<tr>
<td>Restaurants</td>
<td>32,324</td>
<td>0.69</td>
</tr>
<tr>
<td>Misc. amusement and recreation</td>
<td>31,285</td>
<td>0.67</td>
</tr>
<tr>
<td>Department stores</td>
<td>26,592</td>
<td>0.25</td>
</tr>
<tr>
<td>Hotels</td>
<td>24,923</td>
<td>0.52</td>
</tr>
<tr>
<td>Auto manufacturing</td>
<td>22,445</td>
<td>0.04</td>
</tr>
<tr>
<td>Grocery stores</td>
<td>21,114</td>
<td>0.27</td>
</tr>
<tr>
<td>Semiconductors</td>
<td>19,242</td>
<td>0.10</td>
</tr>
</tbody>
</table>

1Industries are defined at the two-digit SIC code level. As of 2002. Amounts in $ millions except for ratios.
2Excludes existing REITs and limited partnerships. Excludes oil, gas, and mining firms, utilities, and financial services firms.

Source: Compustat

16 We use 35 percent as the marginal tax rate in the small fraction of observations for which Graham did not have marginal tax rate data. Our qualitative conclusions are unchanged if we use corporate effective tax rates (tax expense divided by pretax income) as our estimate of the firm’s marginal tax rate.
such that highly levered industries and those that currently have small dividend payouts will have smaller net tax benefit than other industries.

A caveat about the data. While firm level data have the advantage of allowing for across firm variation, they preclude us from looking at variation within a given firm. For example, a firm might have two tracts of real estate, one for which there are large tax benefits of a REIT spin-off and low nontax costs and the opposite for the other. At the firm level, we only observe the net tax benefits and nontax costs. This problem is likely to be most severe in large, diversified firms such as General Electric and we probably understate the potential for REIT spin-offs in such firms.

**Simulation Method**

We compute four tax effects of REIT spin-offs: 1) the potential reduction in corporate taxes from removing real estate earnings from the corporation, 2) the potential increase in corporate taxes from reductions in corporate debt as a result of the reduction in real estate assets, 3) the potential increase in investor level taxes on the new REIT, and 4) the potential reduction in investor level taxes on the shareholders of the remaining corporation. The net decrease in corporate taxes is 1) minus 2). The net increase in investor level taxes is 3) minus 4).

The annual reduction in corporate taxes from removing future real estate income from the corporation is \( \text{REAL ESTATE} \times R_{\text{real}} \times t_c \), where \( R_{\text{real}} \) is the expected pretax return on real estate and \( t_c \) is the marginal corporate tax rate. Typical yields on REITs at the time of writing this paper were in the 7–8 percent range, similar to the yields on corporate bonds. Consequently, the estimates in this paper use the yield on the Dow Jones corporate bond index, 7.53 percent, as our expected pretax return on real estate.\(^{17}\)

Next we estimate the increase in corporate taxes caused by the decrease in corporate debt. Because interest on debt is deductible at the corporate level but taxable at the investor level, debt has the same tax effect as turning a portion of the corporation into a flow-through entity (Scholes et. al., 2002). Empirically, debt levels are highly associated with the level of property, plant, and equipment (Graham, 1996; Erickson, Frank, and Maydew, 2001). The connection is likely to come from lenders providing more credit to firms with hard collateral such as land than with soft collateral such as goodwill. If a firm spun-off its real estate assets, this would tend to lead to an increase in the debt to asset ratio if there were no reduction in debt. Rather than assume this, we will simply assume that the ratio of long term debt to property plant and equipment (which includes real estate) remains constant after the spin-off and thereby compute the reduction in long term debt required if all real estate were removed from the firm.\(^{18}\) Thus, the reduction in corporate taxes from the change in debt will be \( \Delta \text{DEBT} \times R_{\text{debt}} \times t_c \). The total impact on corporate taxes will be the net of these two components.

To estimate the effect of a REIT spin-off on investor level taxation, we need to make assumptions about the tax status and tax rates of REIT investors. Gentry, Kemsley, and Mayer (2002) find taxable investors facing a 30 percent tax rate are the marginal investors in REITs.\(^{19}\) To estimate the revenue effects we need to know the average tax rate of all the REIT inves-

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\(^{17}\) The rate as of May 20, 2002.

\(^{18}\) If the firm has more debt than property plant and equipment then we fix the ratio at one and the spin-off of the real estate is estimated to result in a dollar-for-dollar reduction in corporate debt.

\(^{19}\) Gentry et. al. (2002) actually produce a range of estimates and 30 percent is the midpoint estimate.
tors. We assume that one-half of REIT investors are taxable investors facing a 30 percent rate and one-half are nontaxable, so the average tax rate of the REIT investors, $t_p$, is 15 percent. So the increase in investor level taxes is $\text{REAL ESTATE} \times R_{\text{real}} \times t_p$.

The last tax effect that we estimate is the decrease in investor level taxes from the decrease in the dividends of the corporation left behind after the REIT spin-off. Here we assume that firms pay out as dividends one-half of the pretax income from their real estate, with the remainder either paid for corporate taxes or retained in the firm. To prevent the strange case of assumed negative dividends by the parent after the spin-off, we compare this estimated reduction with the actual amount of dividends paid in the prior year, $DIV$, and use the minimum of the two as the assumed reduction. We assume the same 15 percent average tax rate across all investors in the corporation as we did with the REIT. The REIT spin-off would then reduce taxes paid by the shareholders of the former parent corporation by $t_p$ times the minimum of $\text{REAL ESTATE} \times R_{\text{real}}$ and $\text{Dividends}$. The net increase in investor level taxes is then the net of these two components.

Other Tax Costs That May Reduce the Number of REIT Spin-offs

There are several potential tax costs associated with REIT spin-offs that we cannot compute using the COMPUSTAT data. First, the newly formed REIT is required to declare a special one-time dividend to purge itself of the earnings and profits that it accumulated while it was a C corporation. Second, if the REIT disposes of property within ten years of the conversion it can be subject to corporate income tax to the extent the property had a built-in gain (i.e., fair market value in excess of basis) at the time of the REIT conversion.

Third, because REIT spin-offs are new, there is some uncertainty about how they will be received by the IRS in practice and how they interact with the rest of the tax code. As evidence of the cost of this uncertainty, note that Georgia Pacific and Plum Creek paid approximately $24 million in premiums to obtain a $500 million insurance policy to protect against the possibility that the IRS would deem the spin-off taxable. Finally, there are some miscellaneous other risks and costs, such as the risk that the REIT fails some REIT provision in the future and loses its REIT status.

Nontax Costs That May Reduce the Number of REIT Spin-offs

In many cases, the most significant nontax cost of a REIT spin-off will arise from coordination issues and conflicts of interest from separating ownership of an operating company from that of the real estate it uses in its operations. For example, as of 2001 Wal-Mart owned approximately $34 billion of real estate and leased another $4.6 billion under capital leases. For the leased assets Wal-Mart

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20 Institutional ownership is often used as a proxy for nontaxable investors. Ciochetti et. al. (2002) find that institutional investors owned 53 percent of outstanding REIT stock in 1998. At the time we wrote this paper, the institutional ownership percentage of the three largest REITs ranged from 47 percent to 80 percent, although smaller REITs likely have lower institutional ownership.

21 This does not require a dividend of all the earnings and profits of the former parent but only those attributable to the spun-off REIT. In the Georgia Pacific / Plum Creek case, this cost simply amounted to Plum Creek (the REIT) accelerating one of its quarterly dividend payments from 2002 into 2001 (it also resulted in a portion of the dividend being taxed as ordinary income. Because of special rules relating to the cutting of timber, Plum Creek’s dividends have been classified as either capital gains or returns of capital). Also note that techniques exist so that the dividend would not have to be a cash payment (Willens and Wright, 2002).

apparently decided that benefits of leasing exceed the coordination costs of not owning the real estate but the majority of Wal–Mart’s stores are not leased but are owned outright. Owning the stores outright likely gives Wal–Mart more flexibility to modify its stores and more freedom to open and close stores.23

All else equal, the more firm–specific a property is, the less likely it is to be a candidate for a REIT spin–off. Real estate that would have a similar value to numerous potential owners or lessees would tend to be good candidates for REIT spin–offs. Alternatively, the REIT and the former parent can enter into long term lease contracts such that the parent is guaranteed access to the property necessary for its business and the REIT is guaranteed a steady stream of revenue. For example, Getty Petroleum has 50–year leases on service stations owned by Getty Realty while Georgia Pacific and Plum Creek entered into a ten–year timber supply agreement. There is some evidence that such “captive REITs” have higher costs of capital than other REITs because of information asymmetry and conflicts of interest (Wei, Hsieh, and Sirmans, 1995). As the shareholder base of the REIT and the corporation diverge, conflicts of interest can arise between the two entities. At the date of this article, however, Plum Creek’s price–to–book value ratio of 2.4 was comparable with those of the two other largest REITs, Equity Office Properties and Equity Residential, although Plum Creek’s yield was about 1.3 percent greater than the average of the other two REITs.

The Simulated Effects on Corporate and Investor Level Taxes

Table 3 presents the estimated effect on corporate and investor level taxes for the ten largest real estate owning industries from Table 2, sorted by the size of the net tax decrease (in millions of dollars). Note that these represent upper bound estimates in that they assume that all real estate in these industries is spun off to REITs. The total potential reduction in corporate taxes is estimated at $4,882 million and is partially offset by an increase in investor level taxes of $2,314 million for a net tax decrease of $2,568 million. On average, across the largest real estate owning industries, increases in investor level taxes

<table>
<thead>
<tr>
<th>Industry</th>
<th>Reduction in Corporate Taxes1 ($ millions)</th>
<th>Increase in Investor Taxes2 ($ millions)</th>
<th>Net Tax Decrease ($ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variety stores</td>
<td>883</td>
<td>364</td>
<td>519</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>672</td>
<td>200</td>
<td>472</td>
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<td>Railroads</td>
<td>1,121</td>
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<td>Semiconductors</td>
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<td>Restaurants</td>
<td>551</td>
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<td>237</td>
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<tr>
<td>Home building retailers</td>
<td>364</td>
<td>127</td>
<td>237</td>
</tr>
<tr>
<td>Grocery stores</td>
<td>314</td>
<td>177</td>
<td>137</td>
</tr>
<tr>
<td>Communications equipment</td>
<td>184</td>
<td>57</td>
<td>127</td>
</tr>
<tr>
<td>Aircraft manufacturers</td>
<td>179</td>
<td>55</td>
<td>124</td>
</tr>
<tr>
<td>Computer programming</td>
<td>206</td>
<td>96</td>
<td>110</td>
</tr>
<tr>
<td>Totals</td>
<td>4,882</td>
<td>2,314</td>
<td>2,568</td>
</tr>
</tbody>
</table>

1Sum across all firms in industry of estimated reduction in corporate tax from removal of real estate income from corporation less increase in tax from removal of interest expense on debt associated with real estate.

2Sum across all firms in industry of increase in investor level taxes by virtue of having real estate held in REIT, which must distribute its income each year, less projected reduction in corporate dividends.

Source: Compustat, Authors’ computations.

23 We thank Chris Mayer for raising this issue with us.
are estimated to offset nearly half (47.5 percent) of the corporate tax savings from REIT spin-offs.

Among the industries, variety stores have the largest net tax decrease of $519 million, with $883 million in reduced corporate level taxes partially offset by $364 million in increased investor level taxes. Railroads show the largest reduction in corporate taxes, $1,121 million per year, but they also show a disproportionally high increase in investor level taxes of $761 million due to their high starting leverage ratios. Investor level taxes offset nearly 68 percent of the corporate tax savings for the railroad industry.

These industries have the largest holdings of real estate but are not necessarily the industries with the most to gain compared to their current market value. We next compute the present value net tax savings for each of the 4,925 firms in our sample. The present value is calculated by discounting the annual net tax savings—taking into account both corporate and investor level taxes—by the expected return on debt (consistent with Modigliani and Miller, 1963). We compute the aggregate present value tax savings for each industry scaled by each industry’s aggregate market value of equity.

Because there are some very small industries in terms of assets, we limit our attention to the fifty largest industries by size of real estate holdings. Of these, Table 4 presents the ten industries with the largest present value net tax savings to market value. Nursing homes show the greatest present value net tax savings to market value at 18.2 percent. Railroads come in second at 12.9 percent tax savings to market value. The ratios drop quickly beyond that, with only three more industries showing present value net tax savings in excess of 5 percent of market value. To put these ratios in at least some perspective, Moore, Christensen and Rosenfeldt (1989) found almost 6 percent positive abnormal returns from announcements of conversions from C corporations to master limited partnerships, which are pass-through entities like REITs. Gyourko and Sinai (1999) estimate that the gain from operating as a REIT rather than a C corporation is between 2 and 5 percent of firm value.

These data provide an upper bound on the amount of spin-off activity when there are costs of doing so. If firms face net nontax costs of spinning off their real estate of say, around 5 percent of market value, then that would be sufficiently costly to prevent all but a few industries from restructuring their real estate. Existing work on how corporate taxation affects firm choices of organizational form (see Scholes and Wolfson (1990), Gordon and Mackie-Mason (1994;...

**TABLE 4**

<table>
<thead>
<tr>
<th>Industry</th>
<th>Present Value Net Tax Savings to Market Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing homes</td>
<td>0.182</td>
</tr>
<tr>
<td>Railroads</td>
<td>0.129</td>
</tr>
<tr>
<td>Trucking</td>
<td>0.066</td>
</tr>
<tr>
<td>Paperboard and boxes</td>
<td>0.056</td>
</tr>
<tr>
<td>Steel mills</td>
<td>0.053</td>
</tr>
<tr>
<td>Restaurants</td>
<td>0.045</td>
</tr>
<tr>
<td>Auto manufacturing</td>
<td>0.041</td>
</tr>
<tr>
<td>Auto rentals</td>
<td>0.038</td>
</tr>
<tr>
<td>General merchandise stores</td>
<td>0.037</td>
</tr>
<tr>
<td>Rolling and drawing nonfer. metals</td>
<td>0.036</td>
</tr>
</tbody>
</table>

1Among fifty largest industries by size of aggregate real estate holdings.

2Present value of net tax savings is the present value of the reduction in corporate tax less the present value of any increases in investor level taxes from the REIT spin-off.

Source: Compustat, Authors' computations.
off to be worthwhile. The cutoffs range from 2 percent of market value to 20 percent of market value, with the number of spin-offs obviously declining as the cutoff increases. For the highest cutoff of 20 percent of market value, only 109 firms out of the 4,925 choose to spin-off their real estate. While this is a small fraction of the total sample, if they each spun off an independent, publicly traded REIT it would increase the number of publicly traded equity REITs by approximately two-thirds. The loss in tax revenue to the government, however, would be rather modest. The net reduction in corporate taxes is estimated at $1,238 million offset by an increase in investor level taxes of $600 million for a net tax reduction of $638 million.

**Alternatives to a REIT Spin-off and the Lock-in Effect**

The underlying idea of a REIT spin-off is that the efficient owner of property can be different from the efficient user of the property and taxes can be a major contributor to this divergence. The same underlying idea is at work in a sale-leaseback. In a sale-leaseback firm A sells property to entity B and then leases the property back to firm A. The capital gains taxation of the property is then zero, whereas a REIT spin-off might result in a large capital gains tax liability. Sale-leasebacks can be attractive in this regard. The key difference is that in a sale-leaseback, the property is owned by another entity whereas in a REIT spin-off, the property is owned by the REIT itself. The tax benefits of a sale-leaseback are thus realized at the level of the property owner, whereas the tax benefits of a REIT spin-off are realized at the level of the REIT. The former is likely to be more attractive to property owners, whereas the latter is likely to be more attractive to REITs.

**TABLE 5**

<table>
<thead>
<tr>
<th>Threshold</th>
<th>Number of Spin-offs</th>
<th>Loss of Corporate Tax Revenue</th>
<th>Increase in Individual Tax Revenue</th>
<th>Net Loss of Tax Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>All spin-off</td>
<td>4,906</td>
<td>11,104</td>
<td>6,227</td>
<td>4,877</td>
</tr>
<tr>
<td>Benefit &gt;2% market value</td>
<td>788</td>
<td>6,620</td>
<td>2,856</td>
<td>3,764</td>
</tr>
<tr>
<td>Benefit &gt;5% market value</td>
<td>425</td>
<td>2,778</td>
<td>1,282</td>
<td>1,496</td>
</tr>
<tr>
<td>Benefit &gt;10% market value</td>
<td>221</td>
<td>1,617</td>
<td>794</td>
<td>823</td>
</tr>
<tr>
<td>Benefit &gt;15% market value</td>
<td>149</td>
<td>1,409</td>
<td>701</td>
<td>708</td>
</tr>
<tr>
<td>Benefit &gt;20% market value</td>
<td>109</td>
<td>1,238</td>
<td>600</td>
<td>638</td>
</tr>
</tbody>
</table>

1Thresholds are based on ratio of present value of corporate tax savings from REIT spin-off to market value.

2Annual loss of corporate tax revenue from REIT spin-off and net of corporate tax increase from reduction of interest deductions on debt associated with real estate.

3Increase in investor level taxes by virtue of having real estate in REIT, which distributes its income each year, less projected reduction in corporate dividends.

Source: Compustat, Authors’ computations.

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24 Non-tax costs frequently prevent small tax saving transactions. Gentry (2002), for example, examines the market for DECS and finds a fairly high lower bound on deal sizes. Erickson et. al. (2002) discuss the distinction between nontax costs that are fixed versus those that are proportional to size in a different context.

25 NAREIT data show 158 equity REITs as of 2001.
NATIONAL TAX JOURNAL

TABLE 6
CURRENT COST VERSUS HISTORICAL COST OF STRUCTURES BY INDUSTRY

Panel A: Current and Historical Cost of Structures By Major Industry Group ($ Billions)

<table>
<thead>
<tr>
<th>Major industry group</th>
<th>Current Cost</th>
<th>Historical Cost</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, forestry, and fishing¹</td>
<td>$484,380</td>
<td>$171,726</td>
<td>2.82</td>
</tr>
<tr>
<td>Mining</td>
<td>471,325</td>
<td>301,294</td>
<td>1.56</td>
</tr>
<tr>
<td>Construction</td>
<td>46,939</td>
<td>24,879</td>
<td>1.89</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>733,875</td>
<td>382,219</td>
<td>1.92</td>
</tr>
<tr>
<td>Transportation</td>
<td>439,916</td>
<td>157,665</td>
<td>2.79</td>
</tr>
<tr>
<td>Communications</td>
<td>395,699</td>
<td>283,207</td>
<td>1.40</td>
</tr>
<tr>
<td>Electric, gas, and sanitary services</td>
<td>834,640</td>
<td>437,950</td>
<td>1.91</td>
</tr>
<tr>
<td>Wholesale trade</td>
<td>267,525</td>
<td>166,009</td>
<td>1.61</td>
</tr>
<tr>
<td>Retail trade</td>
<td>514,304</td>
<td>310,639</td>
<td>1.66</td>
</tr>
<tr>
<td>Finance and insurance²</td>
<td>501,743</td>
<td>330,519</td>
<td>1.52</td>
</tr>
<tr>
<td>Services</td>
<td>598,893</td>
<td>376,735</td>
<td>1.59</td>
</tr>
<tr>
<td>Total</td>
<td>$5,289,239</td>
<td>$2,942,842</td>
<td>1.80</td>
</tr>
</tbody>
</table>

Panel B: The Five Industries with the Largest Ratio of Current to Historical Cost

<table>
<thead>
<tr>
<th>Industry</th>
<th>Current Cost</th>
<th>Historical Cost</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railroad transportation</td>
<td>$287,093</td>
<td>$79,743</td>
<td>3.60</td>
</tr>
<tr>
<td>Primary metal industries</td>
<td>50,605</td>
<td>17,854</td>
<td>2.83</td>
</tr>
<tr>
<td>Leather and leather products</td>
<td>1,905</td>
<td>677</td>
<td>2.81</td>
</tr>
<tr>
<td>Textile mill products</td>
<td>18,128</td>
<td>6,756</td>
<td>2.68</td>
</tr>
<tr>
<td>Local and interurban passenger transit</td>
<td>19,765</td>
<td>7,442</td>
<td>2.66</td>
</tr>
</tbody>
</table>

Panel C: The Five Industries with the Smallest Ratio of Current to Historical Cost

<table>
<thead>
<tr>
<th>Industry</th>
<th>Current Cost</th>
<th>Historical Cost</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radio and television</td>
<td>$80,180</td>
<td>$61,944</td>
<td>1.29</td>
</tr>
<tr>
<td>Holding and other investment offices</td>
<td>82,233</td>
<td>62,342</td>
<td>1.32</td>
</tr>
<tr>
<td>Security and commodity brokers</td>
<td>58,087</td>
<td>42,704</td>
<td>1.36</td>
</tr>
<tr>
<td>Business services</td>
<td>65,166</td>
<td>46,873</td>
<td>1.39</td>
</tr>
<tr>
<td>Motion pictures</td>
<td>24,065</td>
<td>17,100</td>
<td>1.41</td>
</tr>
</tbody>
</table>

¹Excludes farms.
²Excludes the real estate subindustry, which in the BEA tables is primarily owner-occupied housing.

Source: Bureau of Economic Analysis Fixed Asset Tables 3.1S and 3.3S. For year 2000. In $ billions.

Property back from B. Firm A still enjoys the benefits of using the property in its operations, while entity B enjoys the tax benefits of ownership. If the property produces large amounts of taxable income, entity B is likely to be a nontaxable investor such as a pension fund. If the property produces tax losses as a result of accelerated depreciation, entity B is likely to be a high tax investor that values the tax shields more highly than does A. Unfortunately, the sale part of a sale–leaseback will generally trigger taxation to A to the extent the fair market value of the property exceeds A’s basis in it at the time of the sale. This can produce a lock–in effect whereby A and B do not engage in sale–leasebacks that they otherwise would. The property is effectively trapped inside of A.

REIT spin–offs are at least a partial way around the lock–in effect. In a REIT spin–off entity A puts property into the REIT without triggering taxation of the gains in the property.⁶ We expect that REIT spin–offs will be most advantageous with property that has appreciated in value such that the REIT spin–off has an advantage over the sale–leaseback. We do not

⁶ Note that if the shareholders that receive the REIT shares later sell the shares they will, of course, recognize a taxable gain or loss for the difference between the proceeds and their basis in the REIT stock. So there still could be a lock–in effect at the shareholder level to getting the REIT interest into the correct tax clientele.
have firm level data of the extent to which property has appreciated in value such that a lock–in effect is present, but we can provide some suggestive evidence at the industry level using BEA data.

Table 6 shows BEA estimates of the current cost and historical cost of real estate by industry for the year 2000. This is not a measure of the change in market value of the property, only of the change in inflation since the property was purchased. Still, the ratio of current cost to historical cost may give a rough metric for the significance of the lock–in effect across industries. Panel A shows the above measures by major industry grouping, while Panel B presents at a finer level the five industries with the largest estimated lock–in effect and Panel C presents the five with the smallest estimated lock–in effect. Again, all else equal we expect REIT spin–offs to be most useful in those industries where the lock–in effect has prevented firms from engaging in sale–leasebacks.

CONCLUSIONS

The recent decision in the U.S. to allow corporations to spin–off their real estate into REITs raises the possibility of a large shift of assets into pass–through entities and a significant decrease in corporate tax revenue. In this paper we have simulated the impact of this phenomenon. Our results document that the potential gains from such REIT spin–offs are highly concentrated in a small number of industries. The results also show that typical nontax costs from separating ownership of real estate from ownership of the firm is likely to prevent a large number of these transactions from taking place. This, as well as the impact of these spin–offs on corporate debt and on individual level taxes, are likely to substantially reduce the potential revenue losses from REIT spin–offs in the aggregate, though there will almost certainly be some large and high–profile individual companies that pursue them.

Acknowledgments

We appreciate helpful comments from Jennifer Blouin, Tony Ciochetti, and Chris Mayer as well as participants at the 32nd Annual National Tax Association Spring Symposium. We also appreciate financial support from the National Science Foundation, the Sloan Foundation, the American Bar Foundation, and the KPMG Peat Marwick Research Fellowship Fund.

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